A Comparison Between Unit-Based Education and Centralized Education Among Staff Nurses

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Abstract

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Educating staff nurses is pivotal in the evolving healthcare environment. Two staff development models used in the healthcare setting are unit-based and centralized. Unit-based education is a staff development model that places educators on individual units. These educators direct the educational development of staff nurses on their assigned units. Centralized education meets generalized learning needs and provides nursing departments with scheduled education sessions or impromptu meetings regarding changes to policies and procedures. In addition, centralized educators are assigned to address the learning needs of the nurses on several units with universal orientation (Cummings & McCaskey, 1992), coordinate and implement intravenous and blood transfusion therapy courses, physical assessment courses, professional update programs, and universal workshops and conferences (Cummings & McCaskey, 1992). In contrast, unit-based educators are more familiar with the unit's practices and staff nurses while providing more individualized staff education than the centralized model.

This research was conducted to explore the association between the type of staff development model and staff nurses' evaluations of their clinical educators, their anxiety, and their clinical reasoning. The researcher used a quantitative descriptive comparative, cross-sectional, intact group design. The sample included staff nurses (N = 86) from a tertiary care medical center in New York City. The staff nurses were from two units with a unit-based educator and two units with a centralized educator. Data were collected from the first week of September 2022 to the first week of December 2022. Two reports are described below

that are based on this research, which included administering four different scales. Not all respondents completed all four scales.

The first report concerns the findings on two instruments that measured the staff nurses' evaluation of clinical educators. The Clinical Educator Evaluation Questionnaire (CEEQ), developed for this study, measured nurses' perceptions of the extent to which their staff educators' methods were consistent with Malcolm Knowles's *Adult Learning Theory.* The Nursing Clinical Teacher Effectiveness Inventory (NCTEI) measured staff nurses' perceptions of their current staff educators as clinical educators. An exploratory factor analysis was conducted on the CEEQ questionnaire developed by the researcher, a Pearson's correlation analysis between the two surveys, the CEEQ and the NCTEI, and a Chi-square analysis and independent *t* test was conducted to compare demographic variable among the unit-based and centralized education groups was also conducted. In addition, differences between group responses for independent sample comparisons were examined using *t* tests.

There were significant differences between the groups, $t(100) = 3.31$, $p = .001$, on the CEEQ. The 59 participants in the unit-based group scored higher ($M = 119.76$, $SD = 19.62$) than the 43 participants in the centralized group ($M = 106.86$, $SD = 19.17$) on perceptions of their instructors' methods as consistent with the adult learning theory. The groups also differed on the perceived effectiveness of their nurse educators as clinical instructors, $t(94) = 2.66$, $p = .009$, on the NCTEI. The 55 participants who represented the unit-based group ($M = 250.5$, $SD = 70.34$) had higher means than the 41 participants in the centralized group ($M = 212.8$, $SD = 66.14$).

The second report concerns staff nurses' anxiety during staff education as measured using the State Anxiety Inventory (SAI) and staff nurses' self-report of their clinical reasoning as

measured by the Nurses Clinical Reasoning Scale (NCRS). Differences between the group responses for independent sample comparisons were examined using *t* tests. The anxiety of the 48 participants in the unit-based group (M = 35.7, SD = 11.47) was compared to the anxiety of the 38 participants in the centralized group (M = 37.2, SD = 11.35). No statistically significant differences were found, $t(84) = -.633$, $p = .528$. Similarly, there was no significant difference between the groups on the NCRS, $t(85) = -.188$, $p = .852$. The 48 participants who represented the unit-based group (M = 59.1, SD = 6.61) did not differ from the 39 participants in the control group (M = 59.3 SD = 6.80) on clinical reasoning. Findings showed that the staff nurses evaluated the unit-based educators more highly but that the two models did not differ regarding their effects on anxiety and clinical reasoning.

