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THE RELATIONSHIP BETWEEN NURSING STUDENTS' PERCEIVED SENSE OF BELONGINGNESS AND THEIR WILLINGNESS TO SELF-REPORT MEDICATION ERRORS IN THE CLINICAL PRACTICE SETTING: A FEASIBILITY STUDY

by

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BScN, Ryerson University, Canada, 2011

A thesis

presented to Ryerson University

in partial fulfillment of the

requirements for the degree of

Master of Nursing

in the Program of Nursing

Toronto, Ontario, Canada, 2013

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THE RELATIONSHIP BETWEEN NURSING STUDENTS' PERCEIVED SENSE OF BELONGINGNESS AND THEIR WILLINGNESS TO SELF-REPORT MEDICATION ERRORS IN THE CLINICAL PRACTICE SETTING: A FEASIBILITY STUDY

Abstract

By
Anda Botezatu
Master of Nursing
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Medication errors threaten the physical and emotional well-being of the Canadian population (Mayo & Duncan, 2004). There is a paucity of published studies examining medication errors in the nursing student population. The purpose of this pilot study was determining the feasibility of conducting a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. Thirty fourth year nursing students completed the study instruments. The study's conceptual framework guided the development of objectives and interpretation of results. Overall, there was a high response rate, the study protocol was appropriate, and study instruments were valid and reliable. Results indicated a negative nonsignificant inverse relationship between the two main variables. Implications related to nursing practice, education, theory, and results are offered, with a specific focus on the need to replicate the study using a larger sample.

Acknowledgments

I would like to express my gratitude to my thesis supervisor, Dr. Janice Waddell for her expertise during the completion of this thesis project. Your guidance and support throughout the process have encouraged me not to lose sight of this project's goals and to enjoy its completion. Above all, you displayed a great level of commitment to the project and a strong desire to facilitate my learning and progression through the process. You have played a central role in my completion of this thesis and for that I would like to thank you.

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Thank you to my mom Paula and my dad Claudiu for their continuous support throughout graduate school. Your investment and interest in my education and development as a young adult have gone beyond my expectations. Throughout these two years you have been my parents, supporters, friends, editors, and providers of ideas for my many projects.

Finally, to Alex for always believing in me and for the much appreciated technical support!

Dedication

I would like to dedicate this thesis to my grandfather, Neculai Botezatu, who has always displayed a joy for living. Over the years I have observed your enthusiasm in numerous social interactions and I am immensely grateful to you for teaching me to focus on the positive aspects of every experience. Finally, you possess a fantastic sense of humour that has delighted me over the years.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

Medication errors threaten the physical and emotional well-being of the Canadian population as well as the economic resources of our society (Mayo & Duncan, 2004). Based on the results from a 2005 Canadian National Survey focused on Registered Nurses (RNs), one-fifth of hospital based RNs believed they had been involved in frequent or occasional medication errors within the previous year (Wilkins & Shields, 2008). In this thesis the self-reporting of medication errors by the nursing student population will be examined.

Over the years, the principles of beneficence and nonmaleficence have been included as part of the ethical codes of practice for numerous health care professions such as medicine, nursing, and pharmacy (Smith, 2005). These principles are derived from the "primum non nocere" Hippocratic injunction which reminds health care professionals (HCPs) of their duties not to cause harm to those in their care (Smith). In today's health care system, more people die as a result of medical errors than motor vehicle collisions or acquired immunodeficiency syndrome (Barach & Berwick, 2003; Woods, 2003). There is a paucity of literature examining medical and medication errors within the Canadian healthcare system (Butt, 2010). The first published study examining adverse events in the Canadian healthcare system was conducted in 2004 and based on the results, medication errors have been identified as one of the most common medical errors that occur within the healthcare arena (Ross Baker et al., 2004). The Canadian Adverse Events Study identified the three most common types of medical errors that occur in acute care hospitals across Canada, as being: those related to surgical procedures (34%) and drug and fluid related events (24%) (Ross Baker et al.).

O'Hagan, MacKinnon, Persaud, and Etchegary (2009) examined patients in Canada, Australia, Germany, the Netherlands, New Zealand, the United Kingdom (UK), and the United States who reported being affected by a medical error within the previous two years. The authors identified that Canadian patients were the third highest affected by medical errors, with 17% of the participants stating they had been affected by a medical error within the past two years. Six percent of Canadian study participants believed they had received the wrong medication or wrong medication dose within the past two years (O'Hagan et al.).

The incidence of medication errors is of significance to the nursing profession as administration of medications is a central component of nursing practice. Medication errors are defined as preventable events that lead to client harm or inappropriate usage of a drug (Benner et al., 2002; Robinson Wolf, Hicks, & Farley Serembus, 2006). Medication errors can occur in any of the prescribing, transcribing, administration, dispensing, and/or monitoring phases associated with the medication use process (Harding & Petrick, 2008). The commission of a medication error can result in physical and psychological harm for the client and psychological and emotional distress for the HCP involved in the incident (Chenot & Daniel, 2010). The distressed HCP may be reluctant to self-report a medication error due to fear of punitive measures, such as being singled out and facing legal repercussions (Baker & Norton, 2002).

Barriers to self-reporting of medication errors by RNs have been explored by various researchers, including Chiang and Pepper (2006), Chenot and Daniel (2010), Mayo and Duncan (2004), and Reid-Searl, Moxham, Walker, and Happell (2008). Motivational factors, such as fear, avoiding being perceived as incompetent, and wishing to maintain positive collegial relationships have been identified as some of the most compelling barriers to the reporting of medication errors. The desire to maintain positive collegial relationships and to be accepted by

the healthcare team could be perceived as striving to achieve a sense of belongingness (Levett-Jones, Lathlean, McMillan, & Higgins, 2007). The relationship between a student's sense of belongingness and willingness to self-report medication errors will be explored further in this thesis. Butt (2010) has examined factors that may increase the self-reporting of medication errors by hospital staff and suggested the creation of committees to examine strategies for error-reduction and error-reporting. Butt proposed the inclusion of representatives from all levels of an organization could allow the committee to address barriers to self-reporting as identified by various professions and hence increase compliance with self-reporting of medication errors. Butt does not indicate whether he supports the inclusion of nursing students in discussions focused on self-reporting of medication errors.

Problem Statement

A review of the literature indicates a paucity of published studies exploring medication errors in the nursing student population. The transition of nursing students from the academic environment to the clinical practice setting has been characterized by high levels of anxiety that often impact one's clinical practice performance (Moscaritolo, 2009; Sheu, Lin, & Hwang, 2002; Sprengel & Job, 2004). This anxiety could be a result of many factors, such as being in an unfamiliar environment, fearful of making mistakes, and uncertain of how to interact with patients and families (Sprengel & Job). Examined in this thesis is the feasibility of conducting a study exploring the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. One of the factors suggested as having the strongest influence on students' decision-making processes is that of interaction with members of the healthcare team (Baxter & Rideout, 2006).

Nursing students frame their interactions with colleagues in ways that are perceived as contributing to their primary goal, that of becoming part of the team (Levett-Jones, Lathlean, Maguire, & McMillan, 2007). This need to belong reportedly takes precedence over the quality of care provided and the level of competency achieved (Levett-Jones, Lathlean, Maguire, & McMillan, 2007). Levett-Jones, Lathlean, Maguire, et al. (2007) further suggested that students will often conform to poor practices observed in the clinical practice setting if they perceive this compliance to increase their chances of being accepted as a team member. Hence, students may tend to adapt their behavior in the clinical practice setting to achieve a sense of belongingness.

For the purposes of this study, belongingness was defined as a personal feeling that was dependent upon the context that a person finds himself or herself in, as well as the extent to which that person felt (i) accepted, included, and valued by a specific group, (ii) attached to individuals within the group, and (iii) that similarity exists between his or her personal and professional values and those endorsed by the group (Levett-Jones, Lathlean, McMillan, et al., 2007; Levett-Jones & Lathlean, 2008; Levett-Jones, Lathlean, Maguire, et al., 2007). Willingness to self-report medication errors referred to students' recognition of an error occurring and of the need to complete a self-report related to the commission of a medication error. In this chapter, the investigator provides an overview of the topic of medication errors, an examination of potential factors that affect the overall decision-making processes of nursing students in clinical settings, as well as a statement of purpose of this study.

Levett-Jones, Lathlean, Maguire, et al. (2007) observed that students will often conform to poor practices in the clinical practice setting to increase their chances of being accepted as a member of the professional team. Consequently, this desire to achieve a sense of belongingness has the potential to influence all aspects of their clinical practice, including the reporting of

medication errors. There is a paucity of published studies examining the relationship between students' perceived sense of belongingness in the clinical practice setting and their willingness to engage in self-reporting of medication errors.

Study Purpose

The purpose of this pilot project was determining the feasibility of conducting a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting.

The primary and secondary objectives of this pilot feasibility study were:

Primary Objectives

a) Determine response rate by potential participants.
b) Assess nursing students' willingness to participate in a study examining the relationship between a perceived sense of belongingness and the willingness to self-report medication errors in the clinical practice setting.
c) Determine appropriateness of study protocol for data collection.

Secondary Objectives

a) Determine validity and reliability of study instruments.
b) Examine the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting.

Significance of Problem to Nursing Practice

This feasibility study is of significance to nursing as there is a paucity of published literature examining the relationship between students' perceived sense of belongingness in the clinical practice setting and their willingness to engage in self-reporting of medication errors. Levett-Jones, Lathlean, Maguire, et al. (2007) suggested that students will often conform to poor practices observed in the clinical practice setting if they perceive this compliance to increase their chances of being accepted as a team member. Hence, students may not be willing to engage in self-reporting of medication errors if this practice is supported by the clinical setting and if it will lead to a sense of belongingness.

The conduct of a pilot study allowed for determination of potential participant interest in the topic, response rate, and reliability, validity, and clarity of study instruments. Hayward et al. (2007) emphasized the importance of pilot studies in demonstrating accountability on the part of researchers, suggesting that they are willing to determine feasibility before engaging in a large scale study.

In this pilot study the investigator aimed to determine the reliability and validity of the *Belongingness Scale Clinical Placement Experience (BES – CPE)* and that of a version of the *Medication Administration Error (MAE) Survey* modified by the investigator, the *MAE Self-Reporting* instrument. This psychometric assessment is of significance to nursing research as there are no instruments currently available to measure the willingness of nursing students to self-report medication errors.

CHAPTER 2

REVIEW OF THE LITERATURE

Search Strategy

A thorough literature review was conducted related to the topic of belongingness, medication errors, self-reporting of medication errors in nursing students, RNs, and the general HCP population. The outcome of this literature review lent support to the selected research problem and the purpose of this pilot study.

Multiple sources of theoretical and empirical literature were consulted, using keywords such as medication errors, RNs, HCPs, nursing students, decision-making, reporting, self-reporting, self-esteem, and anxiety. The "AND" and "OR" Boolean operators were used when conducting the search. Locational and positional operators were not used as the investigator did not wish to restrict the search, but rather review abstracts of all the articles obtained during the literature search. The University's online library system was utilized to access online journal articles located in databases such as Academic Search Premier, CINAHL via EBSCOhost, EBM Reviews, Jstor, Ovid, ProQuest, PsycInfo, PubMed, and Scholars Portal. No timeframe was used in conducting the literature reviewed to allow access to landmark studies on the topic of medication errors. However, most of the articles retrieved were published within the last 10 years.

Twenty-nine articles were included in the literature review and ideas from approximately 60 articles were included in this thesis. These articles were selected after reviewing the abstracts, which the investigator deemed as being relevant to this pilot feasibility study. Once abstracts were deemed relevant to this study, articles were carefully reviewed and summarized. The

Google Scholar search engine provided limited access to abstracts of relevant articles, but assisted in narrowing down searches. After reviewing abstracts of articles found via Google Scholar, the investigator selected those to be included in the literature review section and searched for the full versions via the University's online library system. The selected articles examined the topics of medication error, belongingness, nursing students, and RNs. The investigator examined the reference lists of selected articles for additional sources of information. Other resources included textbooks from the fields of nursing, education, and psychology, as well as paper versions of peer reviewed journal articles located at the University's library.

Overview of the Literature Review Related to Medication Errors and Self-Reporting

Self-reporting of medical errors by HCPs is a complex issue influenced by a variety of factors, such as moral and professional integrity (Kaldjian et al., 2008). According to the Canadian Nurses' Association (CNA) Code of Ethics, RNs have an obligation to be accountable, honest, and to practice with integrity (CNA, 2008). Healthcare organizations and academic institutions also encourage and expect nursing students to uphold these standards. The process of self-reporting by HCPs is examined, as well as the transition of nursing students from the academic to the clinical environment. Lastly, limitations of the current literature on the topic of self-reporting of medication errors are considered as well as a rationale for conducting this proposed pilot study.

Self-Reporting of Medication Errors by Nursing Students

The concept of quality improvement is integral to our publicly funded health care system. Necessary to continuously improving public safety is understanding the causes and frequency of

medical errors (Vincent, 2003). A root cause analysis of medical errors can be undertaken only if the error is identified. Most identification methods rely on a self-report system that emphasizes the need for professional integrity and continuous learning.

There appears to be a paucity of published literature on the topic of self-reporting of medication errors by nursing students, with only one identified study examining this topic. This descriptive cross-sectional study examined the self-reporting of medication errors by Iranian nursing students (Koohestani & Baghcheghi, 2008). The authors did not identify a theoretical or conceptual framework used for conducting the study. Self-administered questionnaires were distributed to 240 nursing student participants. The sampling strategies were stated and some of the characteristics of the sample were described. A more in-depth description of the study participants, such as educational preparation, ethnicity, and marital status would allow readers to determine the generalizability of research findings. Questionnaires estimated the number of medication errors reported by nursing students to their instructors and examined students' perceptions of barriers to self-reporting of medication errors.

The authors noted that 30% of students reported making at least one medication error during their academic enrollment, with 75.8% of medication errors being reported to instructors (Koohestani & Baghcheghi, 2008). The strongest identified perceived barriers to self-reporting of medication administration errors (MAEs) were fear and administrative barriers (Koohestani & Baghcheghi). The researchers identified that students reported that no positive feedback was offered for correct administration of medications and that too much emphasis was placed on MAEs as an indicator of the quality of care provided. Students were primarily afraid of receiving a low evaluation score and being perceived as incompetent (Koohestani & Baghcheghi).

This pilot study built on the study conducted by Koohestani and Baghcheghi (2008) by including conceptual frameworks for the two main variables, those of nursing students' perceived sense of belongingness and willingness to self-report medication errors. An in-depth description of the sample was offered, including characteristics such as sex, age, ethnicity, educational preparation, marital status, and occupation.

Students' Decision-Making Skills in the Clinical Practice Setting

Due to the lack of published literature on the topic of self-reporting of medication errors by nursing students, literature on decision-making of nursing students was examined to determine the general processes that may be involved when deciding to self-report medication errors. Willingness to self-report medication errors by nursing students requires engagement in a decision-making process. Students must first identify the commission of an error and then assess the need to report (Wakefield et al., 1999). Important then was to consider the overall decision-making skills of nursing students in the clinical practice setting as well as factors that could influence that process.

The self-reporting of medication errors represents one of the decisions that nursing students engage in while in the clinical practice setting. Baxter and Rideout (2006) used unstructured interviews to examine the decision-making activities of second year students as revealed by their weekly journaling. Baxter and Rideout proposed that students' decisions are affected by their professional relationships with members of the healthcare team and that they avoid upsetting RNs by following their directions. It may be that nursing students' decisions to self-report medication errors is influenced not only by their own clinical judgment, but also by the students' desire not to upset staff members. A definition of the concept of decision-making

was lacking in the article. One factor that could affect transferability of findings was lack of description of the study sample. Baxter and Rideout (2006) stated that 12 second year students were selected to participate in the study. The authors did not offer a description of the sex, previous educational preparation, age, marital status, or ethnicity of the participants.

Most students identify clinical placements as the most stressful component of their undergraduate education (Sheu et al., 2002). The transition from the academic setting where students have become familiar with faculty members and their expectations, to the unfamiliar clinical practice setting where students may be uninformed of HCPs' expectations, can result in high levels of anxiety (Moscaritolo, 2009). Students report they recognize the difference between theoretical principles introduced in the academic environment and those practices supported in the clinical setting (Maben, Latter, & Clark, 2006). Following this recognition, students struggle to adapt their practices as they often feel uncomfortable in deviating from textbook prescriptions (Gillespie & Peterson, 2009). This discrepancy between principles learned in the academic setting and those observed in clinical practice may evoke feelings of anxiety for both the nursing student and his or her clinical preceptor (Maben et al.; White, 2003). High levels of anxiety can lead to a loss of concentration, inability to make decisions, and limited coping abilities (Boggs, 2007; Noud, Lee, & Hegadoren, 2008), all of which could contribute to the commission of a medication error. This anxiety and fear of upsetting their clinical preceptors (Baxter & Rideout, 2006) may lead students to avoid events that are perceived as undermining their academic success, such as that of deciding to self-report medication errors.

White (2003) used an interview guide to examine the clinical decisions of fourth year nursing students in the practice setting. The author identified a gap in research and a study purpose. White offered a conceptual definition of clinical decision making, but no other elements

of a conceptual framework were articulated. The engagement in a decision-making process consisted of the identification of an issue, the consideration of multiple solutions, and the selection and implementation of a specific alternative (White, 2003). Lauri et al. (2001) stated that one of the most important contributions of professionals to the health care environment is their utilization of advanced critical thinking skills while engaging in effective decision-making. Baxter and Boblin (2008) suggested that understanding the factors affecting decision-making of nursing students may assist educators to implement curricula that would facilitate the development of strong decision-making skills. Strong decision making skills influenced by one's independent usage of critical thinking skills may influence the reporting of medication errors in nursing students. Developing a habit of relying on one's own critical thinking skills may be of importance as Baxter and Boblin further stated that decision-making practices developed during undergraduate education are often transferred into professional practice.

Decision-making practices of nursing students are further influenced by professional relationships with members of the nursing team, especially those with their clinical preceptor (Baxter & Rideout, 2006). Gillespie and Peterson (2009) stated that novice practitioners who lack the personal confidence to engage in independent decision-making often require an increased level of guidance from senior RNs. Messmer, Gracia Jones, and Taylor (2005) identified that students often alter their decisions based on the advice offered by more experienced RNs, although nursing students engage in numerous decision-making processes even before deciding to approach an RN. One of the determining factors in their decision to approach a HCP is their perception of how that person will respond based on his or her previous actions (Baxter & Rideout). Baxter and Rideout suggested that students will usually follow the directions of an RN without questioning them to avoid making the RN upset, as this occurrence

could jeopardize the student's educational success. Introducing students into a clinical setting where HCPs do not support the reporting of medication errors may have the potential to influence their decision to engage in self-reporting of medication errors.

One factor that may moderate the strong influence of peer relationships is one's level of knowledge (Baxter & Rideout, 2006). Developing one's knowledge level regarding nursing practices was found to increase a student's level of self-confidence (Baxter & Rideout). A higher level of confidence allowed the student to independently identify the need for decision-making and allowed for more autonomy in decision-making practices. Another factor reported to influence one's decision-making processes is strong critical thinking (Bowles, 2000). Bowles, as well as Adams, Stover, and Whitlow (1999) purported the existence of a relationship between strong critical thinking skills and effective decision-making.

While one needs to consider that no elaboration was offered for the support of such a statement, Gunning (1981) (as cited in Baxter & Rideout, 2006) declared there was no relationship between critical thinking skills and decision-making. Others have proposed that a lack of relationship between critical thinking skills and decision-making processes was reported due to inconsistent utilization of measuring instruments (Kataoka-Yahiro & Saylor, 1994). There may be a relationship between critical thinking skills and decision-making in the nursing student population. This pilot study examined the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication error in the clinical practice setting. Findings of this pilot study could be used to further examine whether there is a relationship between students' willingness to report and components of their critical thinking.

Baxter and Boblin (2008) examined the types of decisions and factors influencing nursing students' decision making throughout four years of undergraduate education. Their findings suggest that students in their first year of study focus on the first step of the nursing process, that of assessment (Baxter & Boblin). At this point in their undergraduate careers, students are less able to describe major interventional strategies than in later program years. First, second, and third year students were found to utilize information achieved from textbooks, peers, and clinical instructors when engaging in various decision-making processes (Baxter & Boblin). The authors offered a comprehensive description of participants, listing their age range, enrollment status, and educational experience. Baxter and Boblin did not offer suggestions for future research.

The population of interest in this study was that of fourth year nursing students. Important to explore were the types of decisions this level of students made as well as the factors that influenced their decision-making processes. As senior students in their final year of study, fourth year nursing students may experience acute or chronic clinical placements populated by complex patients with multiple diagnoses requiring comprehensive nursing care. This comprehensive level of care may negatively affect students' confidence levels, resulting in the realization they do not possess high levels of knowledge and experience (Baxter & Boblin, 2008). Lower levels of confidence may require students to shift back to the stage of the nursing process where they feel most comfortable, that of assessment (Baxter & Boblin). The comprehensive level of care that is required may contribute to high levels of anxiety, which can lead to a loss of concentration, inability to make decisions, and limited coping abilities (Boggs, 2007; Noud et al., 2008) all of which could contribute to the commission of a medication error, as well as to the decision of whether or not to self-report the error.

Baxter and Boblin (2008) stated that students in their fourth year of study were found to consult a variety of resources to arrive at a specific decision. Sources such as peer reviewed journal articles, best practice guidelines (BPGs) and other staff were included in their decision-making processes. As compared to junior students, who often consulted their peers and instructors, fourth year students were found to seek the input of a variety of HCPs when choosing to engage in a decision-making process (Baxter & Boblin). This interest in the opinion of other professionals may influence clinical decisions that nursing students make in the practice setting, including the decision of whether or not to self-report medication errors.

No published quantitative studies that examined decision-making processes related to the process of self-reporting of medication errors in the nursing student population were found. A quantitative methodology was used in this pilot study. This study built on the studies conducted by Gillespie and Peterson (2009), Baxter and Boblin (2008), Baxter and Rideout (2006), and White (2003) by offering conceptual frameworks describing the variables of interest and outlining the characteristics of the study sample, including participants' sex, age, ethnicity, educational preparation, marital status, and occupation. This thesis concludes with a section outlining suggestions for future research.

Summary: Students' decision-making skills in the clinical practice setting.

In summary, the transition of nursing students from the academic environment to the clinical setting is characterized by high levels of anxiety and uncertainty (Moscaritolo, 2009). One of the most daunting aspects of the clinical experience is the engagement in progressive independent decision-making (Lauri et al., 2001). The factors proposed to have the strongest

influence on students' decision-making processes include professional relationships with health care workers specifically, relationships with preceptors (Baxter & Rideout, 2006).

Students fear upsetting either the patient or another HCP as this situation could have consequences for their educational success (Baxter & Rideout, 2006). In an attempt to maintain working relationships, students may follow the advice offered by colleagues, even if they might consider this advice to represent less than ideal practice. Being influenced by others' clinical judgment may discourage nursing students' from self-reporting medication errors if they find themselves in a clinical practice environment that seems to condone or ignore such behavior. The desire to be accepted by others or to develop a sense of belongingness within the healthcare team and its consequences for the overall clinical practice experience are considered in a subsequent section.

Self-Reporting of Medication Errors by Registered Nurses

Due to the paucity of published literature on the topic of self-reporting of medication errors by nursing students, the writer reviewed studies examining the self-reporting of medication errors by RNs. The practices of RNs that nursing students observe in the clinical setting may enhance one's understanding of the factors that might influence students' own practice.

In comparison to other HCPs, RNs are more likely to detect, prevent, and interrupt errors that could result in life threatening circumstances for clients (Rothschild, Hurley, Landrigan, & Cronin, 2006), as they are in an excellent position to identify the processes they assess as contributing factors to the outcome of a medication error. Wakefield et al. (1999) described a four step process of self-reporting of MAEs: i) recognition of an MAE occurring, ii) assessment

of a need to report, iii) completion of a self-report, and iv) follow up by the person receiving the report. A breakdown of the reporting process can result if any of these steps is omitted. This breakdown can be perceived as a missed opportunity for learning and improvement of patient safety (Kaldjian et al., 2008). Challenges can arise at any step in the MAE self-reporting process. For example, in Osborne, Blais, and Hayes' (1999) descriptive-comparative survey, 15.8% of RNs were undecided about what situations could be classified as medication errors. Fourteen percent of the same RNs were unsure of the need to report an error.

Following the recognition of an error as well as that of the need to report, an RN must undergo a self-reporting process. The literature examining the topic of medication errors has identified numerous barriers that impede RNs from self-reporting. Wakefield et al. (1999) examined these barriers by utilizing a survey instrument aimed at identifying RNs' perceptions of reasons why medication errors occurred, as well as perceptions of the reasons why MAEs were not reported. The confirmatory factor analysis conducted by Wakefield et al. exploring reasons why MAE might not be reported could be considered a landmark study as it is cited by numerous nursing articles examining the topic of medication errors. Wakefield et al. identified specific strategies that might lead to an increase in MAE reporting, such as facilitating the reporting process and improving administrative response. The researchers direct readers to an accompanying article for an outline of participant characteristics. The authors would assist readers in determining generalizability of study findings by providing a description of the study sample. This thesis provides a detailed description of the study sample, including participants' sex, age, ethnicity, educational preparation, marital status, and occupation.

Chiang and Pepper's (2006) cross-sectional correlational study used self-administered questionnaires to describe perceived barriers in the self-reporting of MAEs and relationships

among barriers, cultural characteristics, work environment, and demographic characteristics of RNs working in Taiwan. Numerous administrative factors that deter RNs from reporting medication errors were identified, such as not receiving positive feedback following the reporting of a MAE and a focus on individual factors rather than system factors that result in the commission of a MAE (Chiang & Pepper, 2006). The article written by Chiang and Pepper focuses on a current issue that is of importance to nursing practice. The readability of the article is enhanced by providing tables that highlight information of interest, such as perceived barriers to the self-reporting of medication errors. The authors conducted a comprehensive literature review and ensured their findings were compared and contrasted to those of other published studies.

The factor proposed as having the strongest influence on RNs' decisions not to report medication errors was fear (Chiang & Pepper, 2006; Chenot & Daniel, 2010; Mayo & Duncan 2004; Reid-Searl et al., 2008). Registered Nurses fear being labeled as someone who makes errors, the manager's reaction to the error, and are cautious regarding the perceptions of coworkers (Mayo & Duncan). Robinson Wolf et al. (2006) stated that following the commission of a medication error, RNs often blame themselves, resulting in feelings of inadequacy and humiliation. Mayo and Duncan reported the commission of a medication error could lead an RN to question and even lose confidence in his or her clinical skills. In their descriptive correlation study, Mayo and Duncan noticed that RNs were not in agreement with one another regarding the definition of a medication error. This finding led the researchers to hypothesize there is a gap between an RN's perceived and actual knowledge.

Mayo and Duncan's (2004) study contributes to nursing knowledge by exploring perceptions of medication errors from nurses' perspectives. The authors provided a detailed

description of the study sample, including their age, sex, number of years as practitioners, practicing areas, ethnicity, level of education, and employment status. This detailed description of the sample allows the reader to determine the generalizability of study findings. The researchers utilized their findings to suggest specific implications for the nursing profession as well as future areas of study (Mayo & Duncan, 2004).

In summary, the reporting of MAEs is dependent upon a number of factors, such as the recognition of the existence of a MAE and the desire to self-report such an error (Wakefield et al., 1999). The decision to self-report a MAE is influenced by practitioners' perceptions of their colleagues', managers', and clients' reactions, with the strongest factor affecting one's decision to self-report being that of fear (Chiang & Pepper, 2006; Chenot & Daniel, 2010; Mayo & Duncan, 2004; Reid-Searl et al., 2008).

Self-Reporting of Medication Errors by HCPs

The literature was reviewed to compare the attitudes and rates of self-reporting of medication errors of RNs to those of other HCPs. This exploration is of importance in the clinical practice setting, as nursing students work in collaboration with numerous HCPs and have the opportunity to observe various professional practices.

Taylor et al. (2004) used a survey to explore RNs' and Medical Doctors' (MDs') attitudes and experience with using incident self-report forms. Both categories of HCPs tended to report errors they perceived as being serious rather than those they did not perceive as having a negative impact on clients (Taylor et al.). The researchers also stated that, as compared to near misses, errors were more likely to be reported. Medical Doctors reported a limited number of errors and, in comparison to RNs, were less likely to report medication errors. This finding was

consistent with results reported by Rothschild et al. (2006), who stated that in comparison to other HCPs, RNs are more likely to detect, prevent, and interrupt errors that could result in life threatening circumstances for clients. Vincent, Stanhope, and Crowley-Murphy (1995) examined the rates of self-report of adverse events of obstetricians and midwives. These researchers suggested that compared to midwives, obstetricians were less likely to self-report adverse events due to fears of litigation.

Taylor et al.'s (2004) study was of importance to this pilot study as it allowed comparison between rates in self-report of adverse events by RNs and those by MDs. The behaviors of other HCPs could be observed and may influence the perception of nursing students regarding the importance in self-reporting of medication errors. The authors included a minimal literature review, reviewing 13 articles. This pilot study included an extensive review of the literature as evidenced by the "Review of the Literature" and "Conceptual Framework" sections. Taylor et al. provided a description of the survey that was developed and used in their study, without including a discussion of its psychometric properties. This pilot study described the psychometric properties of the original instruments selected for the study, as discussed by the researchers who developed the instruments. The writer also reported the psychometric properties of the modified instrument administered to the current study's participants.

Summary: Review of the Literature

The transition of nursing students from the academic setting to the clinical environment is marked by high levels of anxiety and uncertainty (Moscaritolo, 2009). One of the most challenging aspects of the clinical setting is the need to engage in progressively independent decision-making (Lauri et al., 2001). Baxter and Rideout (2006) posited that professional

relationships with other staff members influence nursing students' decisions. Nursing students have reported modification of their decisions based on advice offered by team members, even if they may consider this advice to represent less than ideal practice. Students modify their decisions due to fear of upsetting other professionals as such incidences could have negative consequences for their educational success (Baxter & Rideout, 2006). Being influenced by others' clinical judgment may discourage nursing students' from self-reporting medication errors if they find themselves in a clinical practice environment that seems to condone or ignore such behavior.

In comparison to other HCPs, such as MDs, RNs are more likely to detect, prevent, and interrupt errors that could result in life threatening circumstances for clients. However, Chiang and Pepper (2006) observed that RNs' decisions are influenced by existing peer relationships. For example, RNs are more likely to self-report medication errors if they experience positive collegial relationships characterized by collaboration and trust. Therefore, the decision to self-report a MAE is influenced by practitioners' perceptions of their colleagues' reactions (Mayo & Duncan, 2004). Nursing students who find themselves in a clinical practice environment that does not support the self-reporting of medication errors may feel compelled to follow these established practices, and be less willing to self-report errors.

CHAPTER 3

CONCEPTUAL FRAMEWORK

The purpose of this pilot study was to determine the feasibility of conducting a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. Two main variables of interest in this feasibility study are nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting.

Belongingness

In this pilot study a perceived sense of belongingness was measured using the *Belongingness Scale Clinical Placement Experience* (*BES – CPE*). The concept of belongingness was explored from the perspective of a basic human motivational need. Psychologist Abraham Maslow (1943) proposed a theory of human motivation based on a variety of needs that an organism strives to achieve. Maslow ranked these needs according to their complexity and their ability to ensure long term survival. Physiological needs are classified as the most basic human drives and include homeostatic processes, such as: maintaining optimal levels of water, calcium, salt, sugar, and oxygen content (Maslow). An organism must first meet these basic needs before attempting the achievement of other more complex needs. Following these basic physiological needs, an organism will seek to preserve his or her own safety, which implies being free of physical and emotional distress (Maslow).

Maslow (1943) classified needs found on the third level of the pyramid as love needs. Once the person finds himself or herself in physiological homeostasis and free from any

impending danger, he or she will seek affection, love, and belongingness. Maslow stated that a person will wish to achieve a place within a well-defined group and will strive with great intensity to achieve this goal, sometimes driven by a feeling that its achievement represents the most important aspect in the world. Levett-Jones, Lathlean, Maguire, et al. (2007) also stated that the need to belong and be part of various social structures drives much of a person's thinking and the activities in which he/she engages. Achievement of the basic human motivational need of belongingness will be sought regardless of one's social environment. In the clinical setting, nursing students may seek to achieve a place on the team and to be seen as a valuable member by conforming to the environment.

The concept of belongingness is not exclusive to the nursing profession and has been extensively researched within other fields, such as psychology and education (Levett-Jones, Lathlean, McMillan, et al., 2007). The majority of nursing research on the topic of belongingness has been conducted by Levett-Jones and colleagues. For the purposes of this pilot study, a definition of the term belongingness was compiled from the various articles published by these nurse researchers. Belongingness is defined as a personal feeling that is dependent upon the context that a person finds himself or herself in, as well as the extent to which that person feels (i) accepted, included, and valued by a specific group, (ii) attached to individuals within the group, and (iii) that similarity exists between his or her personal and professional values and those endorsed by the group (Levett-Jones, Lathlean, McMillan, et al., 2007; Levett-Jones & Lathlean, 2008; Levett-Jones, Lathlean, Maguire, et al., 2007). The primary goal of seeking inclusion into a group is that of increasing one's chances of survival (Maslow, 1943). Secondary goals include the fulfillment of emotional needs, the development of self-esteem and esteem of

others, and the development of social supported required for the person to pursue interests that allow for his or her self-actualization (Maslow).

During the evolutionary phases of the human race, lone people found themselves at a disadvantage as they tried to compete for scarce resources with those organized in groups. As a self-preservation mechanism, human beings are naturally driven to establish and maintain a sense of belongingness (Baumeister & Leary, 1995). The converse of experiencing a sense of belongingness is that of social exclusion (Levett-Jones, Lathlean, Maguire, et al., 2007). Baumeister, Twenge, and Nuss (2002) conducted three randomized control trials to examine the effect of social exclusion on cognitive processes. One of the hypotheses proposed by the researchers was that people preoccupied with thoughts of social exclusion would be distracted and unable to fully process incoming information, leading to impaired performance on tests that would require recall of received information. In the clinical setting, the decision-making processes of nursing students may be impaired as these students would be preoccupied with thoughts of seeking inclusion into the healthcare team.

Baumeister et al. (2002) temporarily deceived participants into believing they would be socially excluded or they would benefit from numerous social relationships, to determine how this deception would affect participants' performance on tests analyzing recall and intelligence. All study participants completed personality tests and were then led to believe the results were interpreted in terms of their social propensities. The study included participants who were temporarily deceived into believing they would be accident prone in the future, socially isolated in the future, or would benefit from many social contacts (Baumeister et al.). Participants were asked to read various passages and to remember the presented information. Tests analyzing recall rates as well as those analyzing intelligence levels were then administered. Participants who

received an assessment of being socially excluded experienced a significant decrease in intelligence performance (Baumeister et al., 2002), in that they attempted a smaller number of problems on the intelligence test and also made an increased number of errors.

Participants with a forecast of being accident prone in the future scored as well as those who were told they would benefit from many social contacts (Baumeister et al., 2002). The lower score of the participants in the group who received news of social exclusion could not be simply attributed to a forecast of bad news, but rather it was specific to the theme of experiencing aloneness (Baumeister et al.). Further, the forecast of social exclusion affected the recall of information rather than its encoding (Baumeister et al.).

Following the reading of passages, some participants were debriefed regarding the deceptiveness of the social exclusion forecast. The researchers observed these participants had similar recall rates to those who were deceived into believing they would benefit from multiple social contacts (Baumeister et al., 2002). Baumeister et al. explained their findings by stating that people utilize common resources for controlling their feelings and thoughts and for engaging in decision-making. When confronted by negative events, individuals utilize those common resources in an attempt to control the resulting negative feelings (Baumeister et al.). Consequently, they experience diminished cognitive abilities. In Baumeister et al.'s study, this diminished cognitive ability was evidenced by the attainment of lower scores on Intelligence Quotient (IQ) and Graduate Record Examination tests.

The effect of belongingness or lack thereof is thought to influence one's cognitive status, as well as emotional status and behavior. Twenge, Ciarocco, Baumeister, DeWall, and Bartels (2007) reported that individuals who perceive themselves as being socially excluded are less

likely to engage in prosocial behavior, or behavior that would benefit others. Pickett, Gardner, and Knowles (2004) hypothesized that socially excluded individuals engage in constant social monitoring and searching of the environment to determine the presence of social cues, as well as their inclusionary status. This constant social monitoring results in utilization of intellectual and emotional resources and could be taxing for the individual. These individuals may then gear their resources toward dealing with encountered threats, such as that of aloneness, rather than focusing on being empathetic towards others (Twenge et al., 2007). The lack of engagement in prosocial acts could be related to the fact that people who feel socially excluded experience a temporary absence of emotion. This absence could be regarded as a self-protective mechanism as it does not allow the person to be overcome by feelings of sadness as a result of their social exclusion.

The perception of belongingness may influence individuals' cognitive performance as well as emotions and behavior. Those who perceive themselves to be socially isolated and lacking a sense of belongingness, may demonstrate diminished cognitive ability, less empathy towards other individuals, and may engage in less prosocial behavior. Pickett et al. (2004) hypothesized that these individuals focus their intellectual resources on constantly scanning the environment to determine their inclusionary status. Their emotional resources are focused on attempting to block the negative emotions they experience (Twenge et al., 2007).

This constant monitoring could potentially detract one from attending to other incoming information that is not related to social activities. The level of monitoring that nursing students may engage in when experiencing a lack of belongingness in the clinical setting may detract them from processing other incoming information. This distraction may increase their risk of committing medication errors. Following the commission of medication errors, nursing students who lack a sense of belongingness may be less likely to self-report, as Twenge et al. (2007)

observed that socially isolated individuals are less likely to engage in behavior that would benefit others.

A review of educational literature allowed for a better understanding of the concept of belongingness, as well as an appreciation of the similarities between the education and nursing professions. Both of these disciplines are dominated by female workers (McIntyre, Thomlinson, & McDonald, 2006). Similar to the nursing domain, female teachers under the age of 30 are found to be leaving the profession due to a lack of autonomy and perceived lack of support (Olsen, 2009). McIntyre et al. stated there are unsupportive and uncaring work practices within the nursing profession. These practices are based upon a hierarchal model derived from the male dominated medical profession (McIntyre et al.). The authors further stated that female nurses perceived the work environment as being unsupportive and uncaring. According to Booker (2006), the creation of a positive work environment characterized by feelings of belongingness results in increased levels of satisfaction with one's work and one's colleagues. Achieving a sense of belongingness increases levels of connection with others and involvement in the school community (Booker).

Booker (2007) noted that students often strive to achieve a sense of belongingness with other peers and will sometimes refuse to engage in classroom learning until this feeling is present. Gore (2005) concurred, stating that all students must experience a sense of belongingness before being able to turn their attention to scholastic activities. This sense of belongingness or being part of a community, leads to increased motivation, increased class engagement, and maximization of learning outcomes (Booker, 2006).

Within the nursing profession, few journal articles have been published on the topic of belongingness as experienced by nursing students. The majority of nursing research in this area has been conducted by Levett-Jones and colleagues. Levett-Jones, Lathlean, Higgins, and McMillan (2008) suggested that clinical placements represent opportunities for students to be socialized into the nursing profession. This time is when students gain not only the skills and knowledge necessary to perform their nursing role but also the social skills needed to navigate professional relationships. Students become accustomed to the values and behavioral patterns supported by a specific organization (Rush, McCracken, & Talley, 2009). For nursing students, this process of acculturation could provoke more stress and anxiety than the acquisition of nursing knowledge and skills (Ousey & Johnson, 2007).

In a clinical practice setting, nursing students can observe and have the opportunity to practice various nursing skills. If these students are not confident in their knowledge levels or skills, they can then consult various other resources such as faculty members and scholarly sources. However, a practice culture setting with strong exclusive boundaries may prove to be difficult to infiltrate and can leave the nursing student feeling marginalized and alienated (Ousey & Johnson, 2007). Paton (2010) identified nurses' experiences upon graduation as influencing their intent of remaining within the profession. Paton suggested that nurses, although being in a caring profession, have not learned to care for each other, leaving colleagues feeling disenchanted and lacking a sense of belongingness.