This is the first study to examine staff nurses' evaluations of their clinical educators. Findings indicate that staff nurses reported more effectiveness for unit-based educators than centralized educators regarding practices that aligned with Malcolm Knowles's *Adult Learning Theory.* In addition, this is also the first research study to examine the relationships of staff development models to anxiety and clinical reasoning during staff education. Although the two models did not differ on their effect on anxiety and clinical reasoning, additional research is recommended to explore other variables that may further justify the investment in unit-based education.

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Acknowledgments

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Dedication

I dedicate this dissertation to my mother, Dorine Campbell, whose unrelenting love and support have allowed me to reach my end goal. The debilitating disease "Alzheimer's" has cheated her from witnessing this milestone. Still, I know she is proud of me.

Chapter 1

The coronavirus disease 2019 (Covid-19) pandemic has transformed healthcare globally, created challenges for healthcare professionals, and solidified the need for continual staff development (Zuo & Miller, 2021). Staff development is paramount in nursing because of the changes in healthcare needs, such as the acuity of managing illnesses, patient status changes, and other mandatory nursing responsibilities (Sheriff & Banks, 2001). As long ago as 2001, the Institute of Medicine considered it necessary to prepare healthcare professionals for the complex healthcare delivery systems of the 21st century (Witter, 2012). As a result, many strategies have been proposed to promote good patient outcomes (Coto et al., 2020), stress and anxiety reduction among staff nurses (Lary & Mardani-Hamlooleh, 2019), and increased nurses' clinical reasoning skills (Wu, 2016).

Since 1992, three staff development models have been used in healthcare: centralized, decentralized, and unit-based education (Sheriff & Banks, 2001). Unit-based education offers personal, educational programs tailored to individual nurses' needs rather than wide-ranging education programs (Topley, 2009). In addition, unit-based educators are competent nurses assigned to meet bedside staff nurses' educational and clinical needs, have years of experience, are highly proficient in nursing practice, and endorse professional growth among nurses (Lockhart, 2004; Lockhart & Bryce, 1996).

In contrast, centralized education meets generalized learning needs and gives nursing departments a universal orientation (Cummings & McCaskey, 1992). An example of a centralized staff development model is the Montefiore Learning Network at Montefiore Health System in New York City.

Specific Aim

The study aimed to explore the association between the type of staff development model and staff nurses' evaluations of their clinical educators, anxiety, and clinical reasoning. The following research questions were addressed:

Research Questions

1. Are nurses who practice in unit-based education environments more likely to report that their instructors' methods are consistent with the six assumptions of Malcolm Knowles's *Adult Learning Theory* than nurses who practice in centralized education environments?
2. Are nurses who practice in unit-based environments more likely to report that their instructors are better clinical teachers than nurses who practice in centralized education environments?
3. Will staff nurses exposed to unit-based education have lower state anxiety levels during staff education than staff nurses on units with centralized education?
4. Will staff nurses exposed to unit-based education have enhanced clinical reasoning compared to staff nurses on units with centralized education?

Changes in Methods

Since the proposal hearing, alterations have been made due to Covid-19, the delay in Institutional Review Board (IRB) approval, and the departure of staff nurses from the proposed units. The original population of staff nurses was approximately 400 when the researcher did the initial investigation on the four preselected inpatient units. The current count is 198, which resulted from a mass exodus of staff nurses due to illness, travel assignments, retirement, new job opportunities, and nurses with less than 3 months of experience, an exclusion criterion.

The Institutional Review Board (IRB) application at the research site (Montefiore Medical Center) was submitted on 4/22/22, and approval was sent on 8/5/22. Data collection was initially predicted to last 6 weeks; however, due to the delay of the IRB approval and the unexpected reluctance of staff nurses to participate in the study, data collection took 3 months. In addition, staff nurses reported that the acuity of the patients due to Covid-19 prevented them from completing the survey promptly.

Concerning data analysis, the researcher conducted an exploratory factor analysis on the Clinical Educator Evaluation Questionnaire (CEEQ) (created by the researcher), a Pearson correlation between the results of the Clinical Educator Evaluation Questionnaire (CEEQ) and The Nursing Clinical Teacher Effectiveness Inventory (NCTEI) instruments, a Chi-square analysis and independent *t* teste were also conducted to compare the unit-based and centralized education groups on demographic variables. However, none of these analyses was mentioned in the proposal.