A recurring theme that emerged from the various articles reviewed was that a perceived sense of belongingness influences students' motivation and ability to engage in clinical learning (Rush et al., 2009; Levett-Jones, Lathlean, McMillan, et al., 2007; Levett-Jones & Lathlean, 2008; Levett-Jones, Lathlean, Maguire, et al., 2007). Levett-Jones and Lathlean (2008) posited

that students' primary goal in clinical practice is to be accepted as part of the nursing team, as well as part of the interprofessional team. This goal may, in fact, take precedence over the quality of care they provide as well as the level of competency they achieve (Levett-Jones & Lathlean, 2008). Experiencing a sense of belongingness results in feelings of safety, acceptance, and support in clinical practice (Levett-Jones et al., 2008).

This feeling of safety and legitimization of the learner role by the nursing staff allows the student to voice his or her concerns, ask questions, and practice critical thinking skills in a supportive environment. Levett-Jones and Lathlean (2008) also observed that over time, students who experience an increased sense of belongingness tended to develop increased self-direction, confidence, resilience, and independence. These students reported feeling comfortable in challenging actions they perceived as reflecting poor practices. These abilities to develop self-direction and challenge the actions of others may contribute to the development of decision-making skills in the nursing student.

A lack of belongingness resulted in affiliative behaviors characterized by conformity and compliance with observed practices in the hope that this compliance would increase acceptance by the team (Levett-Jones & Lathlean, 2009a). Clark (1992) proposed that group conformity enhances one's chances of inclusion, as observed in various gangs and groups engaged in criminal activities. In Levett-Jones and Lathlean's study, students reported that questioning established practices undermined their chances of being accepted by the team. The intensity of students' desire to belong increases as they feel more excluded from the team, until the need to fit in dominates their thoughts (Levett-Jones et al., 2008). Students would not only conform to practices they regarded as less than ideal but would also change their behavior to emulate that of team members (Levett-Jones & Lathlean, 2008). These students were found to experience

increased stress, increased anxiety, increased depression scores as well as decreased self-esteem, and impaired cognition (Levett-Jones & Lathlean, 2008).

Levett-Jones and Lathlean (2009b) developed a conceptual framework to describe belongingness, based on their empirical work. The framework represents a modified version of Maslow's theory of human motivation and consists of five levels individuals are required to engage in to achieve competence within the clinical setting. These steps include the need: i) for safety and security, ii) to belong and feel accepted, iii) for the development of a healthy self-concept, iv) to engage in learning, and v) for the development of competence. Similar to Maslow's hierarchy of needs, Levett-Jones and Lathlean (2009b) stated that students must first satisfy basic needs before attempting to achieve more complex needs. If students do not reach the first level of the pyramid, that of safety and security, their primary motivation in the clinical setting would be to survive their daily interactions with staff (Levett-Jones & Lathlean, 2009b). This focus on merely surviving a clinical placement has the potential to detract students from the acquisition of skills and knowledge. Levett-Jones and Lathlean (2009b) identified hostile staff as a barrier that prevents students from ascending through the competence pyramid. Mentors were found to have the greatest influence on students' ability to achieve competence, as they facilitated one's entry into the team and helped develop relationships with other staff (Andrews, Brodie, Andrews, Wong, & Thomas, 2005).

Summary: The Concept of Belongingness.

Belongingness is a basic human motivational need that must be satisfied before an individual can attempt the achievement of more complex needs, such as those pertaining to esteem and self-actualization (Maslow, 1943). When an individual feels accepted and supported

by a social group, he or she feels safe to display individual behaviors rather than feeling forced to emulate those endorsed by the group. Individuals can then contribute to and benefit from group interaction rather than expending energy on searching for social cues. In the case of nursing students, experiencing an increased sense of belongingness in clinical practice may allow them to focus on the acquisition of skills and knowledge rather than on the establishment of social and professional relationships (Levett-Jones & Lathlean, 2009b).

A perception of belongingness may also allow nursing students to be receptive to, and attend to, incoming information rather than to be distracted by constantly trying to fit in. If nursing students feel accepted and supported in their clinical practice settings, they may be inclined to utilize their critical thinking skills when deciding to engage in self-reporting of medication errors as opposed to feeling compelled to conform to observed practices. Practicing independent decision making as a nursing student may be of value, as Jenkins (1985) stated that decision making processes developed during one's educational career are often carried over into clinical practice.

A perceived sense of belongingness can be exemplified by students' perception of inclusion in socialization events on the unit (Levett-Jones et al., 2008). Students can develop a perceived sense of belongingness when being included in patient care activities and being invited to participate in various professional development opportunities. Informal socialization opportunities, such as being invited to have meals with other RNs, also affect students' perception of belongingness. A perceived sense of belongingness is also influenced by the level of congruence between a student's personal and professional values and those endorsed by the nursing team (Brodie et al., 2005).

Willingness to Self-Report Medication Errors

A definition of medication errors was compiled from the reviewed articles and led to various types of medication errors being considered. For the purpose of this pilot study a medication error was described as a preventable event that led to client harm or inappropriate use of a drug while that medication was in the possession of the HCP, the client, or the consumer (Benner et al., 2002; Robinson Wolf et al., 2006). Wakefield et al. (1999) identified three primary categories of medication errors, namely those occurring in the prescribing, transcribing, or administration phases. Harding and Petrick (2008) identified dispensing and monitoring as additional steps in the medication use process.

The seven most common types of MAEs identified by Benner et al. (2002) included: missed doses, wrong administration times, intravenous (IV) pump rates set too fast, wrong concentrations or doses of IV medication, wrong administration routes, wrong medications administered, and administration of medications to the wrong patient. All of these MAEs can be categorized as acts of commission or omission. Commission errors refer to those that resulted from the administration of a medication to a client (Wakefield et al., 1999) and are directly related to the eight medication rights, which include: the right medication, right client, right reason, right dose, right frequency, right route, right site, and right time [College of Nurses of Ontario (CNO), 2008]. Omission errors refer to those where a client did not receive a medication that was ordered and dispensed to the unit (Wakefield et al.).

Medication administration errors may result in a number of negative outcomes for both the client population as well as healthcare workers, specifically those directly involved in the commission of the medication error. Chenot and Daniel (2010) stated that the commission of

medication errors can lead to client death, injuries to the client ranging from severe and life threatening to minor, and psychological and emotional harm. According to Ross Baker et al. (2004), in the year 2000, 36.9% of adverse events committed in Canadian hospitals resulted in deaths of clients. A total of 46.7% of adverse events led to death, disability at the time of discharge, or prolonged hospital stay. The second most common type of adverse events as identified by Ross Baker et al. was that related to drug or fluid errors.

The commission of a medication error can lead to psychological and emotional distress on the part of the healthcare worker/s involved in the incident. Robinson Wolf et al. (2006) reported that RNs involved in medication errors often felt inadequate and humiliated, believing that a good RN would not make a mistake. From an economic perspective, the injuries and prolonged hospital stays associated with medication errors can lead to increased spending in the healthcare domain. Omission and commission MAEs can result in negative consequences ranging from client death and injury to psychological and emotional harm for both clients and the HCP directly involved in the MAE (Chenot & Daniel, 2010).

In this pilot study nursing students' willingness to self-report medication errors in the clinical practice setting was measured using a modified version of the *MAE Survey*, the *MAE Self-Reporting* instrument. Wakefield et al. (1999) described a four step process of self-reporting of MAEs: i) recognition of an MAE occurring, ii) assessment of a need to report, iii) completion of a self-report, and iv) follow up by the person receiving the report.

There is a paucity of literature examining the concept of willingness, with most studies reporting on willingness in a specific context, such as willingness to pay for a product. Héliot and Riley (2010) reported on a study of indicators of willingness as it relates to the process of

knowledge transfer. The willingness of nursing students to self-report medication errors could be considered a process of knowledge transfer as it involves the consideration of transmitting a particular piece of information. Willingness can be defined as freedom from reluctance (May, Gilson, & Harter, 2004). Two aspects that influence an individual's willingness are his or her decision to participate in a group activity and the social and political pressure that others exert upon that individual (Héliot & Riley, 2010). Héliot and Riley further stated that an individual's willingness to participate in a group is dependent upon identification with that group. Identification with a particular group has also been recognized as a component of the concept of belongingness (Levett-Jones, Lathlean, McMillan, et al., 2007; Levett-Jones & Lathlean, 2008; Levett-Jones, Lathlean, Maguire, et al., 2007).

Héliot and Riley (2010) used a group of academic engineers to develop eight indicators of the concept of willingness as it relates to the process of knowledge transfer. The engineers agreed they would transfer their knowledge to a colleague if: there was no competition between them, they could trust the colleague, they had legal guarantees, there were financial incentives attached to this transfer, the transfer would enhance their professional standing, the transfer would make them well-known, they would receive new knowledge in exchange, and they were fairly treated by the employer (Héliot & Riley). The willingness of nursing students to disclose the commission of a medication error may be influenced by their relationship with colleagues, the potential of no legal repercussions, the possibility that their academic and professional status would not be affected, and the probability that they would be fairly treated by other HCPs.

For the purposes of this study, willingness to report medication errors referred to a student's inclination to report the commission of a mistake related to the administration of a medication. The purpose of this study was to examine the willingness of nursing students to

report medication errors, rather than their active engagement in such a process. Willingness to report also refers to a student's inclination to engage in an informal process of divulging the error to another colleague to seek guidance. There is a paucity of published studies examining the relationship between students' perceived sense of belongingness in the clinical practice setting and their willingness to engage in self-reporting of medication errors.

CHAPTER 4

METHODS

Design

A descriptive, correlational pilot study was conducted to determine the feasibility of conducting a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. According to Hayward et al. (2007) the purpose of conducting a pilot study includes testing the feasibility of the study design, evaluating the enrollment of participants, establishing a protocol for data collection, and testing the instruments. Additionally, Hertzog (2008) stated that conducting a pilot study assists the researcher in determining the time required by participants to complete the study questionnaires and potential response and attrition rates. The aims of this current study were congruent with Hayward et al.'s and Hertzog's suggestions for conducting a pilot study.

Setting

The pilot study was conducted at an urban university with an enrollment of approximately 28,000 undergraduate and graduate students (Organization Website, 2013). The baccalaureate nursing program offered at this university has an enrollment of approximately 500 students per year of study and is offered in collaboration with two urban colleges (Organization Website). Students complete the first two years of the Collaborative Nursing Degree Program (Collaborative Program) at one of the three academic sites. All nursing students are registered at the university site for their third and fourth year of the program and are supervised in their clinical placements by nursing instructors from their home site. All fourth year nursing students

are taught classroom material by university site instructors. Students enrolled in the Collaborative Program are typically recent graduates of high school programs between the ages of 18 and 22. A proportion of the students are characterized by a higher educational status, having previously engaged in post-secondary education. Approximately 80% to 85% of undergraduate nursing students are females (S. Son, personal communication, June 4, 2013). The undergraduate nursing students at this institution represent diverse cultural and ethnic backgrounds.

Accessible Population

The accessible population of this pilot study consisted of fourth year nursing students enrolled in the full-time undergraduate collaborative nursing degree at the urban university identified above.

Sample Size

Multiple sources were considered to determine an appropriate sample size for a pilot study aimed at testing feasibility of conducting a larger scale study. Nieswiadomy (2002) stated that a sample size of approximately 10 participants is considered appropriate for the purposes of a pilot study. Hulley et al. (2001) recommended obtaining a pilot study sample consisting of 10% of the size for the intended study. Browne (1995) stated that when conducting a pilot study, the general rule is to enlist 30 participants. For the purposes of this pilot study, a sample size of 30 participants was considered to be reasonable.

Sampling

Before initiating the recruitment phase, a four phase sampling strategy was developed to increase the probability of obtaining a desired sample size. For the first phase of the sampling strategy the investigator sought to contact and present study information to the majority of fourth year Collaborative Program students. If the first phase of the sampling strategy did not lead to the desired sample size, the investigator would have implemented strategies two and three, as they would have allowed for the presentation of study information to a large number of fourth year Collaborative Program students. If the first three strategies would have resulted in a smaller than desired sample size, the investigator would have implemented sampling strategy four, which may have captured the attention of some fourth year Collaborative Program students. In this pilot feasibility study, phase one of the sampling strategy yielded a response rate that led to the desired sample size. Therefore, phases two, three, and four of the sampling strategy were not implemented.

Phase one. The investigator contacted the fourth year lead of the Nursing Practice course to explain the purpose of the pilot study. The course lead was given a sheet outlining details of the study (Appendix A) and the course lead's permission was sought to allow the investigator to present study information to students during the January 10th orientation. Fourth year Collaborative Program students attended a mandatory academic orientation at the University for their Nursing Practice course on January 10th, 2013. Following permission from the course lead, the investigator used five minutes of orientation time to provide a brief overview of the pilot study to students, including the investigator's contact information. A statement regarding the research ethics board (REB) approval of the study was also included in the presentation. Students were informed that their decision to participate or not to participate would not affect their

academic performance, academic standing, or future relations with the University in any way. Posters outlining details regarding the pilot study were left in the room for interested students to obtain following orientation (Appendix B). Interested participants were encouraged to use the email address provided on the poster to communicate with the investigator for requesting electronic copies of the questionnaires or for indicating their availability to meet outside of class time to review and sign the consent form and complete the study questionnaires. The investigator also forwarded an electronic version of the recruitment poster to the course faculty lead and permission was sought to post a copy of the poster on the Nursing Practice course Blackboard shell. The recruitment poster was displayed on the Nursing Practice course Blackboard shell.

When 30 participants with completed measures were obtained, the investigator informed any additional volunteers that recruitment for the project had been completed. Additional volunteers received an email thanking them for their interest. Please refer to Appendix C for a draft of the email message that was sent to volunteers after the recruitment for the study was closed.

Phase two. If the first phase of the sampling strategy did not lead to the desired sample size, the investigator would have implemented phases two, three, and four of the sampling strategy. For phase two of the sampling strategy the investigator would have requested that the student affairs coordinator (SAC) electronically forward a document outlining study details, the investigator's contact information, and documentation of REB approval of the study to all fourth year Collaborative Program students. Please refer to Appendix A for a copy of the information sheet prepared for fourth year Collaborative Program students. Students would have been invited to email the investigator to express interest in participating or to seek clarification regarding the study. Recruited participants could have chosen to complete the questionnaires via email or in

person, as stated on the information letter for students. If students would have chosen to complete paper copies of the study instruments, they would have been provided with packages containing the study introductory letter, two copies of the consent form, and the study questionnaires (Appendix D and Appendix E). For a description of the role and contents of packages please refer to the *Ethical Considerations* section (p. 49). If there was a poor response to the initial email invitation, a second email would have been sent by the SAC to the Collaborative Program fourth year students one week following the initial email invitation.

Phase three. If the first and second phases of the sampling strategy did not result in obtaining the desired sample size, the investigator would have asked the SAC for the names of instructors of fourth year undergraduate classes. The investigator would have contacted the identified instructors to explain the purpose of the pilot study. Instructors would have been given an information sheet outlining details of the study and their permission sought to allow the investigator to present study information to students during class time. Please refer to Appendix A for a copy of the information sheet prepared for fourth year Collaborative Program instructors. If permission was granted from the instructor(s), the investigator would have used five minutes of class time to provide a brief overview of the pilot study to students. Additionally, information sheets would have been left in the room for interested students to obtain following class. The investigator would have provided students with her email address and interested participants would have been encouraged to email the investigator to request electronic copies of the questionnaires or to indicate their availability to meet outside of class time to review and sign the consent form and complete the study questionnaires.

Phase four. If 30 participants were not obtained following the three recruitment methods described above, the investigator would have posted flyers in the University, inviting students to take part in the study. Please refer to Appendix B for a copy of the flyer.

Sample Inclusion Criteria

Participants who met the following eligibility criteria were included in the study:

1. A fourth year undergraduate nursing student enrolled in the above described Collaborative Nursing Degree Program.
2. Enrolled in the educational program on a full time basis.
3. 18 years of age or older at the time of enrollment in the study.
4. Proficient in reading and writing of the English language.
5. Currently enrolled in a clinical placement that involves the administration of medications by the participant.

Participation was limited to fourth year undergraduate nursing students as they represented the population of interest for this pilot study. The ability to read and write was selected as an inclusion criterion to ensure that participants were able to accurately express their views when completing the questionnaires. Lastly, the age based criterion was selected following a review of Piaget's stages of cognitive development. According to Piaget, one achieves the highest level of cognitive development upon entering adulthood, which is often equated to achieving the age of majority, or that of 18 years of age (as cited in Wadsworth, 2004). At this time, the person is able to advance from concrete principles to the consideration of abstract ideas. The completion of the questionnaires required the utilization of abstract principles to consider how one might have reacted in a hypothetical situation.

Demographic Data

Demographic data of the participants enrolled in the pilot study was also collected at the time of interaction to describe the sample. This demographic data was collected using a structured demographics questionnaire. Based on the focus of this study and as suggested by the majority of nursing research studies, the following demographic variables were collected: sex (nominal; 1 = male, 2 = female; mode, range), age [ratio; mean, standard deviation (SD)], marital status (nominal; 1 = single, 2 = married/cohabitating, 3 = separated/divorced, 4 = widowed; mode, range), ethnicity (nominal; 1 = African Canadian, 2 = Hispanic, 3 = Caucasian, 4 = First Nations, Aboriginal, Inuit, or Métis, 5 = Asian, 6 = Other; mode, range), highest level of education achieved prior to entering the nursing program (ordinal; 1 = some high school, 2 = high school, 3 = trade school, 4 = college diploma, 5 = Bachelor's degree, 6 = Master's degree; median, range), previous health care experience (nominal; 1 = Personal Support Worker; 2 = Registered Practical Nurse; 3 = Other roles within the health care system; 4 = None of the above), previous enrollment in fourth year of nursing school (nominal; 1 = yes, 2 = no).

Instruments

For the purposes of this pilot feasibility study, the *BES – CPE* was used to collected data regarding participants' perceived sense of belongingness in the clinical practice setting. Students' willingness to self-report medication errors in the clinical practice setting was measured using a modified version of the *MAE Survey*, the *MAE Self-Reporting* instrument. The section examining reasons why medication errors are not reported by RNs was adapted by the investigator in an effort to make it applicable to the nursing student population. Participants were asked to complete the *BES – CPE* instrument, the section of the original *MAE Survey* that examines

reasons as to why RNs do not report medication errors, as well as the *MAE Self-Reporting* instrument examining reasons why nursing students may not be willing to self-report medication errors. Participants were asked to complete a portion of the original *MAE Survey* to examine the reliability of that section, in isolation of other *MAE Survey* sections. For the purpose of this study, both the original *MAE Survey* section that examined reasons as to why RNs do not report medication errors and the *MAE Self-Reporting* instrument were tested for reliability. The investigator had direct contact via email with the researchers who developed the original *MAE Survey* and the *BES – CPE* and permission was granted to use the instruments and to include them in this pilot feasibility study.

The Belongingness Scale Clinical Placement Experience. Information regarding the perceived level of belongingness was collected using a self-administered questionnaire, the *BES – CPE*. The questionnaire was developed by Levett-Jones, Lathlean, Higgins, and McMillan in the year 2006 (Levett-Jones, Lathlean, Higgins, & McMillan, 2009). The instrument was adapted from the *Belongingness Scale* developed by Somers in 1999 as part of the author's doctoral research (Levett-Jones et al., 2009). The scale developed by Somers measures belongingness as it relates to the family environment, friends, work and school, and neighborhood and community (Levett-Jones et al., 2009). Levett-Jones et al. (2009) adapted the work/school portion of the scale to measure belongingness in the clinical practice setting.

The *BES – CPE* scale is comprised of 34 items that examine one's feelings, cognition, and behaviors as they relate to belongingness. The scale is comprised of items that measure the major components of belongingness, namely esteem and connectedness (Levett-Jones et al., 2009). Esteem is described as feeling secure, included, and valued by members of a specific group (Levett-Jones et al., 2009). Connectedness refers to feeling integral to the group and

deriving a feeling of fitting in with its members (Levett-Jones et al., 2009). Levett-Jones and colleagues' descriptions of the terms "esteem" and "connectedness" are consistent with the definition of the term "belongingness" as used in this study. For the purposes of this study, belongingness was defined as a personal feeling that was dependent upon the context that a person finds himself or herself in, as well as the extent to which that person feels (i) accepted, included, and valued by a specific group, (ii) attached to individuals within the group, and (iii) that similarity exists between his or her personal and professional values and those endorsed by the group (Levett-Jones, Lathlean, McMillan, et al., 2007; Levett-Jones & Lathlean, 2008; Levett-Jones, Lathlean, Maguire, et al., 2007).

For the completion of the *BES – CPE* scale, participants are asked to choose a response rated on a five-point scale comprised of the categories: "never true", "rarely true", "sometimes true", "often true", and "always true". The authors included both positively and negatively framed statements in an effort to reduce bias. Negatively framed statements are reverse-scored (Levett-Jones et al., 2009). The total score of a participant can range from 34 to 170, with a higher score indicating an increased perceived level of belongingness (Levett-Jones et al., 2009). This scale is measured at the interval level, as there is an absence of the zero point.

The internal consistency reliability of the *BES - CPE* scale was determined by calculating Cronbach's alpha coefficient for each of the esteem and connectedness subscales. The overall Cronbach's alpha for the *BES-CPE* scale was 0.9, indicating a high level of internal consistency. According to Burns and Grove (2009), a Cronbach's alpha of 0.8 to 0.9 is desired over one of 1.00, as this score signifies that an instrument is able to reflect fine discriminations in levels of the specific construct. The construct validity of the scale was analyzed using principal components analysis with varimax rotation. Construct validity examines whether the operational

definitions selected reflect the conceptual definitions of the study (Burns & Grove, 2009). Principal components analysis assists researchers determine which items on the scale can be clustered together, which generally indicates they measure the same variable (Vogt, 2007). When varimax rotation is employed, the correlations among related items are raised, resulting in more clearly distinct clusters of variables (Vogt). Levett-Jones et al.'s (2009) analysis suggested that all survey items could be clustered together, with no existing outliers.

Levett-Jones et al. (2009) identified the need for further psychometric testing of the scale in different contexts and with diverse samples. A literature review revealed two studies that utilized and modified the *BES – CPE* scale to measure the construct of belongingness. Kim and Park (2011) conducted a descriptive correlational study that sought to examine belongingness as one factor affecting the self-directed learning of Advanced Practice Nursing students in Korea. The *BES – CPE* scale was translated and adapted for the purposes of the study. The internal consistency for this scale was determined to be high, with a Cronbach's alpha score of 0.91 (Kim & Park).

Another study that utilized a modified version of the *BES – CPE* scale was conducted by Metsälä, Heiskanen, and Kortelainen (2012) with the purpose of developing a scale to measure belongingness in higher education institutes rather than clinical settings. The authors stated the *BES – CPE* was used due to its high construct validity and internal consistency. The researchers utilized the same psychometric testing as Levett Jones et al. (2009) employing a principal component analysis with varimax rotation. The scale was subdivided into three sections, and each section obtained a Cronbach's alpha coefficient ranging from 0.8 to 0.95. The investigator included the *BES – CPE* scale in this pilot feasibility study as this scale has high construct validity and internal consistency and has been psychometrically tested in different contexts and

with diverse samples. The psychometric tests of the *BES – CPE* supported the scale's property of actually reflecting the construct being examined and the fact that all of the items in the instrument consistently measured that construct.

The Medication Administration Error Reporting Survey. Participants were asked to complete a portion of the original *MAE Survey* to determine the reliability of that section. The willingness of nursing students to report medication errors was measured using a modified version of the *MAE Survey,* as developed by Wakefield and Wakefield in 1994 and adapted in 1996 (Wakefield, Uden-Holman, & Wakefield, 2005). The original paper-and-pencil self-administered questionnaire contains questions regarding RNs' perceptions as they relate to three general areas: reasons why medication errors occur, reasons why medication errors are not reported, and percentage of errors actually reported. The first two sections of the scale are scored using a Likert scale, ranging from scores of one to six (Wakefield et al., 2005). Categories of the scale prompt the RN to identify whether he or she agrees with a particular statement. These categories are labeled: "strongly disagree", "moderately disagree", "slightly disagree", "slightly agree", "moderately agree", and "strongly agree". The area of interest to this study was the reasons why medication errors are not reported. The total score of a participant on this section of the scale could range from 16 to 96, with a higher score indicating a strong agreement by a respondent that statements identify factors that impede reporting of medication errors. This scale is measured at the interval level, as there is an absence of the zero point.

The subscales were initially developed using exploratory factor analysis and were reviewed for face validity. The authors stated that the construct validity of the scale was determined using confirmatory factor analysis. A pilot study was conducted by Wakefield et al. (2001) to establish criterion-related validity of the instrument by correlating items found on this

scale with other items believed to measure the same construct. The reliability of the subscales was assessed utilizing Cronbach's alpha (Wakefield et al., 2001) The Cronbach's alpha for the subscale examining reasons why errors medication errors occur ranged from 0.62 to 0.92. The Cronbach's alpha for the subscale examining reasons why MAEs are not reported ranged from 0.69 to 0.87 (Wakefield et al.). Overall, the internal consistency of the various measures is within ranges deemed acceptable by Burns and Grove (2009). The test-retest reliability of the scale was determined utilizing a sample of RNs enrolled in graduate education. The graduate students completed a second survey three weeks following the initial recording of their answers. This time period falls within the two weeks to one month recommended time frame for test-retest of paper-and-pencil measures (Burns & Grove). Pearson's product-moment correlation coefficient ranged from 0.53 to 0.78, which is classified as a strong relationship (Burns & Grove).

The scale developed by Wakefield and Wakefield in 1994 has been used by numerous other researchers. The *MAE Survey* has undergone further psychometric testing in various contexts and with diverse samples. Koohestani and Baghcheghi (2009) conducted a cross sectional descriptive study examining nursing students' perceptions of barriers to the reporting of MAEs. The *MAE Survey* was translated and back translated and its content validity was assessed by seven nursing faculty members. Chiang and Pepper (2006) adapted the *MAE Survey* to conduct a cross sectional, descriptive correlational study examining Taiwanese RNs' perceptions of barriers to the reporting of MAEs. The content validity of the scale was examined by five Taiwanese experts. The construct validity and reliability of the scale were deemed to be satisfactory (Chiang & Pepper). Lastly, Stratton, Blegen, Pepper, and Vaughn (2004) used a portion of the *MAE Survey* to compile two subscales that examined the reporting of medication

errors by pediatric RNs. The subscales were determined to be reliable with Cronbach's alpha scores of 0.74 and 0.84.

For the purpose of the current study, the investigator adapted a section of the *MAE Survey*. The section examining reasons why medication errors are not reported was adapted in an effort to make it applicable to the nursing student population. Statements in that particular section were rephrased to determine which reasons might affect students' willingness to self-report medication errors. The number of statements and the categories labeled "strongly disagree", "moderately disagree", "slightly disagree", "slightly agree", "moderately agree", and "strongly agree" that prompt the participant to select a particular response, were not altered.

Psychometric testing. In this pilot feasibility study, the *BES – CPE* was used to collect data regarding participants' perceived sense of belongingness in the clinical practice setting. Students' willingness to self-report medication errors in the clinical practice setting was measured using a modified version of the *MAE Survey*, the *MAE Self-Reporting* instrument.

When examining the validity of an instrument one seeks to determine how well that instrument reflects the various aspects of the concepts (Burns & Grove, 2009). For the purpose of this pilot feasibility study, the investigator examined the content-related validity of the *MAE Self-Reporting* instrument. The investigator sought to determine whether items on the *MAE Self-Reporting* instrument included all the primary aspects of the concept of willingness to self-report medication errors. Major elements of a concept can be determined following an extensive literature review or through concept analysis (Burns & Grove, 2009). For the purposes of this study, the content-related validity of the *MAE Self-Reporting* instrument was determined

following an extensive literature review as well as an analysis of the concept of willingness to self-report medication errors.

The primary method of assessing the reliability of paper-and-pencil tests is that of testing an instrument's homogeneity (Burns & Grove, 2009). As the proposed scale included interval level data, Cronbach's alpha coefficient was the statistical procedure of choice for assessing homogeneity.

Ethical Considerations

Prior to conducting any type of research involving humans, it is important to reflect upon the rights of participants to ensure the safeguarding of their safety and well-being. Five rights were considered during this pilot study. The five rights included: the right to self-determination, the right to privacy, the right to maintaining anonymity and confidentiality, the right to fair treatment, and the right of protection from discomfort and harm [American Nurses Association (ANA), 2001].

The right to self-determination was addressed throughout this pilot study as participants received information regarding the purpose of the study, as well as potential risks and benefits of participating in the study in person or, if preferred, via email. Coercion was not used as participants were not offered excessive rewards. Participants were offered a certificate of participation following the completion of the study, which could be included in their professional portfolio. The investigator ensured that all questions and concerns identified by participants were addressed prior to completion of the surveys. Students were also informed of their right to withdraw from the study at any point without any repercussions related to their academic performance, academic standing, or future relations with the University.

One should consider the fact that students could have felt a sense of coercion to participate in the study to obtain a satisfactory performance in their nursing courses. During the recruitment process, students were informed that their decision to participate or to decline participation would not affect the outcome of their academic performance, academic standing, or future relations with the University. Further, instructors did not have access to any information collected and did not learn the identity of those who accepted or declined participation. The investigator involved in the data collection process had no pre-established relationship with any of the undergraduate nursing students, as she had graduated from the program two years prior to conducting the study.

The investigator also ensured that the privacy of the participants was respected. Students were informed regarding the specific information they were required to provide and no data was collected without the participants' knowledge. This study did not involve any form of deception. Participants were also informed under which conditions the information they provided would be shared with others (thesis supervisor, thesis committee). This information was provided during the review of the consent process, to ensure students were well informed before deciding to participate in the study.

Participants' confidentiality was maintained in written materials by omitting all identifying information. If students expressed their interest to complete paper copies of the questionnaires, the investigator would have compiled one envelope for every student. Each participant would have received an envelope with a written number on it, ranging from 1 to 40. Inside the envelope, the participant would have found a study introductory letter, two copies of the consent form, the *BES-CPE*, the section of the original *MAE Survey* examining why RNs do not report medication errors, the newly developed *MAE Self-Reporting* instrument, and the

demographic questionnaire. Each of these forms would have had the same number on it as the envelope. Participants would have been asked to retain the introductory letter and one copy of the consent form and to return the completed forms by placing them in the numbered envelopes. Participants would have been informed that only the numbered study questionnaires would be used to analyze the data collected. The consent forms and the demographic questionnaires would have been placed in their respective numbered envelopes and stored in a locked file cabinet at the University.

Electronic data obtained via email was saved on two encrypted Universal Serial Bus (USB) flash drives that are password protected. The consent forms and demographic questionnaires are saved on a separate encrypted and password protected USB drive. Participants were informed that the study questionnaires were saved on a separate encrypted and password protected USB drive. The investigator will destroy this data after five years by formatting the USB drives. If there were any paper copies of completed questionnaires, the investigator's thesis advisor would have stored them in a locked cabinet in the University for five years at which time she would destroy them if the investigator did not have access to the University at that time.

The consent form informed participants of how the investigator maintained confidentiality of the data they provided. Participants were informed the investigator was the only one who had access to their names and contact information. This information was not provided to anyone, under any circumstances, unless required by law. Their professors did not have access to the information they provided for the study, nor were they aware of the fact that the students participated in this study. In addition to the investigator, the REB could have access to participants' information for review and monitoring processes. Participants' names will not be identified in any article that may be published, ensuring that participants' information will

remain confidential. If the participants were to complete paper copies of questionnaires, these copies would have been stored in a locked file cabinet at the University and would have been shredded after five years.

In this study, subject selection was based upon the inclusion criteria stated in the section discussing data collection methods (p. 41). This selection method ensured that all students who met the inclusion criteria had an equal chance of participating in the study, regardless of their educational performance, socioeconomic status, and ethnic background (Williams, 2002). Once participants were enrolled in the study, the investigator made every attempt to ensure that ethical protocols were maintained. These protocols included being on time and ensuring that time commitments were clearly stated and respected.

Another human right that was considered in this study was that of protection from discomfort and harm. There were no major anticipated risks associated with this research. The completion of the study instruments included a minimal possibility of temporary discomfort for the students. The completion of the survey required a time commitment of approximately 20 minutes. There was a small probability that being seated for the time period and having to concentrate on the task would result in temporary physical discomfort, such as fatigue, headaches, and muscle tension. A psychological risk that could have arisen was that of anxiety and emotional discomfort pertaining to the completion of the self-administered questionnaires. Students might have felt uncomfortable answering questions regarding their willingness to report medication errors, as this reflection could have obligated them to consider their moral and ethical values. Participants could have also experienced minor distress upon reflection on their perceived level of belongingness in the clinical practice. As noted, students were informed of their right to withdraw from the study at any time and the decision to withdraw would not affect

their academic performance, academic standing, or future relations with the University in any way.

Costs

Participants who chose to complete paper copies of the questionnaires would have been provided with all the tools necessary to participate in this study, such as paper copies of questionnaires, pencils, and pens to record answers. One cost that participants could have incurred is travel costs to the established campus location. However, upon initial presentation of study via email or in person, participants were asked to indicate their availability to meet outside of structured class time to review and sign the consent form and complete the *BES-CPE*, the section of the original *MAE Survey* examining why RNs do not report medication errors, the newly adapted *MAE Self-Reporting* instrument examining reasons why students might not self-report medication errors, and the demographic questionnaire. Costs could have been eliminated if participants selected a day when they were physically on campus. There were no expected costs for participants who completed the online version of the questionnaires.

Potential Benefits

Participation in this pilot study had the potential to enhance understanding of the research process. Participants also had the opportunity to be informed about the results of the study if they desired. Students could have also derived a sense of satisfaction knowing they contributed to the development of nursing knowledge. Participants were also credited with two hours of clinical practice time to complete the questionnaires.

This feasibility study is of significance to nursing as there is a paucity of published literature examining the relationship between students' perceived sense of belongingness in the

clinical practice setting and their willingness to engage in self-reporting of medication errors. The conduct of a pilot study allowed for determination of potential interest of participants in the topic, response rate, and reliability, validity, and clarity of study instruments. This pilot study aimed to determine the reliability and validity of the *BES – CPE* and that of a modified version of the *MAE Survey*, the *MAE Self-Reporting* instrument. This psychometric assessment is of significance to nursing research as there are no instruments currently available to measure the willingness of nursing students to self-report medication errors.

The completion of this pilot study could also result in benefits to the nursing student population. Results of this study could be used to conduct a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. If a relationship is detected between the two variables, strategies could be proposed that would increase students' perceived sense of belongingness in the clinical practice setting.

CHAPTER 5

RESULTS

In this chapter, results are framed using the study objectives and are presented in the following manner: a description of the sample along with the variables of interest, a presentation of the instruments' reliability, and an examination of the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting.

Primary Objective (a) – Response Rate

Within this study, phase one of the sampling strategies yielded a high response rate with 28 of the initial 30 students contacted completing the study instruments. Overall, a strong response rate was obtained with 30 participants out of the 35 students who volunteered for the study completing the study measures. Overall, 30 students consented to be enrolled in the study and no participants dropped out. Approximately 400 fourth year nursing students (L. Nicholson, personal communication, April 3, 2013) were approached at the mandatory academic orientation for fourth year Collaborative Program undergraduate students on January 10, 2013, for potential study participation. Students interested in participating in the pilot feasibility study commenced emailing the investigator on January 10, 2013, following the orientation session.

Thirty responses indicating interest in participating in the study were obtained by January 14, 2013 via electronic mail. Participants were asked to return the completed questionnaires within a week if they were still interested in taking part in the study. The consent form assured participants that their decision to participate or not to participate would not affect their academic performance, academic standing, or future relations with the University in any way.

Twenty eight (93%) of the 30 participants that initially contacted the investigator consented to participate and returned the completed questionnaires within a week. Two students who initially indicated interest in participating in the study did not return their completed consent forms and study instruments. The students who did not return their completed questionnaires did not offer any reasons for their decision not to take part in the study following expression of interest.

While awaiting responses from the first 30 participants, the investigator received 26 more electronic messages from students indicating interest in participating in the study. Electronic messages were stored in the investigator's electronic inbox and were organized by the date and time when they were received. As per study protocol, these students were informed that others had already expressed interest and that they would be contacted should the desired sample size not be achieved. Upon receipt of the initial 28 completed questionnaires, the investigator selected the next five students who indicated interest in participating in the study and electronically mailed the consent form and study instruments to them. These five students were asked to return the completed questionnaires within a week if they were still interested in participating in the study. Two students returned the completed questionnaires within three to four days. At this time, the recruitment phase was closed, as 30 participants with completed measures were obtained.

Enrollment time in the study for participants ranged from one day to one week, the amount of time participants required to return the completed study instruments. The remaining 24 students who expressed interest in participating in the study were sent an electronic mail thanking them for the interest in the study and informing them that recruitment had been closed.

Please refer to Appendix C for a draft of the electronic message sent to volunteers after recruitment for the study had been closed.

In summary, a total of 56 students expressed interest in participating in this pilot feasibility study. The investigator electronically mailed the consent form and study instruments to the first 30 students who expressed interest in participating in the study. Upon receipt of 28 completed study questionnaires, the investigator electronically mailed the consent form and study instruments to the next five students who indicated interest in participating in the study. Two of these five participants returned their completed questionnaires. Thirty participants consented to participate in the study and all 30 returned their completed questionnaires.

Participants' demographic information was collected to examine whether the sample enrolled in this pilot feasibility study was representative of the population of fourth year nursing students enrolled in the Collaborative Program. Further, demographic information was collected to determine whether previous experiences would influence participants' responses to study instruments.

Sample demographics. The study participants had an average age of 23.4 years, were generally female, and single. Study participants reported a variety of ethnical backgrounds and diverse education and experience in the health care field prior to entering the Collaborative Program. Please refer to Table 1 for a summary of demographic characteristics of study participants and to Appendix F for additional tables outlining detailed demographic information.

Table 1

Demographic Characteristics of Participants (N =30)

Variable		n	%
Age Range 21.0 – 41.0 Mean = 23.4 SD = 4.2			
Sex	Male	1	3.3
	Female	29	96.7
Marital Status	Single	24	80.0
	Married/Cohabiting	6	20.0
Ethnicity	African Canadian	7	23.3
	Caucasian	5	16.7
	Asian	13	43.3
	Other	5	16.7
Highest level of education prior to entering nursing program	High school	26	86.7
	College diploma	1	3.3
	Bachelor's degree	3	10.0
Previous health care experience prior to entering nursing program	No	20	66.7
	Yes	10	33.3
Type of health care experience	PSW	4	13.3
	Other	6	20.0
	Not applicable	20	66.7
Previous enrolment in fourth year of nursing school	No	26	86.7
	Yes	4	13.3

MAE Self-Reporting and BES-CPE. The study participants had an average score on the *MAE Self-Reporting* instrument of 2.58 (SD = 0.76) and *BES-CPE* score of 3.5 (SD = 0.49). The mean score for the *MAE Self-Reporting* instrument of participants who obtained a previous diploma or degree before entering the nursing program (M = 2.27; SD = 0.16) was lower than the

overall mean score of participants. The lower score indicates a higher willingness to self-report medication errors.

The mean score for the *BES – CPE* obtained by participants who acquired a previous degree/diploma (M = 3.62; SD = 0.27) prior to entering nursing school was slightly higher than that obtained by other participants (M = 3.49; SD = 0.52), indicating a higher perceived sense of belongingness in the clinical practice setting. Scores of participants who had been previously unsuccessful in their fourth year of the Collaborative Program were compared to those with no previous enrollment in fourth year of the Collaborative Program. The mean score (M = 2.37; SD = 0.63) for the *MAE Self-Reporting* instrument of participants who were previously enrolled in fourth year of nursing school was lower than other participants (M = 2.61; SD = 0.78), indicating a higher willingness to self-report medication errors. Participants previously enrolled in fourth year of nursing school reported a lower mean score (M = 3.14; SD = 0.37) on the *BES – CPE* scale than that reported by other participants (M = 3.57; SD = 0.49), indicating a lower perceived sense of belongingness in the clinical practice setting. The mean score for the *MAE Self-Reporting* instrument of participants who possessed previous experience in the health care field (M = 2.79; SD = 0.98) was higher than participants with no previous health care experience (M = 2.47; SD = 0.63), indicating a lower willingness to self-report medication errors. On the *BES – CPE* scale, participants with previous heath care experience obtained a lower mean score (M = 3.41; SD = 0.52) than those without previous health care experience (M = 3.56; SD = 0.49). This lower score indicates a lower perceived sense of belongingness in the clinical practice setting.