Lastly, there will be four chapters instead of five because the researcher decided to combine Chapters 3 and 4 due to similarities in the methods and results.

Organization of the Dissertation

In Chapters 2 and 3, the researcher explores the relationship between two staff development models (unit-based and centralized) and staff nurses' evaluation of their clinical educator, anxiety, and clinical reasoning. Finally, Chapter 4 summarizes all the methods and findings in the dissertation and the implications.

Dissemination Plan

Chapter 2 titled, **Influence of staff development model on staff nurses' evaluation of their clinical nurse educators,** will be submitted as a feature article to *The American Journal of*

Nursing (AJN). The AJN is the oldest and most esteemed nursing journal globally. It welcomes submissions such as evidence-based clinical application papers, original research, QI reports, and manuscripts on various clinical and professional topics.

Chapter 3 titled, **The effect of staff education on staff nurses' anxiety levels and clinical reasoning,** will be submitted as a feature article to *Nurse Education Today* which is a prominent international journal known for publishing high-quality original research, review and debates regarding inter-professional healthcare education and papers that contribute to evidence-based practice for educationalists worldwide.

The abstract will be submitted to the **12th Annual Nursing Research Symposium** at Montefiore Medical Center. This annual symposium allows nurses and other healthcare professionals to share their research, evidence-based practice, and quality improvement findings and experiences.

The abstract will also be submitted to the Sigma International Nursing Research Congress in 2024. Sigma is an international community of nurses dedicated to advancing knowledge, teaching, learning, and service by cultivating practice, education, and research communities. https://www.sigmanursing.org/why-sigma/about-sigma

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Chapter 2

Influence of Staff Development Models on Staff Nurses' Evaluation of their Clinical Nurse Educators

In the 1920s, organized orientation classes for nurses began, and senior nurses were responsible for orienting new nurses (Leslie & Churilla, 1998). Education sessions were provided for nurses in service, an activity that came to be called "in-service education" (Kelly, 1992). Most nursing programs were hospital-based diploma programs, and the educated nurses remained in the institution's employment after graduation. Because these nurses were familiar with the hospital routines, they transitioned into practice effortlessly (Leslie & Churilla, 1998). After the closing of hospital-based diploma programs, there was an enhanced demand for in-service education on hospital-specific routines and policies (Donley, 1994). During the 1960s, the nursing profession continued to grow, and the complexities of nursing increased significantly, requiring additional in-service education; hence, centralized staff development departments were established to meet nurses' education needs. The American Nurses Association (ANA) published Guidelines for Staff Development in 1976, which gave direction and guidance to nurse educators responsible for staff development. In 1978, the Joint Commission on Accreditation of Hospitals (JCAH) required hospitals to establish a designated staff position for coordinating and overseeing staff development activities (Kelly, 1992). In the 1980s, the role of nursing staff development was well-defined, and the National Nursing Staff Development Organization (NNSDO) was formed. The NNSDO provides nurses with the opportunity to network and share ideas. In addition, during this time, the *Journal of Nursing Staff Development* was used to share this knowledge (Kelly, 1992).

Customarily, in a healthcare setting, staff development departments of nursing are either

decentralized or centralized (Cummings & McCaskey 1992). Staff development programs include measures to promote employee empowerment and competency to undertake their tasks more effectively, thus helping the organization achieve its goals. Because of the increasingly complex healthcare system and the prolonged life expectancies for patients with chronic illnesses, organizational change efforts have become a catalyst to decisively examine hospital education and development departments' structures (Sheriff & Banks, 2001). No one solution suits all organizations, so nurse leaders must create systems that fit the unique needs of their organization and staff. Since 1992, three staff development models have been used in healthcare settings: centralized, decentralized, and unit-based education.