Participants were asked whether they had been previously enrolled in the fourth year of nursing school. One of the primary objectives of this pilot study is to determine the feasibility of

conducting a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. Students previously enrolled in fourth year of nursing school might respond differently to study questionnaires than students not previously enrolled, and offer different perspectives. In the future, these different perspectives could be incorporated into strategies that might increase students' sense of belongingness. Incorporating the perspectives of a variety of students might contribute to the successful implementation of those strategies. Twenty six participants or 86.7% of the sample indicated no previous enrollment in fourth year of nursing school. Four participants or 13.3% of the sample indicated previous enrollment in fourth year of the nursing school.

The sample enrolled in this pilot feasibility study was representative of the population of fourth year nursing students enrolled in the Collaborative Program, as the majority of participants (76.7%) were between 21 and 23 years of age, were recent graduates of high school programs (86.7%), were females (96.7%), and possessed a variety of ethnical backgrounds (23.3% African Canadian, 16.7% Caucasian, 43.3% Asian, and 16.7% Other).

Primary Objective (b) – Nursing Students' Willingness to Participate in the Study

Five of the 30 participants, or 16.7% of the sample stated they participated due to the investigator being available at specific times. Six of the 30 participants, or 20% of the sample stated that ease of comprehension of questionnaires influenced their willingness to participate in the study. Seven of the 30 participants, or 23.3% of the sample reported they were influenced by the length of time required to complete the questionnaires. More than half of the participants (sixteen out of thirty), or 53.3% of the sample indicated that the option of completing the

questionnaires online influenced their willingness to participate in the study. The factor that appears to have influenced most participants' (21 students, or 70% of the sample) willingness to enroll in this pilot feasibility study was that of interest in the topic. Please refer to Appendix G for a frequency table outlining factors that influenced nursing students' willingness to participate in this pilot feasibility study. Three study participants (10% of the sample) expressed interest in the study results and asked the investigator to inform them of findings upon completion of study.

Primary Objective (c) – Appropriateness of Study Protocol for Data Collection

The completion of study questionnaires and all communication related to this pilot feasibility study occurred via electronic mail. No participants chose to complete paper copies of the study instruments. No issues were identified during the screening of students for inclusion in the study's sample. Training was not required for potential participants before being able to enroll in the study. Students were encouraged to highlight, underline, or bold their answers on the multiple choice demographic questionnaire and on the Likert scales examining self-reporting of medication errors, RN reporting of medication errors, and one's perceived sense of belongingness in the clinical practice setting. The recruitment process for this pilot feasibility study was completed within two to two and a half weeks from the initial contact with fourth year nursing students of the Collaborative Program.

The investigator did not have to initiate any telephone calls to interact with study participants. No participants electronically mailed the investigator requiring any clarifications regarding the study instruments. One participant interacted with the investigator at an academic hospital in the downtown of the metropolis where the study took place, as that is the investigator's place of employment and the nursing student's clinical placement.

Secondary Objective (a) –Validity and Reliability of Study Instruments

The overall Cronbach's alpha score for the *BES – CPE* scale was 0.86. The investigator also considered the effect of item deletion on the Cronbach's alpha score. Multiple Cronbach's alpha scores were computed assuming that one item at a time would be removed from the *BES – CPE* instrument. The Cronbach's alpha scores if items were to be deleted varied from 0.84 to 0.88.

The Cronbach's alpha score obtained in this pilot study for the section of the *MAE Survey* examining the reasons why medication administration errors are not reported was of 0.84. The Cronbach's alpha scores if items were to be deleted varied from 0.82 to 0.85, meaning all of the items contribute equally to the reliability of the instrument and this reliability would not be highly affected if any of the items were to be removed. The Cronbach's alpha score obtained for the *MAE Self-Reporting* instrument was of 0.84. The Cronbach's alpha scores if items were to be deleted varied from 0.80 to 0.86. For tables outlining the Cronbach's alpha scores obtained in this pilot study for the *BES – CPE*, *MAE Survey*, and the *MAE Self-Reporting* instrument please refer to Appendix H. The Cronbach's alpha scores obtained for the three instruments employed in this pilot feasibility study, specifically those for the *BES – CPE*, *MAE Survey*, and the *MAE Self-Reporting* instrument ranged from 0.84 to 0.86.

For the purpose of this pilot feasibility study, the investigator examined the content-related validity of the modified version of the *MAE Survey*, the *MAE Self-Reporting* instrument. Following a literature review and concept analysis, the investigator determined that items on the *MAE Self-Reporting* instrument included all the primary aspects of the concept of willingness to self-report medication errors in the nursing student population. In this pilot

feasibility study, the *MAE Self-Reporting* instrument was found to have a high degree of content-related validity.

Secondary Objective (b) - Relationship between Nursing Students' Perceived Sense of Belongingness and their Willingness to Self-Report Medication Errors in the Clinical Practice Setting

Pearson's correlation was the analysis used to identify the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. Results indicate a statistically nonsignificant inverse relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting ($r = -0.231$; $p = 0.219$).

CHAPTER 6

DISCUSSION

In this chapter, the investigator will present a discussion of this study's key findings. The discussion is framed using the study objectives and results, as well as ideas found in the literature.

The Data Collection Process

One of the primary objectives of this pilot feasibility study was to determine the appropriateness of the data collection protocol. A well developed data collection protocol may indicate the feasibility of conducting a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. The investigator emailed the consent form and study instruments to 35 students and 30 participants completed the instruments. According to Bowling (2004), in a quantitative study employing questionnaires or interviews, a response rate of 75% is considered an acceptable minimum standard. However, in the review of electronic mail surveys from the year 1986 to 2000, Sheehan (2006) detected a mean response rate of 36.83%. The response rate obtained for this pilot feasibility study is higher than the response rate reported by Sheehan and appears to meet the minimum standard as proposed by Bowling. The high interest of participating in this pilot study expressed in a short period of time of is one factor that indicates the feasibility of conducting a larger scale examining relationship between a perceived sense of belongingness and the willingness to self-report medication errors in the clinical practice setting.

The initial communication with potential participants was conducted in person at the mandatory academic orientation for fourth year nursing students. The investigator prepared a script to be used during the presentation of information to students. Employing a well-rehearsed script facilitated the presentation of study information to potential participants. Prior to attending the orientation, the investigator considered potential questions that students might have had. This prior consideration facilitated the reply to students' inquiries.

The data collection process was completed in approximately 10 days. The short duration of the recruitment and data collection processes may be attributed to students' expressed interested in the topic as well as to the option of completing the questionnaires online. The duration of the recruitment process may also be attributed to the fact that participants had a deadline of one week to complete the study instruments, as well as to the investigator's pattern of communication with participants. A few participants communicated via electronic mail with the investigator, inquiring whether they had to submit an electronic copy of the consent form and whether they could submit a paper copy of the questionnaire. The investigator responded within an hour to a few hours to each inquiry, with the aim of not delaying the recruitment process. Incorporation of electronic devices in this pilot feasibility study contributed to faster patterns of communication and completion of study instruments. Participants and the investigator were able to respond at their own convenience, rather than agreeing on specific times to communicate in person or via telephone. The number of inquiries via electronic mail may have been minimized as students had the opportunity to ask clarifying questions regarding the pilot study during the mandatory academic orientation for fourth year Collaborative Program students.

One participant interacted with the investigator at an academic hospital in the downtown of the metropolis where the study took place, as that is the investigator's place of employment

and the nursing student's clinical placement. The participant brought to the investigator's attention the fact that the instrument measuring students' willingness to self-report MAEs may be slightly difficult to comprehend due to statements being negatively phrased. For example, the original *MAE Survey* developed by Wakefield and Wakefield contains statements such as "Nurses do not recognize an error occurred". The scale prompts the RN to identify whether he or she agrees with a particular statement. These categories are labeled: "strongly disagree", "moderately disagree", "slightly disagree", "slightly agree", "moderately agree", and "strongly agree". In an attempt to enhance the understanding of the *MAE Self-Reporting* instrument, the investigator adapted the statement and phrased it as "I am not willing to self-report because I do not recognize an error occurred". Nursing students were prompted to indicate whether they agreed with a particular statement by selecting from the same categories included in the original scale developed by Wakefield and Wakefield. The investigator did not believe that the instrument should be altered, as there were no other participants that offered this feedback regarding the *MAE Self-Reporting* instrument.

Some of the participants returned their completed questionnaires close to the one week deadline. One factor that may have contributed to delay in completion of study instruments by participants was that of prior engagements and other priorities. When returning completed questionnaires, participants often apologized stating that heavy course loads, busy clinical placements, and employment contributed to their delayed responses. Students were invited to participate in this study at the beginning of the semester, when many of them were introduced to new clinical placements and had to attend a number of orientation sessions. Following the return of completed questionnaires, a number of participants inquired about the certificate of participation. Two factors that may have encouraged students to participate in the study were the

certificates of participation and the two hours of professional development time that students could use towards completing clinical hours.

Following the acquisition of all questionnaires, an electronic mail was sent to participants informing them of the procedure for obtaining their certificates of participation. The investigator consulted with students regarding their class schedule and the majority of participants stated that they would be physically present on campus on February 4, 2013. The investigator met with the majority of participants at a pre-established location and provided them with paper copies of certificates. Permission was obtained to leave the remaining certificates in the SAC's office. Participants who were unable to meet with the investigator were informed that they could obtain their certificates from the SAC's office. All participants but one obtained their certificates from the SAC's office (S.Son, personal communication, July 11, 2013).

As suggested by Burns and Grove (2009), data entry was limited to one hour at a time to reduce errors. All of the data was entered in one day. On a different day, the investigator enlisted the help of another person for checking the accuracy of the data entered. The investigator read all the original data and the other person checked it against the SPSS database. Five errors in data entry were detected and corrected. The short duration required for data entry could be attributed to the numeric nature of the data as well as to the availability of the person assisting in the accuracy of data entry.

Three study participants (10% of the sample) expressed interest in the study results and asked the investigator to inform them of findings upon completion of study. Upon completion of the analysis of study results, the investigator electronically mailed a summary of preliminary results to interested participants. This summary offered an overview of the high interest in the

study expressed by students and the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting.

Description of the Sample

Koohestani and Baghcheghi (2008) examined the self-reporting of medication errors by Iranian nursing students. The authors reported the majority (79.2%) of participants as being females and a mean age of 21.71 years. Baxter and Rideout (2006) examined the decision making skills of second year nursing students. The authors did not offer a detailed description of the participants' characteristics. Baxter and Boblin (2008) examined the clinical decisions and factors that influence decisions made by students enrolled in first, second, third, and fourth year of a nursing program. The ages of participants enrolled in Baxter and Boblin's study ranged from 18 to 24 years old. Most of the students enrolled in Baxter and Boblin's study entered the nursing program directly from high school without having obtained a previous degree. Lastly, White (2003) examined clinical decision making skills of 17 nursing students enrolled in their last semester of fourth year nursing school. The participants were between 21 and 37 years of age, with fifteen (88.2%) of the participants being between the ages of 21 and 24 (White). Sixteen of the participants were females and one participant was male (White). White also stated that 16 participants identified themselves as Caucasian and one identified himself/herself as African American. Fifteen participants had recent experience within the health care setting, but only two had worked in health care prior to entering the nursing program (White).

Similar to students enrolled in studies examining medication errors and decision making skills, the majority of students enrolled in this pilot feasibility study were in their early twenties,

were females, and had entered the nursing program directly from high school without having obtained a previous degree. The majority of participants enrolled in the study conducted by White (2003) identified themselves as Caucasian and had recent experience within the health care setting. Participants in this pilot feasibility study were ethnically diverse and only 33.3% of the sample had previous experience in the health care field. White did not describe the geographical area where the study was conducted. However, the author identified herself as the director of the graduate nursing program at the University of Southern Indiana. Participants may have been selected from the Southern Indiana area and may possess different characteristics than participants selected from the multicultural area of a downtown metropolis. In summary, similar to participants enrolled in studies examining similar topics, individuals included in this pilot feasibility study were in their early twenties, were females, and had entered the nursing program directly from high school without having obtained a previous degree. In contrast to participants enrolled in studies examining similar topics, individuals enrolled in this pilot study were ethnically diverse as they were selected from a downtown metropolitan area.

In this pilot feasibility study, demographic information was collected to also determine whether any previous experiences would appear to influence participants' responses. The mean score on the *MAE Self-Reporting* instrument for participants who possessed previous experience in the health care field was higher than that of those who did not have any previous health care experience. The higher score indicates a lower willingness to self-report medication errors.

Participants who had previous experience in the health care field may be familiar with the reporting of medication errors and repercussions they may perceive as being negative, such as not receiving positive feedback following the reporting of a MAE and a focus on individual factors rather than system factors (Chiang & Pepper, 2006). These participants may have a

decreased sense of safety and security, which according to Maslow (1943) may prevent one from achieving a more complex need of belongingness and acceptance, as well as the development of a sense of competence. Further, Robinson Wolf et al. (2006) stated that following the commission of a medication error, RNs may not engage in self-reporting as they often blame themselves, resulting in feelings of inadequacy and humiliation. Following the commission of a medication error, participants who had previous experience in the health care field may question their professional competency and may be less likely to self-report the medication error as they may feel as if an error should not have occurred given their previous experience. Informative to further examine would be the relationship between previous health care experience and the self-reporting of medication errors, as this relationship may inform the creation of varied strategies to encourage students to engage in self-reporting.

Participants who had previous experience working in the health care system reported a lower perceived sense of belongingness in the clinical practice setting as compared to those with no prior health care experience. Participants who had no previous health care experience typically entered the Collaborative Program directly following graduation from high school. These participants may be enthusiastic to develop a sense of belongingness in the profession of nursing, which they may regard as a lifelong career. In comparison, students with previous experience in the health care setting entered the Collaborative Program after having worked in administrative or Personal Support Worker (PSW) roles. Enrolling in the Collaborative Program may be regarded as a career change for students with previous experience in health care. These participants may be more cautious and may wish to develop a sense of belongingness after ensuring they derive personal and professional satisfaction in the role of RN and no further career changes are desired.

Another potential influence on the perceived sense of belongingness of participants with previous experience in the clinical practice setting may be their relationships with HCPs. Davey (2002) states that RNs may at times feel threatened by nursing students as they may believe these students critically observe their practice. Professionals who are aware of a nursing student's previous experience in health care may perceive him/her as a threat as they may believe the nursing student will compare the professionals' practice with that observed in other health care settings. When encountering a perceived external threat that may be detrimental to the well-being of the group, members are more likely to increase group cohesion in order to exclude that threat (Baumeister & Leary, 1995). The perception of a student as a threat may encourage a HCP to exclude the student as well as deter them from assisting the learner in the development of a sense of belongingness. According to Levett-Jones and Lathlean (2009b), one must develop a sense of belongingness before achieving competence in the clinical setting. Hence, participants who had previous experience working in the health care system and who reported a lower perceived sense of belongingness may have more difficulty in developing a sense of competency in the clinical practice setting.

Maslow's (1943) theory of human motivation and Levett-Jones and Lathlean's (2009b) conceptual framework regarding competence in the clinical setting assist in examining the perceived sense of belongingness of participants enrolled in this pilot study. Maslow and Levett-Jones and Lathlean consider the role of environment on one's development of a sense of belongingness. It would be interesting to develop the existing knowledge on the topic of a group's perception of an individual who may attempt to gain access to that particular group. Tajfel and Billig (1974) stated that in a group, members are more likely to offer rewards to other group members, rather than to external individuals. A person who may attempt to achieve

belongingness may in fact appear as a threat to the social network that he/she wishes to access which may contribute to a sense of diminished safety and security for the group. When others are organized in a group, it is essential for an individual to already be part of a well-defined group, especially one that is concerned about that individual's welfare (Baumeister & Leary, 1995). Specific to the nursing student population, RNs and HCPs who may perceive students as threats may experience a diminished sense of safety and security that may in turn prompt them to exclude learners and impede their development of a sense of belongingness.

The mean score for the *MAE Self-Reporting* instrument of participants who obtained a previous diploma or degree before entering the nursing program was lower than the overall mean score of participants. The lower score indicates a higher willingness to self-report medication errors. Baxter and Rideout (2006) suggested one factor that may moderate the strong influence of peer relationships is one's level of knowledge. There may be a relationship between increased willingness to self-report medication errors and a greater level of knowledge as well as an increased level of confidence developed as a result of having obtained a previous degree.

Messmer, Gracia Jones, and Taylor (2005) identified that students often alter their decisions based on the advice offered by more experienced RNs. Similarly, Baxter and Rideout (2006) suggested that students will usually follow the directions of an RN without questioning them to avoid upsetting the RN. Developing one's knowledge level regarding nursing practices was found to increase a student's level of self-confidence (Baxter & Rideout). A higher level of confidence allowed the students to independently identify the need for decision-making and allowed for more autonomy in decision-making practices. Further examining whether nursing students who obtain a high academic standing would indicate a higher willingness to self-report

medication errors would be informative, as these students may possess a higher level of knowledge regarding nursing practices.

Another factor reported to influence one's decision-making processes is strong critical thinking (Bowles, 2000). Participants who obtained a previous degree prior to entering nursing school may possess higher levels of knowledge and higher self-confidence which may lead to an increased willingness to self-report medication errors. A higher level of self-confidence may also influence the slightly higher scores on the *BES – CPE* scale of participants who acquired a previous degree prior to entering nursing school.

The mean score for the *MAE Self-Reporting* instrument of participants previously enrolled in fourth year of nursing school was lower than that of other participants, indicating a higher willingness to self-report medication errors. Participants previously enrolled in fourth year of nursing school may be familiar with the process of self-reporting medication errors, or they may have observed other HCPs report medication errors. This familiarity with the process of reporting medication errors may influence their willingness to self-report. Further, participants previously enrolled in fourth year of nursing school may feel a sense of apprehension regarding their academic success and may therefore attempt to align their practice with policies of the clinical setting, including those of self-reporting of medication errors. Participants previously enrolled in fourth year of nursing school reported a lower mean score on the *BES – CPE* scale than that reported by other participants. The initial unsuccessful completion of fourth year of nursing school may have contributed to a decline in the sense of safety and security of these learners in the Collaborative Program. Participants previously enrolled in fourth year of nursing school may require a large number of positive clinical experiences before being able to develop a sense of safety and security. According to Maslow (1943) and Levett-Jones and Lathlean

(2009b), a sense of safety and security must be achieved before being able to progress to the development of a sense of belongingness. The delayed development of a sense of safety and security may contribute to a lower perceived sense of belongingness in the clinical practice setting of participants previously enrolled in fourth year of nursing school. Further, students previously enrolled in fourth year of nursing school may find themselves in clinical groups with new unknown peers and this may contribute to a lower perceived sense of belongingness.

Although the collection of demographic information to determine whether any previous experiences would appear to influence participants' responses was not an objective of this study, interesting patterns were observed. Participants who possessed previous experience in the health care field tended to have a decreased willingness to self-report medication errors and a lower perceived sense of belongingness in the clinical setting. Participants who obtained a previous degree or diploma prior to entering nursing school tended to have an increased willingness to self-report medication errors and an increased perceived sense of belongingness in the clinical practice setting. Participants previously enrolled in fourth year of nursing school tended to have an increased willingness to self-report medication errors and a decreased sense of belongingness in the clinical practice setting.

Missing Data

With regards to missing data, one participant did not select an answer for one of the statements on the *BES – CPE.* The investigator electronically mailed the participant to remind her that she did not select an answer for one of the questions and to please provide the answer if possible. The participant provided her answer, explaining that she had missed the question. Another piece of data obtained on the demographic questionnaire could not be initially coded.

One of the questions on the demographic questionnaire prompted participants to provide a numerical value for their age. A participant provided the investigator with an age range of 30-36 years, rather than a number. After having discussed the issue with the thesis supervisor and one of the thesis committee member, the investigator decided to input a mean of the range provided (33 years of age), rather than the mean age of all of the participants. This decision to compute a separate mean for the individual was made as the mean age of participants (including the participant who was 33 years of age) was 23.4 years of age. The difference between the mean age of participants and this participant was almost 10 years. The investigator considered that inputting the mean age of all of the participants would be an inaccurate representation of the participant's age that was not provided.

Nursing Students' Willingness to Participate in the Study

To assist with data collection for a potential larger study, the investigator sought to identify which factor/s influenced nursing students' decision to participate in this pilot feasibility study. Participants were asked to select one or more of the following factors that influenced their willingness to participate in the pilot study: investigator being available at specific times, interest in topic, ease of comprehension of questionnaires, length of time to complete questionnaires, and/or option of completing online. The two factors that seem to have had the strongest influence on participants' willingness to enroll in this pilot study were interest in topic and the option of completing the questionnaires online. Sheehan (2006) identified completion of surveys via e-mail as an easier and more immediate means of response as compared to completion of surveys via mail. Participants in this pilot feasibility study were fourth year nursing students. Due to school priorities, these students may not have much time and financial resources allocated to extra-curricular activities, such as participating in a study. While interest in the topic may have

attracted students' interest, minimizing the time and eliminating the financial resources required to participate may have influenced their decision to enroll. These two factors identified in this pilot feasibility study may assist in the data collection process for a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. Other factors that may have influenced students' willingness to participate in this study might have been the investigator's age and student status. The investigator's age proximity to the students of the Collaborative Program as well as the fact that the investigator self-identified as a Master of Nursing student might have prompted participants to feel a sense of loyalty and desire to assist someone they perceived as a fellow learner.

Reliability and Validity of Study Instruments

Reliability of the *BES – CPE*, *MAE Survey*, and the *MAE Self-Reporting* instrument for nursing students was assessed by measuring the instruments' homogeneity. Cronbach's alpha coefficient was the statistical procedure of choice for assessing homogeneity of the *BES – CPE* and the *MAE Self-Reporting* instruments. According to Burns and Grove (2009) a high Cronbach's alpha of 0.8 to 0.9 is desirable as it signifies a high internal consistency, or the fact that all the items in the instrument measure the specific construct. A Cronbach's alpha score of 0.8 to 0.9 is desired over a score of 1.00 as it signifies that the instrument identified fine discriminations in the levels of the construct (Burns & Grove).

The validity and reliability of the *BES – CPE* and the *MAE Survey* instruments used in this pilot feasibility study have been supported by numerous authors (Chiang & Pepper, 2006; Kim & Park, 2011; Koohestani & Baghcheghi, 2009; Levett-Jones et al., 2009; Metsälä et al.,

2012; Stratton et al., 2004; Wakefield et al., 2001). The Cronbach's alpha score for the *BES-CPE* scale was not highly influenced by the deletion of any one item, meaning all of the items contribute equally to the reliability of the instrument and this reliability would not be highly affected if any of the items were to be removed. The Cronbach's alpha score obtained in this pilot study for the *BES – CPE* scale is similar to Levett-Jones et al.'s score of 0.9, Kim and Park's score of 0.91, and Metsälä et al.'s Cronbach's alpha score ranging from 0.8 to 0.95 for the *BES – CPE*. The Cronbach's alpha score obtained for the *MAE Self-Reporting* questionnaire examining factors that may influence students' self-reporting of MAE was of 0.84, which is similar to the 0.84 Cronbach's alpha score obtained for the original subsection of the *MAE Survey*.

The Cronbach's alpha scores obtained for the three instruments employed in this pilot feasibility study, specifically those for the *BES – CPE*, *MAE Survey*, and the *MAE Self-Reporting* instrument ranged from 0.84 to 0.86, indicating a high internal consistency, and in turn, a high reliability. For the purpose of this pilot feasibility study, the investigator examined the content-related validity of the *MAE Self-Reporting* instrument. Following a literature review and concept analysis, the investigator determined that items on the *MAE Self-Reporting* instrument included all the primary aspects of the concept of willingness to self-report medication errors in the nursing student population. All of the items on the *MAE Self-Reporting* instrument examined one or more aspects that may influence nursing students' willingness to self-report medication errors, such as desire to maintain positive professional relationships with HCPs, patients, and their families, desire to avoid being regarded as incompetent, wishing to maintain their positive image as a developing professional, and desire to be treated fairly in the clinical setting. In this

pilot feasibility study, the *MAE Self-Reporting* instrument was found to have a high degree of content-related validity.

Relationship between Nursing Students' Perceived Sense of Belongingness and their Willingness to Self-Report Medication Errors in the Clinical Practice Setting

The results of this study indicate a nonsignificant inverse relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting ($r = -0.231$; $p = 0.219$). The level of significance obtained in this pilot feasibility study indicates there is a 78.1% probability for the results to be accurate and for a negative correlation to exist between students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. The large value obtained for the level of significance indicates the results are not statistically significant, as there is a 21.9% probability for the results to be attributed to chance.

Prior to the data collection phase, multiple sources were consulted to determine an appropriate sample size for this pilot feasibility study. Nieswiadomy (2002) stated that a sample size of approximately 10 participants is considered appropriate for the purposes of a pilot study. Hulley et al. (2001) recommended obtaining a sample consisting of 10% of the size for the intended study. Browne (1995) stated that when conducting a pilot study, the general rule is to enlist 30 participants. For the purposes of this pilot study, a sample size of 30 participants was considered to be reasonable.

Nonsignificant results may also occur due to a deviant sample, problems with internal validity, inadequate measurement, or the use of weak statistical techniques (Burns & Grove, 2009). In this pilot feasibility study the sample was representative of the population of fourth

year nursing students enrolled in the Collaborative Program and similar to those of studies examining similar topics. Internal validity refers to the extent to which the relationship detected in a study is a reflection of reality rather than being a result of extraneous variables (Burns & Grove, 2009). In this pilot feasibility study there may be extraneous variables influencing the relationship between the two main variables of interest, those of nursing students' perceived sense of belongingness and their willingness to self-report medication errors. The investigator was aware of this possibility but made no attempts to control for the effect of extraneous variables, as this was a pilot feasibility study whose primary objective was to assess the feasibility of conducting a larger study. Extraneous variables are addressed more commonly in relation to studies that measure causality, rather than those that measure a correlation between variables (Burns & Grove).

Lastly, nonsignificant results may be due to weak statistical techniques (Burns & Grove, 2009). The results of this pilot feasibility study were analyzed using SPSS 20. The investigator ensured that the four assumptions that must be met to use Pearson's correlation were met before calculating the correlation coefficient. Therefore, weak statistical techniques may not have contributed to the nonsignificant results of this pilot feasibility study.

Discussion Summary

As primary objectives of this pilot feasibility study the investigator examined the willingness of nursing students to participate in the study, response rate of participants, and appropriateness of study protocol. Given the results of this pilot study, the investigator suggests that it would be feasible to conduct a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report

medication errors in the clinical practice setting. The overall response rate obtained was 85% and participants indicated a high interest in the topics of belongingness and self-reporting of medication errors. In this pilot feasibility study the data collection process was completed within 10 days and the study protocol appeared to be appropriate for data collection. The Cronbach's alpha scores obtained for the three instruments employed in this pilot feasibility study, specifically those for the *BES – CPE, MAE Survey,* and the *MAE Self-Reporting* instrument indicated a high internal consistency, and in turn, a high reliability.

The results of this study indicate a nonsignificant inverse relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting, which may be due to the small sample size. Considering the response rate, the appropriateness of the study protocol for data collection and the reliability of the instruments, it appears to be feasible to employ a larger sample to conduct a study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting.

CHAPTER 7

IMPLICATIONS, LIMITATIONS, AND CONCLUSION

This chapter includes a discussion of implications of study findings for nursing practice, education, research, and theory/policy, as well as potential limitations of this pilot study.

Implications

Health care organizations. The results of this study indicate a nonsignificant inverse relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. The large value obtained for the level of significance indicates a probability for the results to be attributed to chance and hence, a relationship may exist between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. The literature reviewed offers support for a potential relationship between nursing students' feelings of belongingness and their engagement in independent critical thinking, including the decision to self-report medication errors in the clinical practice setting. According to Baxter and Rideout (2006), in the clinical practice setting nursing students modify their decisions due to fear of upsetting HCPs as such incidences could have negative effects for their educational success. If students feel accepted and supported in the clinical practice setting, they may be inclined to use critical thinking skills when deciding to self-report medication errors, rather than conforming to observed practices.

According to Moscaritolo (2009), Sheu et al. (2002), and Sprengel and Job (2004) clinical placements represent the most stressful component of nursing school for undergraduate students. This time is when students gain not only the skills and knowledge necessary to perform

their nursing role but also the social skills needed to navigate professional relationships. Students become accustomed to the values and behavioral patterns supported by a specific organization (Rush et al., 2009). If students do not experience a sense of belongingness, it may affect not only their decision to engage in self-reporting of medication errors but also their decision to remain within the organization upon graduation. Organizations aspiring to encourage students to engage in the self-reporting of medication errors may consider the implementation of strategies to promote a sense of belongingness in the nursing student population. Ideally, strategies to promote a sense of belongingness should be implemented at all levels of the organization, from administration to front line HCPs. Individual health care organizations could engage nursing students and RNs in exploring their perceptions and creating potential strategies for promoting both a sense of belongingness and a willingness to self-report medication errors and other patient safety behaviours by students and health professionals.

A nursing student's relationship with his or her RN preceptor is one of the strongest factors influencing the student's perception of belongingness in the clinical practice setting (Baxter & Rideout, 2006). Strategies to promote the development of a sense of belongingness in nursing students should also consider the HCPs with whom students interact. Organizations may also explore the meaning of belongingness with health care workers across professional roles and highlight the importance of a sense of belongingness to students who observe and learn from them. One strategy that may be implemented is to integrate the concept and importance of a sense of belongingness in the learning experience of students, with the potential outcome of greater willingness of students to self-report medication errors.

One issue that has been explored in the literature and that health care organizations may consider is the difference between preceptors and mentors. In the clinical practice setting,

nursing students are assigned a preceptor who may or may not perform in the role of a mentor. A preceptor introduces the nursing student to the nursing roles, responsibilities, and skills required in a particular health care setting and most often a specific clinical practice area whereas, a mentor offers broader guidance, support, and socialization, with a greater focus on one's overall career progression (Carroll, 2004; Greene & Puetzer, 2002). This issue is of importance as nursing students would benefit from developing relationships with both preceptors and mentors. A preceptor may explore a student's willingness to self-report medication errors and a developing sense of belongingness in relation to a particular clinical practice setting, whereas a mentor may develop a long lasting professional relationship with a student and assist him or her in developing belongingness and safe medication practices across multiple clinical areas.

In the clinical practice setting, nursing students are assigned preceptors based on RNs' availability and willingness to assume the preceptor roles. Many healthcare organizations have implemented preceptor development programs that may be mandatory or highly recommended for RNs who wish to assume the role of a preceptor. It may be valuable for these preceptor development programs to integrate discussion regarding the importance of the preceptor in fostering a sense of belongingness in the nursing student. This discussion could identify factors that contribute to the development and enhancement of a sense of belongingness, as well as strategies that preceptors may adopt to promote that sense of belongingness in nursing students. This sense of belongingness in nursing students may be of importance as literature reviewed offers support for a potential relationship between nursing students' feelings of belongingness and their engagement in independent critical thinking, including the decision to self-report medication errors in the clinical practice setting (Baxter & Rideout, 2006). Therefore, fostering a

sense of belongingness in nursing students by RNs may prompt the learners to develop safe practice habits, including self-reporting of medication errors.

Preceptors' role of teaching students clinical practice competencies within the setting tends to have less emphasis on matching professional similarities and similarities regarding interaction and communication styles between students and their preceptors (Younge, Hagler, Cox, & Drefs, 2008). According to Beecroft, Santner, Lacy, Kunzman, and Dorey (2006) a preceptor models practices and nursing interventions as supported by the organization whereas a mentor provides guidance and support and assists the mentee in relieving stress. Annibas, Hanson Brenner, and Zorn (2009) stated that a similar set of values and similar personalities facilitates a positive mentor-mentee relationship. Annibas et al.'s description of a mentor-mentee relationship is congruent with the definition of belongingness which states the development of such a personal feeling is dependent upon similarity between the individual's personal and professional values and those endorsed by the group (Levett-Jones, Lathlean, McMillan, & Higgins, 2007; Levett-Jones & Lathlean, 2008; Levett-Jones, Lathlean, Maguire, & McMillan, 2007).

The Registered Nurses' Association of Ontario (RNAO) acknowledges the benefits of belonging to a mentor-mentee dyad, as a mentor can offer information, support, and advice to the less experienced practitioner. According to RNAO, new graduate RNs are more likely to remain within an organization if they can identify a mentor, as this mentor could promote the mentee's development of self-esteem and desire to take reasonable risks during the learning process. Similarly, nursing students may be more likely to join an organization upon graduation if they can identify a mentor within that setting. Organizations may wish to consider the establishment

of mentorship programs wherein RNs interested in engaging in a mentor-mentee relationship would be matched with nursing students who share their unique career interests and goals.

Another implication of the study findings that may be of value for health care organizations to consider would be creating strategies that would serve to foster a sense of belongingness to RNs across the career continuum. These strategies may contribute to the development of an organizational culture that values belongingness. RNs who would possess a sense of belongingness may, in turn, contribute to the development of a sense of belongingness in other HCPs and nursing students through their daily interactions.

Nursing Education in the Academic Setting. Although it may be of value for a nursing student to have both a preceptor and a mentor, given the current demands on health care organizations, it may not always be feasible for students to have access to both a preceptor and a mentor during their clinical placements. Further, it may be of benefit for nursing students to have mentors outside of clinical practice, as external mentors could help them analyze challenging professional relationships in the clinical setting (Beecroft et al., 2006).

Academic settings may consider the benefit of establishing formal programs that support faculty members in the role of mentors to nursing students and new graduate nurses. Such student-faculty mentorship relationships could include assisting students to shape their clinical practice experiences and their overall engagement in the academic program. Assisting nursing students in shaping their engagement in the academic program may allow them to derive personal meaning from the process. Mentors could be encouraged to incorporate discussions within the mentor-mentee relationship that focus on how students can promote their own sense of belongingness and contribute to that of fellow students and HCPs.

Another strategy academic settings may consider is that of using alumni as mentors for nursing students. Sword, Byrne, Drummond-Young, Harmer and Rush (2002) stated the role of faculty as student evaluators may hinder the development of a mentor-mentee relationship which generally requires personal disclosure. These authors developed a program at the McMaster University School of Nursing which paired alumni with baccalaureate nursing students. Alumni provided formal and informal support with scholastic activities, clinical placement selection, and personal affairs (Sword et al.). One alumnus introduced a nursing student to workshops in her place of employment (Sword et al.). Developing relationships with alumni may encourage nursing students to consult these mentors regarding various practices in their clinical setting, including that of self-reporting of medication errors. Alumni may be able to use their knowledge and experience to guide students in the development of safe medication practices and to encourage them to engage in overall safe nursing practice.

In the academic setting, nursing students engage in group work to complete various course requirements. Academic settings may consider fostering a sense of belongingness in the group setting and teaching students about the concept of belongingness. Nursing students could be introduced to characteristics of the concept of belongingness as well as strategies that would help individuals develop their perception of belongingness and foster it within colleagues and within the group context. Booker (2007) suggested that students who took part and engaged in the classroom setting often reported higher levels of belongingness, increased academic motivation, and scholastic achievements. Developing a sense of belongingness in groups of nursing students may encourage them to consult each other when in the clinical practice setting. This collaboration may contribute to safe medication practices as nursing students would be

more likely to share their professional experiences, knowledge, and observations, rather than feeling professionally isolated and making decisions independently.

Furthermore, academic settings may consider offering undergraduate interprofessional courses and clinical practice experiences that would encourage interaction between students from a variety of professions. This interaction would assist students in collaborating with other professions as well as developing an understanding of their roles and responsibilities. This understanding of roles during the academic career may facilitate interactions between HCPs in the clinical practice setting. The interprofessional experience in the academic setting could include educational strategies that would address and respond to the importance of professionals creating an environment fostering a sense of belongingness. In these interprofessional learning experiences participants could utilize case scenarios aimed at linking a sense of belongingness with safe practice in the clinical setting, including self-reporting of medication errors.

Nursing Education in the Practice Setting. Nurse educators in health care organizations could participate in initiatives designed to promote a sense of belongingness for nursing students. The transition from the academic setting where students have become familiar with faculty members and their expectations, to the unfamiliar clinical practice setting where students may be uninformed of HCPs' expectations, can result in high levels of anxiety for nursing students (Moscaritolo, 2009). Yoder (1995) stated that assisting a student in socializing into the profession consists of supporting him or her in reconciling ideal expectations learned in school with practice realities. Nurse educators may assist students during the transition, as they generally possess the clinical expertise as well as the theoretical knowledge that is familiar to students. Nurse educator development programs within health care organizations could include a

discussion regarding the importance of promoting a sense of belongingness in nursing students and HCPs.

Scott and Smith (2008) examined a group mentoring strategy developed by Nurse Education Specialists designed to promote recruitment and retention of new graduate RNs at Lenoir Memorial Hospital. Nurse educators were available to new graduates for one on one mentoring, were accessible by pager, and visited new graduate RNs on the unit (Scott & Smith). Additionally, formal meetings with new graduates, administration staff, and nurse educators took place every three months (Scott & Smith). These meetings consisted of one hour of professional socialization, three to four hours of continuing education, informal sessions regarding nursing research opportunities, and discussion regarding difficulties and positive experiences encountered by new RN graduates (Scott & Smith). At the completion of the program new RN graduates reported the program allowed them to relieve stress, tell others what they were experiencing, and derive a sense of security and being cared for by the organization (Scott & Smith). New RN graduates also reported an increased sense of confidence and competence (Scott & Smith). Nurse educators in health care organizations could develop a group mentoring program for nursing students. Group meetings could be conducted every month, as nursing students are generally in the clinical practice setting only for a few months. Participants may discuss clinical scenarios and relate these scenarios to case studies examining a sense of belongingness and the potential for this to promote safe practices, including that of self-reporting of medication errors.

Nursing Research. The purpose of this pilot project was determining the feasibility of conducting a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical

practice setting. The investigator noted high interest among nursing students to participate in this pilot study and an 85% response rate among participants. The study protocol for data collection appeared to be appropriate and the *BES – CPE* and *MAE Self-Reporting* instruments were valid and reliable. Results of this study indicate a statistically nonsignificant inverse relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. The nonsignificant relationship between the study's main variables may be attributed to the small sample size employed in this pilot study. The investigator suggests further exploration of the concepts of belongingness and self-reporting of medication errors in the nursing student population, as the study protocol appears appropriate and the literature suggests there may be a relationship between the two concepts. Additionally, future studies could test the psychometric integrity of the *MAE Self-Reporting* instrument as well as that of *BES – CPE* and *MAE Survey*.

Another area of future research could focus on intervention studies examining the influence of strategies related to belongingness and health care outcomes such as safe nursing practice and self-reporting of medication errors. In the previous sections the investigator introduced various educational strategies that may be considered in the clinical and academic settings. Future studies could examine the influence of strategies such as faculty-student mentorship relationships, alumni-student mentorship relationships, and interprofessional courses and clinical experiences on nursing students' perception of belongingness and willingness to engage in safe practice, including the self-reporting of medication errors.

Nursing Theory/Nursing Policy. In this pilot study, the concept of belongingness was explored from the perspective of a basic human motivational need, as described by psychologist Abraham Maslow (1943). Findings from this study support Maslow's statement that people wish

to achieve a place within a well-defined group and will strive with great intensity to achieve this goal. On the *BES – CPE* scale nursing students stated it was important for them to feel accepted by their colleagues and to fit in with others during their placements. Maslow (1943) further stated that individuals will often strive with great intensity to achieve a sense of belongingness, sometimes driven by a feeling that its achievement represents the most important aspect in the world. Levett-Jones, Lathlean, Maguire et al. (2007) also stated that the need to belong and be part of various social structures drives much of a person's thinking and the activities in which he/she engages. In this study, two thirds of participants were not willing to self-report medication errors because they were afraid of their preceptors'/other HCPs'/clients' perceptions of them as professionals. Findings from this study support Maslow's discussion on the concept of belongingness.

The literature reviewed offers support for a potential relationship between students' feelings of belongingness and their engagement in independent critical thinking, including the decision to self-report medication errors in the clinical practice setting (Baxter & Rideout, 2006). Healthcare organizations may consider strategies to facilitate the development of a feeling of belongingness in nursing students. Organizations may consider the development and implementation of policies that provide clarity regarding essential evidence-informed elements of preceptor development programs, including the importance of fostering a sense of belongingness in nursing students. RN participation in such preceptor development programs prior to assuming the role of preceptor to nursing students may serve to ensure that RNs have the fundamental knowledge and skills required to be an effective support to students.

Limitations

Issues pertaining to the setting, sampling, and instruments of this pilot study may be regarded as limitations. One limitation of this pilot study pertained to setting and sampling. Participants for this study were selected at one point in time from a single site, that of an urban university in a downtown metropolitan area. Convenience sampling was the method employed to achieve the desired number of participants. This approach may offer little opportunity to control for biases. In this pilot study, convenience sampling allowed for obtainment of a sample that was generally representative of the population of students in the Collaborative Program in regards to age, ethnicity, and previous education. The gender distribution in the study sample may not accurately reflect the students enrolled in the Collaborative Program. One participant (3.3% of the sample) was male, as compared to the 15% to 20% of the student population enrolled in the Collaborative Program (S. Son, personal communication, June 4, 2013). Findings of this study cannot be generalized to other settings or populations. Findings may differ if the study is replicated with students from a smaller rural area or from a different academic institution.

Thirty of the 35 participants who first expressed interest in the study completed the questionnaires. The response rate may indicate the feasibility of conducting a larger scale examining the relationship between a perceived sense of belongingness and the willingness to self-report medication errors in the clinical practice setting. Important to note is that while this pilot study may indicate a likely response rate for a larger study, it cannot predict a high response rate as it was based on a small sample size (Van Teijlingen & Hundley, 2001).

In this pilot feasibility study students' willingness to self-report medication errors in the clinical practice setting was measured using a modified version of the *MAE Survey*, the *MAE*

Self-Reporting instrument. The original paper-and-pencil self-administered questionnaire contains questions about RNs' perceptions regarding medication errors. One could perceive a limitation of this study to be the use of an instrument that was not previously tested in the nursing student population. The investigator was aware of this potential limitation and established one of the study's secondary objectives as that of determining the validity and reliability of study instruments.

Conclusion

This pilot study explored the feasibility of conducting a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. A descriptive, correlational approach was used to determine response rate by participants, to assess nursing students' willingness to participate in the study, to determine the appropriateness of study protocol for data collection, to determine the validity and reliability of study instruments, and to examine the relationship between the two main study variables. A conceptual framework of the two main study variables was used to inform the perspective from which the investigator collected and analyzed data. Thirty fourth year nursing students from the Collaborative Program were enrolled in this study and data obtained was analyzed using SPSS 20. There was high interest to participate in this pilot study among nursing students, there was a high response rate, the study protocol appeared appropriate for data collection, and the study instruments were valid and reliable. The results of this study indicate a nonsignificant inverse relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting, which may be attributed to the small sample size. Findings from this study may inform nursing practice, education, research, and policy. Future studies employing larger

samples are needed to examine the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. Future research could also focus on intervention studies examining the influence of strategies related to belongingness and health care outcomes such as safe nursing practice and self-reporting of medication errors.

Appendix A

Dear Fourth Year Ryerson, Centennial, George Brown Collaborative Nursing Degree Student:

My name is Anda Botezatu and I am a graduate student in the Master of Nursing Program at Ryerson University, working under the supervision of Dr. Janice Waddell.

As part of my Master of Nursing thesis research study I want to determine the feasibility of conducting a larger study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. The results of this pilot study will be used as a component of my thesis. The thesis a requirement for my Master in Nursing degree. I would like to offer you the opportunity to voluntarily participate in this study since you are currently enrolled in the fourth year Collaborative program. You qualify to participate in this study if you have experience of administering medications within a clinical placement. Your voluntary participation in this study will involve completing three study questionnaires examining your perceived sense of belongingness in the clinical setting, your perceptions of why Registered Nurses might not self-report medication errors, and your perceptions of why you might not self-report medication errors. You will be asked to rate your agreement with various statements, ranging from "strongly disagree" to "strongly agree", and "never true" to "always true". You will also be asked to complete a demographic questionnaire, collecting information regarding your sex, age, marital status, ethnicity, highest level of education achieved prior to entering the nursing program, previous health care experience, and previous enrollment in fourth year of nursing school.

These study questionnaires will take approximately 20 minutes to complete. If you are receiving this information letter electronically and are interested to participate, please reply to this email. You may choose to complete the questionnaires via email or in person. If you choose to complete the questionnaires in person, they may be completed individually or in small group settings. Group attendees will be informed of the need for confidentiality and asked not to share the names of others who have volunteered for the study. The completion of the questionnaires includes a minimal possibility of temporary discomfort for you. The physical discomforts of this process could include fatigue, headaches, and muscle tension. The emotional risks that could arise are those of anxiety or embarrassment associated with responding to various statements on the scale. Your decision to participate, decline participation, or withdraw from the study at any time will not affect your academic performance, academic standing, or future relations with Ryerson University in any way.

Participation in this study will allow you to increase your own understanding of the research process. You will also have an opportunity to be informed about the results of the study if you so desire. If you complete the questionnaires, or begin completion but wish to withdraw from the study, you will also be offered a certificate of participation that could be placed in your professional portfolio and on your resume.

Your name will not be recorded on any form you complete nor will it be identified in any article that may be published. You information will remain confidential. The questionnaires that you complete will be stored in a locked file cabinet at Ryerson University and will be shredded after five years.

Electronic data obtained via email will be saved on two encrypted Universal Serial Bus (USB) flash drives that will be password protected. The consent and demographic questionnaires will be saved on a separate encrypted and password protected USB drive that will be stored in a locked file cabinet at Ryerson University. The study questionnaires will be saved on a separate encrypted and password protected USB drive.

Participation in this study is completely voluntary. If you choose not to participate in the study, your academic performance, academic standing, or future relations with Ryerson University will not be affected in any way. If you decide to participate in this study you can change your mind without giving a reason and you may withdraw from the study at any time without this having an effect on your academic performance, academic standing, or future relations with Ryerson University. This study has been approved by the Research Ethics Board at Ryerson University.

Should you have any questions about the study, or require more in-depth information, please do not hesitate to contact me through email at anda.botezatu@ryerson.ca

Dear Ryerson instructor:

My name is Anda Botezatu and I am a graduate student in the Master of Nursing Program at Ryerson University (RU), working under the supervision of Dr. Janice Waddell.

As part of my Master of Nursing thesis research pilot study I am exploring the feasibility of conducting a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. The results of this pilot study will be used as a component of my thesis. The thesis is a requirement for my Master in Nursing degree. I am interested in recruiting 40 fourth year nursing students that would be interested in completing three study questionnaires examining their perceived sense of belongingness in the clinical setting, their perceptions regarding the reasons why Registered Nurses might not self-report medication errors, and their perceptions regarding the reasons why students themselves might not self-report medication errors. Participants will be asked to rate their agreement with various statements, ranging from "strongly disagree" to "strongly agree" for the scales examining medication errors and ranging from "never true" to "always true" for the scale examining perceived belongingness. Participants will also be asked to complete a demographic questionnaire.

If you would grant permission, I will use 5 minutes of designated class time to provide a brief overview of the pilot study to students. Students will be informed that their decision to participate or not to participate will not affect their academic performance, academic standing, or future relations with RU in any way. All students will receive a sheet outlining details of the study, the investigator's contact information, and documentation of REB approval of the study. Additionally, information sheets will be left in the room for interested students to obtain following class. Interested participants will be informed that they may choose to complete the questionnaires via email or in person at a later time. The investigator will provide students with her email address and interested participants will be encouraged to email the investigator to request electronic copies of the questionnaires or to indicate their desire and availability to meet outside of class time to review and sign the consent form and complete the study questionnaires. The meeting times and locations will be confirmed via an email from the investigator.

Participation in this pilot study has the potential to enhance understanding of the research process. Study participants will also have an opportunity to be informed about the results of the study if they so desire. If participants complete the questionnaires, or begin completion but wish to withdraw from the study, they will also be offered a certificate of participation that could be placed in their professional portfolios.

Participation in this study is voluntary. If students choose not to participate in the study, their academic performance, academic standing, or future relations with Ryerson University will not be affected in any way. Study participants can change their mind regarding their involvement in the study without giving a reason and they may withdraw from the study at any time without this having an effect on their academic performance, academic standing, or future relations with Ryerson University. This study has been approved by the Research Ethics Board at Ryerson University.

Should you have any questions about the study, or require more in-depth information, please do not hesitate to contact me through email at anda.botezatu@ryerson.ca

Dear Ryerson Course Faculty Lead:

My name is Anda Botezatu and I am a graduate student in the Master of Nursing Program at Ryerson University (RU), working under the supervision of Dr. Janice Waddell.

As part of my Master of Nursing thesis research pilot study I am exploring the feasibility of conducting a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting. The results of this pilot study will be used as a component of my thesis. The thesis is a requirement for my Master in Nursing degree. I am interested in recruiting 40 fourth year nursing students that would be interested in completing three study questionnaires examining their perceived sense of belongingness in the clinical setting, their perceptions regarding the reasons why Registered Nurses might not self-report medication errors, and their perceptions regarding the reasons why students themselves might not self-report medication errors. Participants will be asked to rate their agreement with various statements, ranging from "strongly disagree" to "strongly agree" for the scales examining medication errors and ranging from "never true" to "always true" for the scale examining perceived belongingness. Participants will also be asked to complete a demographic questionnaire.

If you would grant permission, I will use 5 minutes of designated orientation time to provide a brief overview of the pilot study to students. Students will be informed that their decision to participate or not to participate will not affect their academic performance, academic standing, or future relations with RU in any way. Posters outlining details of the pilot study and contact information of the investigator will be left in the room for interested students to obtain following orientation. Interested participants will be informed that they may choose to complete the questionnaires via email or in person at a later time. Interested participants will be encouraged to email the investigator to request electronic copies of the questionnaires or to indicate their desire and availability to meet outside of class time to review and sign the consent form and complete the study questionnaires. The meeting times and locations will be confirmed via an email from the investigator.

Participation in this pilot study has the potential to enhance understanding of the research process. Study participants will also have an opportunity to be informed about the results of the study if they so desire. If participants complete the questionnaires, or begin completion but wish to withdraw from the study, they will also be offered a certificate of participation that could be placed in their professional portfolios.

Participation in this study is voluntary. If students choose not to participate in the study, their academic performance, academic standing, or future relations with Ryerson University will not be affected in any way. Study participants can change their mind regarding their involvement in the study without giving a reason and they may withdraw from the study at any time without this having an effect on their academic performance, academic standing, or future relations with Ryerson University. This study has been approved by the Research Ethics Board at Ryerson University.

Should you have any questions about the study, or require more in-depth information, please do not hesitate to contact me through email at anda.botezatu@ryerson.ca

Appendix B

NURSING STUDY

Are you a 4th year Nursing Student interested in participating in a research study?

I am a Master in Nursing Student conducting a study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting

You will be asked to complete three study questionnaires and you can choose whether to participate in person (individually or in small group settings) or via email.

If you choose to participate, you will be offered a certificate of participation to be included in your Nursing Portfolio and to add to your professional resume!

If interested please contact me at

anda.botezatu@ryerson.ca

This study has been approved by the Ryerson Research Ethics Board # 2012-311

Appendix C

Study Closed, Thank you Letter

Dear Jane Doe,

I would like to thank you for taking the time to email me and indicate your interest in participating in the pilot study, examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting.

Unfortunately recruitment for the project has been completed as the maximum number of participants has been obtained.

Good luck in your studies and your future endeavors.
Anda

Appendix D

RYERSON UNIVERSITY

SCHOOL OF NURSING
FACULTY OF COMMUNITY SERVICES
Accredited by the Canadian Association of Schools of Nursing

CONSENT TO PARTICIPATE IN RESEARCH STUDY

Title of research project:
Pilot Study: Determining the feasibility of conducting a larger scale study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting

Researcher:
Anda Botezatu, RN; Graduate Student, School of Nursing, Ryerson University

The results of this pilot study will be used as a component of my thesis. The thesis is a requirement for my Master in Nursing degree and it is being completed under the supervision of Dr. Janice Waddell. If you have any questions or concerns regarding the study you may contact Janice at jwaddell@ryerson.ca

Please feel free to contact Anda Botezatu if questions or problems arise. Anda can be reached at: 350 Victoria St., Toronto, ON, M5B 2K3; anda.botezatu@ryerson.ca

Introduction:
Before agreeing to take part in this pilot study please take some time to read the information in this research consent form. It includes details that I think might be useful when you will make a decision about whether you would like to participate. Your participation involves completing three study questionnaires and a demographic questionnaire. If you have any questions, please do not hesitate to ask me. Participation in this research is voluntary and you should not sign this form until you are sure that you understand all of the information.

Description of your involvement:
You are being asked to voluntarily participate in this study since you are currently enrolled in the fourth year of the Ryerson, Centennial, George Brown Collaborative Nursing Degree program (the Collaborative Program) and have experience of administering medications within a clinical placement. Your voluntary participation in this study will involve completing three study questionnaires examining your perceived sense of belongingness in the clinical setting, your perceptions regarding the reasons why Registered Nurses might not self-report medication errors, and your perceptions regarding the reasons why students themselves might not self-report medication errors. You will be asked to rate your agreement with various statements, ranging from "strongly disagree" to "strongly agree", and "never true" to "always true". You will also be asked to complete a demographic questionnaire, collecting information regarding your sex, age,

marital status, ethnicity, highest level of education achieved prior to entering the nursing program, previous health care experience, and previous enrollment in fourth year of nursing school.

You have indicated interest to participate in this pilot study either via email in response to an electronic message sent by the Collaborative Program undergraduate student affairs coordinator (SAC), or following an in-class brief overview of the study given by the investigator.

You are completing the study questionnaires either via email and have already read the study introductory letter, or in person during a meeting that was set up outside of scheduled class time. Paper copies of the questionnaires may be completed individually or in small group settings. Please maintain confidentiality of study participants and refrain from sharing the names of others who have volunteered for the study. During this meeting, you will be given another overview of the study and invited to ask questions regarding the study. You will be asked to indicate if you will be interested to volunteer for the study. Those participants not interested to participate will be thanked for their time. Those participants wishing to volunteer will receive a verbal description of the consent, after which they will receive the consent form to review and, should they agree with the contents, their signature will be requested. Following the obtainment of consent, participants will be provided with packages containing the study introductory letter, two copies of the consent form, and the study questionnaires. Participants will receive the investigator's contact information and will be encouraged to contact the investigator at any time during the study should they have any questions.

Completing the questionnaires will take approximately 20 minutes.

Potential Harms:
The completion of the study instruments includes a minimal possibility of temporary discomfort for you. The completion of the survey requires a time commitment of approximately 20 minutes. There is a small probability that being seated for the time period and having to concentrate on the task at hand may result in temporary physical discomfort, such as fatigue, headaches, and muscle tension. A potential psychological risk that could arise is that of anxiety and emotional discomfort pertaining to the completion of the self-administered questionnaires. You might feel uncomfortable answering questions regarding your willingness to self-report medication errors, as this reflection could obligate you to consider your moral and ethical values. You could also experience distress upon reflecting on your perceived level of belongingness in the clinical practice. You are informed of your right to withdraw from the study at any time and the decision to withdraw will not affect your academic performance, academic standing, or future relations with Ryerson University in any way.

Potential Benefits:
Participation in this pilot study has the potential to enhance understanding of the research process. You will also have an opportunity to be informed about the results of the study if you so desire. You could also derive a sense of satisfaction knowing that you will contribute to the development of nursing knowledge. If you completed the questionnaires, or began completion but wish to withdraw from the study, you will also be offered a certificate of participation that

could be placed in your professional portfolio and on your resume. However, you may not experience any direct benefit from participating in this study.

Protecting your information:
The investigator will compile up to 40 envelopes depending on the number of students indicating interest to complete paper copies of the study instruments. Each participant will receive an envelope with a written number on it, ranging from 1 to 40. Inside the envelope, you will find a study introductory letter, two copies of the consent form, the Belongingness Scale Clinical Placement Experience, the section of the original MAE examining why RNs do not report medication errors, the newly adapted scale, and the demographic questionnaire. Each of these forms will have the same number on it as the envelope. You will be asked to retain the study introductory letter and one copy of the consent form and to return the completed forms by placing them in the numbered envelope. Only the numbered study questionnaires will be used to analyze the data collected. The consent forms and the demographic questionnaires will be placed in their respective numbered envelopes and stored in a locked file cabinet at Ryerson University. This data will be destroyed after five years.

Electronic data obtained via email will be saved on two encrypted Universal Serial Bus (USB) flash drives that will be password protected. The consent and demographic questionnaires will be saved on a separate encrypted and password protected USB drive that will be stored in a locked file cabinet at Ryerson University. The study questionnaires will be saved on a separate encrypted and password protected USB drive.

The researcher Anda Botezatu will have access to your demographic information. In addition, the researcher's supervisor, Dr. Janice Waddell, may also have access to your demographic data. These individuals will be the only ones accessing your demographic data. This information will not be provided to anyone, under any circumstances, unless required by law. Your professor will not have access to the information you provided for the study, nor will he/she be aware of the fact that you participated in this study. In addition to the researcher, the Research Ethics Board at Ryerson University will have access to your information for review and monitoring processes. Your name will not be identified in any article that may be published. You information will remain confidential.

Participation and Withdrawal:
Participation in this study is voluntary. If you choose not to participate in the study, your academic performance, academic standing, or future relations with Ryerson University will not be affected in any way. If you decide to participate in this study you can change your mind without giving a reason and you may withdraw from the study at any time without this having an effect on your academic performance, academic standing, or future relations with Ryerson University.

You can choose to skip any or all of the questions that you will be asked. If you decide to withdraw from the study, the data you provided up to that point will be used for data analysis.

Research Ethics Board:
The study protocol and this consent form have been reviewed by a committee at Ryerson University called the Research Ethics Board (REB). The REB consists of people within the healthcare field, academia, law and ethics, as well as members from the community. The committee is established to evaluate studies and make sure that participants' rights are protected. If you have any questions or concerns regarding your rights or your experience as a research participant, you may contact REB at rebchair@ryerson.ca, or the investigator's supervisor at jwaddell@ryerson.ca

Agreement:
Your signature below indicates that you have read the information in this agreement and have had a chance to ask any questions you have about the study. Your signature also indicates that you agree to be in the study and have been told that you can change your mind and withdraw your consent to participate at any time. You have been given a copy of this agreement.
You have been told that by signing this consent agreement you are not giving up any of your legal rights.

_____

Name of Participant (please print)

_____ _____

Signature of Participant Date

_____ _____

Signature of Investigator Date

Appendix E

Medication Administration Error Survey

The purpose of this survey is to seek input, based on your clinical experience, from the head and staff nurses on the occurrence and reporting of medication administration errors and the extent to which errors are reported on your unit. This survey will take approximately 5 - 10 minutes to complete. All responses will be kept strictly confidential. Thank you for your time and cooperation!

Definition of Medication Administration Errors (MAEs): For the purposes of this survey, MAEs are defined as errors related to the actual ingestion, injection or application of individual medication doses (e.g., wrong method of administration, wrong patient, wrong additive).

A. Reasons Why Medication Errors Occur On Your Unit. Please circle the number that best reflects the extent to which you agree that the following reasons contribute to why medication errors occur on your unit.

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. The names of many medications are similar.	1	2	3	4	5	6
2. Different medications look alike.	1	2	3	4	5	6
3. The packaging of many medications is similar.	1	2	3	4	5	6
4. Physicians' medication orders are not legible.	1	2	3	4	5	6
5. Physicians' medication orders are not clear.	1	2	3	4	5	6
6. Physicians change orders frequently.	1	2	3	4	5	6
7. Abbreviations are used instead of writing the orders out completely.	1	2	3	4	5	6
8. Verbal orders are used instead of written orders.	1	2	3	4	5	6
9. Pharmacy delivers incorrect doses to this unit.	1	2	3	4	5	6

10. Pharmacy does not prepare the med correctly.	1	2	3	4	5	6
11. Pharmacy does not label the med correctly.	1	2	3	4	5	6
12. Pharmacists are not available 24 hours a day.	1	2	3	4	5	6
13. Frequent substitution of drugs (i.e., cheaper generic for brand names).	1	2	3	4	5	6

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
14. Poor communication between nurses and physicians.	1	2	3	4	5	6
15. Many patients are on the same or similar medications.	1	2	3	4	5	6
16. Unit staff do not receive enough inservices on new medications.	1	2	3	4	5	6
17. On this unit, there is no easy way to look up information on medications.	1	2	3	4	5	6
18. Nurses on this unit have limited knowledge about medications.	1	2	3	4	5	6
19. Nurses get pulled between teams and from other units.	1	2	3	4	5	6
20. When scheduled medications are delayed, nurses do not communicate the time when the next dose is due.	1	2	3	4	5	6
21. Nurses on this unit do not adhere to the approved medication administration procedure.	1	2	3	4	5	6
22. Nurses are interrupted while administering medications to perform other duties.	1	2	3	4	5	6
23. Unit staffing levels are inadequate.	1	2	3	4	5	6
24. All medications for one team of patients cannot be passed within an accepted time frame.	1	2	3	4	5	6
25. Medication orders are not transcribed to the Kardex correctly.	1	2	3	4	5	6
26. Errors are made in the Medication Kardex.	1	2	3	4	5	6
27. Equipment malfunctions or is not set correctly (e.g., IV pump).	1	2	3	4	5	6
28. Nurse is unaware of a known allergy.	1	2	3	4	5	6
29. Patients are off the ward for other care.	1	2	3	4	5	6

B. Reasons Why Medication Administration Errors Are Not Reported On Your Unit. Please circle the number that best reflects the extent to which you agree that the following reasons contribute to why errors are not reported on your unit.

	Strongly Disagree	Mod. Disagree	Slightly Disagree	Slightly Agree	Mod. Agree	Strongly Agree
30. Nurses do not agree with hospital's definition of a medication error.	1	2	3	4	5	6
31. Nurses do not recognize an error occurred.	1	2	3	4	5	6
32. Filling out an incident report for a medication error takes too much time.	1	2	3	4	5	6
33. Contacting the physician about a medication error takes too much time.	1	2	3	4	5	6
34. Medication error is not clearly defined.	1	2	3	4	5	6
35. Nurses may not think the error is important enough to be reported.	1	2	3	4	5	6
36. Nurses believe that other nurses will think they are incompetent if they make medication errors.	1	2	3	4	5	6
37. The patient or family might develop a negative attitude toward the nurse, or may sue the nurse if a medication error is reported.	1	2	3	4	5	6
38. The expectation that medications be given exactly as ordered is unrealistic.	1	2	3	4	5	6
39. Nurses are afraid the physician will reprimand them for the medication error.	1	2	3	4	5	6
40. Nurses fear adverse consequences from reporting medication errors.	1	2	3	4	5	6
41. The response by nursing administration does not match the severity of the error.	1	2	3	4	5	6
42. Nurses could be blamed if something happens to the patient as a result of the medication error.	1	2	3	4	5	6
43. No positive feedback is given for passing medications correctly.	1	2	3	4	5	6
44. Too much emphasis is placed on med errors as a measure of the quality of nursing care provided.	1	2	3	4	5	6

45. When med errors occur, nursing administration focuses on the individual rather than looking at the systems as a potential cause of the error.	1	2	3	4	5	6

C. Percentage of Each Type of Error Reported on Your Unit. Based on your experience, please circle the number that best represents what percentage of each type of medication error you believe is actually reported on your unit.

	Percentage Reported									
Types of Non-IV Medication Errors	0 - 20	21- 30	31- 40	41 - 50	51 - 60	61 - 70	71 - 80	81 - 90	91 - 99	100
46. Wrong route of administration	1	2	3	4	5	6	7	8	9	10
47. Wrong time of administration	1	2	3	4	5	6	7	8	9	10
48. Wrong patient	1	2	3	4	5	6	7	8	9	10
49. Wrong dose	1	2	3	4	5	6	7	8	9	10
50. Wrong drug	1	2	3	4	5	6	7	8	9	10
51. Medication is omitted	1	2	3	4	5	6	7	8	9	10
52. Medication is given, but has not been ordered by the physician	1	2	3	4	5	6	7	8	9	10
53. Medication administered after the order to discontinue has been written	1	2	3	4	5	6	7	8	9	10
54. Given to patient with a known allergy	1	2	3	4	5	6	7	8	9	10
Types of IV Errors										
55. Wrong method of administration	1	2	3	4	5	6	7	8	9	10
56. Wrong time of administration	1	2	3	4	5	6	7	8	9	10

57. Wrong patient	1	2	3	4	5	6	7	8	9	10
58. Wrong dose	1	2	3	4	5	6	7	8	9	10
59. Wrong drug	1	2	3	4	5	6	7	8	9	10
60. Medication is omitted	1	2	3	4	5	6	7	8	9	10
61. Medication is given, but has not been ordered by the physician	1	2	3	4	5	6	7	8	9	10
62. Medication administered after the order to discontinue has been written	1	2	3	4	5	6	7	8	9	10
63. Given to patient with a known allergy	1	2	3	4	5	6	7	8	9	10
64. Wrong fluid	1	2	3	4	5	6	7	8	9	10
65. Wrong rate of administration	1	2	3	4	5	6	7	8	9	10

66. Based on your experience, what percentage of **all types of medication errors**, including IV and non-IV medication errors are actually reported on your unit (please circle one)

0 - 20%	21 - 30%	31 - 40%	41 - 50%	51 - 60%	61 - 70%	71 - 80%	81 - 90%	91 - 99%	100 %

To assist in data analysis and interpretation of the survey results, we would appreciate if you would provide us with the following information--Please circle the number that best represents you and your unit.

67. Does your nursing unit use the unit-dose system?
    1. Yes 2. No

68. What model of nursing practice is used?
    1. Team 2. Primary 3. Other, please specify _____

69. What is your nursing education? (Circle all that apply)

1. LPN 2. Diploma 3. ADN 4. BSN 5. Masters degree in nursing

70. What other non-nursing degrees, if any, do you have?

Please specify _____

71. What is your current position on your unit?
1. Staff Nurse 2. Head Nurse/Other Administrative 3. Other, please specify _____

72. How often do you administer **non-IV** medications?
1. Never 2. Rarely 3. Occasionally 4. Frequently

73. How often do you administer **IV** medications?
1. Never 2. Rarely 3. Occasionally 4. Frequently

74. Are you employed full-time or part-time in your current position in this institution?
1. Full-time 2. Part-time

75. What is the average number of times you float between units per month?
0 1 2 3 4 5 6 7 8 9 10 11+

76. How many different units do you float between in a year?
1 2 3 4 5+ Not applicable, I do not float between units

77. Type of nursing unit to which your responses apply (CHOOSE ONLY ONE RESPONSE):

1. Medical	6. LTC/SNF	11. PICU
2. Surgical	7. CCU	12. Psychiatry/Mental Health
3. Medical/Surgical	8. ICU	13. Float Pool Nurse
4. Obstetrics	9. MICU	14. Other, please specify _____
5. Pediatrics	10. SICU	

Do you have any suggestions for improving the current system for monitoring medication errors?

Appendix F

Study Instruments

Factors that Influence your Willingness to Self-Report Medication Administration Errors

	Strongly Disagree	Mod. Disagree	Slightly Disagree	Slightly Agree	Mod. Agree	Strongly Agree
1. I am not willing to self-report because I do not agree with the hospital's definition of a medication error.	1	2	3	4	5	6
2. I am not willing to self-report because I do not recognize an error occurred.	1	2	3	4	5	6
3. I am not willing to self-report because filling out an incident report for a medication error takes too much time.	1	2	3	4	5	6
4. I am not willing to self-report because contacting the physician about a medication error takes too much time.	1	2	3	4	5	6
5. Medication error is not clearly defined.	1	2	3	4	5	6
6. I am not willing to self-report because I may not think the error is important enough to be reported.	1	2	3	4	5	6
7. I am not willing to self-report because I believe that coworkers/other students/preceptor/faculty advisor will think I am incompetent if I make medication errors.	1	2	3	4	5	6
8. I am not willing to self-report because the patient or family might develop a negative attitude toward me, or may report me to my preceptor if a medication error is reported.	1	2	3	4	5	6
9. The expectation that medications be given exactly as ordered is unrealistic.	1	2	3	4	5	6
10. I am not willing to self-report because I am afraid the physician/preceptor will reprimand me for the medication error.	1	2	3	4	5	6

11. I am not willing to self-report because I fear adverse consequences from reporting medication errors.	1	2	3	4	5	6
12. I am not willing to self-report because the response by nursing administration/preceptor does not match the severity of the error.	1	2	3	4	5	6
13. I am not willing to self-report because I could be blamed if something happens to the patient as a result of the medication error.	1	2	3	4	5	6
14. I am not willing to self-report because no positive feedback is given for giving medications correctly.	1	2	3	4	5	6
15. I am not willing to self-report because too much emphasis is placed on med errors as a measure of the quality of nursing care I provide.	1	2	3	4	5	6
16. I am not willing to self-report because when I make a med error, nursing administration/preceptor focuses on the individual rather than looking at the systems as a potential cause of the error.	1	2	3	4	5	6

Medication Administration Error Survey

The purpose of this survey is to seek input, based on your clinical experience, from the head and staff nurses on the occurrence and reporting of medication administration errors and the extent to which errors are reported on your unit. This survey will take approximately 5 - 10 minutes to complete. All responses will be kept strictly confidential. Thank you for your time and cooperation!

Definition of Medication Administration Errors (MAEs): For the purposes of this survey, MAEs are defined as errors related to the actual ingestion, injection or application of individual medication doses (e.g., wrong method of administration, wrong patient, wrong additive).

Reasons Why Medication Administration Errors Are Not Reported On Your Unit. Please circle the number that best reflects the extent to which you agree that the following reasons contribute to why errors are not reported on your unit.

	Strongly Disagree	**Mod. Disagree**	**Slightly Disagree**	**Slightly Agree**	**Mod. Agree**	**Strongly Agree**
46. Nurses do not agree with hospital's definition of a medication error.	1	2	3	4	5	6
47. Nurses do not recognize an error occurred.	1	2	3	4	5	6
48. Filling out an incident report for a medication error takes too much time.	1	2	3	4	5	6
49. Contacting the physician about a medication error takes too much time.	1	2	3	4	5	6
50. Medication error is not clearly defined.	1	2	3	4	5	6
51. Nurses may not think the error is important enough to be reported.	1	2	3	4	5	6
52. Nurses believe that other nurses will think they are incompetent if they make medication errors.	1	2	3	4	5	6
53. The patient or family might develop a negative attitude toward the nurse, or may sue the nurse if a medication error is reported.	1	2	3	4	5	6
54. The expectation that medications be given exactly as ordered is unrealistic.	1	2	3	4	5	6
55. Nurses are afraid the physician will reprimand them for the medication error.	1	2	3	4	5	6

56. Nurses fear adverse consequences from reporting medication errors.	1	2	3	4	5	6
57. The response by nursing administration does not match the severity of the error.	1	2	3	4	5	6
58. Nurses could be blamed if something happens to the patient as a result of the medication error.	1	2	3	4	5	6
59. No positive feedback is given for passing medications correctly.	1	2	3	4	5	6
60. Too much emphasis is placed on med errors as a measure of the quality of nursing care provided.	1	2	3	4	5	6
61. When med errors occur, nursing administration focuses on the individual rather than looking at the systems as a potential cause of the error.	1	2	3	4	5	6

Belongingness Scale Clinical Placement Experience

In the next pages, you will find a list of statements. Read each statement and then select the response that best indicates **how often the statement is true for you**.

For example, if you eat desert after dinner almost every night you would select '*Often True*'. If you rarely eat desert you would select '*Rarely True'.*

For each question:

- **Please answer every item**, even if one seems similar to another one
- **Answer each item quickly**, without spending too much time on any one Item.
- **Think generally about your clinical placement experiences** when considering your responses to the questions, or if this is difficult **reflect on your last clinical placement experience.**

In the statements below, '***placement/s*'** refers to your supernumerary clinical placement experience as a nursing student, and '***colleagues*'** refers to clinical staff in the area of your placement.

01	I feel like I fit in with others during my placements	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
02	It is important to feel accepted by my colleagues	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
03	Colleagues see me as a competent person	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
04	Colleagues offer to help me when they sense I need it	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
05	I make an effort to help new students or staff feel welcome	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
06	I view my placements as a place to experience a sense of belonging	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
07	I get support from colleagues when I need it	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
08	I am invited to social events outside of my placements by colleagues	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True

09	I like the people I work with on placements	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
10*	I feel discriminated against on placements	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
11	I offer to help my colleagues, even if they don't ask for it	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
12	It is important to me that someone at my placement acknowledges my birthday in some way	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
13	I invite colleagues to eat lunch/dinner with me	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
14*	On placements I feel like an outsider	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
15	There are people that I work with on placements who share my values	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
16	Colleagues ask for my ideas or opinions about different matters	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
17	I feel understood by my colleagues	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
18	I make an effort when on placements to be involved with my colleagues in some way	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
19	I am supportive of my colleagues	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
20	I ask for my colleagues' advice	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
21	People I work with on placements accept me when I'm just being myself	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True

22*	I am uncomfortable attending social functions on placements because I feel like I don't belong	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
23	When I walk up to a group on a placement I feel welcomed	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
24	Feeling "a part of things" is one of the things I like about going to placements	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
25	There are people on placements with whom I have a strong bond	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
26*	I keep my personal life to myself when I'm on placements	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
27	It seems that people I work with on placements like me	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
29	Colleagues notice when I am absent from placements or social gatherings because they ask about me	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
30	One or more of my colleagues confides in me	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
31	I let my colleagues know that I appreciate them	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
32	I ask my colleagues for help when I need it	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True
33	I like where I work on placements	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True

34	I feel free to share my disappointments with at least one of my colleagues	a) Never True b) Rarely True c) Sometimes True d) Often True e) Always True

Reference

Levett-Jones, T., Lathlean, J. McMillan, M., & Higgins, I. (2009). Development and psychometric testing of the Belongingness Scale - Clinical Placement Experience: An international comparative study. *Collegian.*16(3), 153-324.

Demographic Questionnaire

Completion of this questionnaire is completely voluntary and you are not required to answer all or any of the questions if you prefer not to.

1. How old are you? Please provide a number _____

2. What sex are you? Please select from the following:

    a) Male
    b) Female

3. Please select your marital status:

    a) Single
    b) Married/Cohabiting
    c) Separated/Divorced
    d) Widowed

4. Please select your ethnicity:

    a) African Canadian
    b) Hispanic
    c) Caucasian
    d) First Nations, Aboriginal, Inuit or Métis
    e) Asian
    f) Other

5. Please select the highest level of education achieved prior to entering the nursing program:

    a) Some high school
    b) High school
    c) Trade school
    d) College diploma
    e) Bachelor's degree
    f) Master's degree

6. Do you have any previous health care experience? Please select from the following:

    a) No
    b) Yes (if selecting this option, please choose one of the answers below)

        Personal Support Worker (PSW)
        Registered Practical Nurse (RPN)
        Other roles within the health care system

7. Have you been previously enrolled in fourth year of nursing school?

    a) Yes
    b) No

8. What factor/s influenced your willingness to participate in this pilot feasibility study?

    a) Being available at specific times
    b) Interest in topic
    c) Ease of comprehension of questionnaires
    d) Length of time to complete questionnaires
    e) Option of completing online

Appendix G

Certificate of Participation

This certifies that

Jane Doe

has participated in

The study examining the relationship between nursing students' perceived sense of belongingness and their willingness to self-report medication errors in the clinical practice setting

Conducted by Anda Botezatu, RN; Graduate Student, School of Nursing, Ryerson University

Date: February 2, 2013

Signature _____

```
***Age frequencies.
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  /STATISTICS=MEAN MODE
  /ORDER=ANALYSIS.
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Frequencies

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Statistics

age

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	Missing	0
Mean		23.4333
Mode		21.00
Percentiles	25	21.0000
	50	22.0000
	75	23.2500

age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21.00	11	36.7	36.7	36.7
	22.00	9	30.0	30.0	66.7
	23.00	3	10.0	10.0	76.7
	24.00	1	3.3	3.3	80.0
	26.00	2	6.7	6.7	86.7
	27.00	1	3.3	3.3	90.0
	28.00	1	3.3	3.3	93.3
	33.00	1	3.3	3.3	96.7
	41.00	1	3.3	3.3	100.0
	Total	30	100.0	100.0	

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Frequencies

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Statistics

sex

N	Valid	30
	Missing	0
Mode		2.00
Percentiles	25	2.0000
	50	2.0000
	75	2.0000

sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	1	3.3	3.3	3.3
	female	29	96.7	96.7	100.0
	Total	30	100.0	100.0	

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Frequencies

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Statistics

marital status

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Mode		1.00

marital status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	single	24	80.0	80.0	80.0
	married/cohabiting	6	20.0	20.0	100.0
	Total	30	100.0	100.0	

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Frequencies

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Statistics

ethnicity

N	Valid	30
	Missing	0
Mode		5.00

ethnicity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	African Canadian	7	23.3	23.3	23.3
	Caucasian	5	16.7	16.7	40.0
	Asian	13	43.3	43.3	83.3
	Other	5	16.7	16.7	100.0
	Total	30	100.0	100.0	

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Frequencies

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Statistics

Highest level of education achieved prior to entering the nursing program

N	Valid	30
	Missing	0
Mode		2.00

Highest level of education achieved prior to entering the nursing program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	high school	26	86.7	86.7	86.7
	college diploma	1	3.3	3.3	90.0
	Bachelor's degree	3	10.0	10.0	100.0
	Total	30	100.0	100.0	

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Frequencies

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Statistics

Previous health care experience

N	Valid	30
	Missing	0
Mode		.00

Previous health care experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	20	66.7	66.7	66.7
	Yes	10	33.3	33.3	100.0
	Total	30	100.0	100.0	

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***Type of health care experience frequency.
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Frequencies

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Statistics

Type of health care experience

N	Valid	30
	Missing	0
Mode		4.00

Type of health care experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	PSW	4	13.3	13.3	13.3
	Other	6	20.0	20.0	33.3
	Not applicable	20	66.7	66.7	100.0
	Total	30	100.0	100.0	

```
***Previous enrollment in fourth year frequency.
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Frequencies

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```

Statistics

Previous enrollment in fourth year of nursing school

N	Valid	30
	Missing	0
Mode		.00

Previous enrollment in fourth year of nursing school

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	26	86.7	86.7	86.7
	Yes	4	13.3	13.3	100.0
	Total	30	100.0	100.0	

```
***Willingness to participate.
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  /BARCHART PERCENT
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Frequencies

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Statistics

		Nursing students' willingness to participate-available at specific times	Nursing students' willingness to participate-interest in topic	Nursing students' willingness to participate-ease of comprehension	Nursing students' willingness to participate-length of time to complete	Nursing students' willingness to participate-option for online
N	Valid	30	30	30	30	30
	Missing	0	0	0	0	0
Mode		.00	1.00	.00	.00	1.00

Frequency Table

Nursing students' willingness to participate-available at specific times

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	25	83.3	83.3	83.3
	Yes	5	16.7	16.7	100.0
	Total	30	100.0	100.0	

Nursing students' willingness to participate-interest in topic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	9	30.0	30.0	30.0
	Yes	21	70.0	70.0	100.0
	Total	30	100.0	100.0	

Nursing students' willingness to participate-ease of comprehension

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	24	80.0	80.0	80.0
	Yes	6	20.0	20.0	100.0
	Total	30	100.0	100.0	

Nursing students' willingness to participate-length of time to complete

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	23	76.7	76.7	76.7
	Yes	7	23.3	23.3	100.0
	Total	30	100.0	100.0	

Nursing students' willingness to participate-option for online

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	14	46.7	46.7	46.7
	Yes	16	53.3	53.3	100.0
	Total	30	100.0	100.0	

Scale: Belong

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.862	.885	33

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
115.7667	164.185	12.81347	33

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***Cronbach for nurses reporting.
RELIABILITY
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r nunegerr nuexpunre
    nureprerr nuadvcons nuresponerr nublaerr nunopos nuqualerr nusysterr
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  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
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Reliability

```
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```

Scale: Nurses reporting

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.846	.843	16

```
***Cronbach's for self reporting.
RELIABILITY
  /VARIABLES=stagrerr stnoterr stincerr stphyerr stdeferr stimperr stincomper
r stnegerr stexpunre
    streprerr stadvcons stresponerr stblaerr stnopos stqualerr stsysterr
  /SCALE('self-reporting') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
```

Reliability

```
[DataSet1] \\Client\F$\Database.sav
```

Scale: self-reporting

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.845	.840	16

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