Literature Review

A literature review investigated research conducted on staff development models, unit-based and centralized education, and their effect on staff nurses in the inpatient setting while identifying gaps and needs for future research. This review's focus was broad, addressing various strategies to educate staff nurses from diverse environments and specialties. A search of CINAHL, PubMed, and MEDLINE databases was conducted. A comprehensive search strategy was conducted using CINAHL and PubMed when the previous search yielded minimal results on the two staff development models. The search with a timeline from 1970-2022 identified studies that implemented an educational program and measured various outcome variables related to staff nurses and nursing students or measured the effect of mentoring and precepting on novice nurses and nursing students. Examples of search terms used were “unit-based,” “unit-based education and staff nurses,” “centralized education and staff nurses,” “staff development and unit-based,” “educating staff nurses,” “staff development and nursing,” and “centralized education,” to name a few. A rigorous search of the literature revealed that , many studies were

published decades ago and few were published within the three to five years of 2022. This finding solidified the need to investigate the two staff development models and their effect on staff nurses.

Centralized Staff Development

The American Nurses Association (1978) defined centralized staff development as an organizational approach in which a central nursing administrative authority is vested with the significant responsibility of meeting the learning needs of the nursing staff. All clinical educators report to this authority in this model even though they are assigned to different clinical areas. This structure delivers consistent content and teaching methods (del Bueno, 1976). In addition, centralized education meets generalized learning needs and provides nursing departments with a universal orientation (Cummings & McCaskey, 1992). Functions of centralized educators include conducting general nursing orientation and coordinating and implementing intravenous and blood transfusion therapy courses, physical assessment courses, mandatory reviews, professional update programs, and universal workshops and conferences (Cummings & McCaskey, 1992). An example of a centralized staff development model is the Montefiore Learning Network at Montefiore Health System in New York City.

Advantages and Disadvantages of Centralized Staff Development

The advantage of having a centralized education department is maintaining control of all department functions, even though this concept may inhibit the creativity of the educators (Cummings & McCaskey, 1992). Inhibiting creativity or reducing the educator's independence can be problematic and result in dissatisfied educators. Even though lines of authority are clearly defined in a centralized education environment, there may be conflicts among educators regarding who is responsible for learning needs that may fall into general educational and

organizational goals (Cummings & McCaskey, 1992). When the education department focuses on centralized classes, such as new employee orientation, CPR training, continuing education seminars, and core classes covering nursing principles and healthcare techniques, it is easy for the educators from the centralized units to lose contact with educators from the decentralized department regarding assigned functions. This can lead to pointless replication of services with different education departments researching and developing the same class while the education department prepares a seminar on that subject (Haggard, 1984).

Decentralized Staff Development

Decentralized staff development is an organizational methodology in which nursing leadership personnel in assigned clinical areas are responsible for meeting the learning needs of the nursing staff within their areas (American Nurses Association, 1978: Haggard, 1984). The functions of the decentralized educators are addressing specialized learning needs, providing follow-up orientation on the units, participating in general education, and coordinating specialty orientation for their designated clinical units (Cummings & McCaskey, 1992). The decentralized educators report directly to the nursing administrator of their clinical area and have no formal relationship with the centralized educators and their administrators (Cummings & McCaskey, 1992). Decentralization should be a constructive, growth-producing experience, and for the model to be effective, constant evaluation of the system and its outcomes is necessary.

Advantages and Disadvantages of Decentralized Staff Development

Some benefits of decentralized staff development include the immediate recognition of education needs at the local level, educational flexibility, an opportunity for the educator to develop and maintain specialized expertise, and support for innovation and creativity (del Bueno,

1976). On the other hand, the disadvantages include the lack of unified educational policies and procedures, which can cause confusion among hospital staff, diminished communication among educators, loss of support for the educator from the organization, and the likelihood of fragmentation and polarization (del Bueno, 1976).

Unit-Based Education

Unit-based education, a form of decentralized staff development, is a sustainable alternative to the centralized staff development of the 1980s. The ANA (1994) validated this approach by stating that professional nurses must take responsibility for their professional development (Leslie & Churilla, 1998). The partnership of the clinical nurse manager and clinical nurse educator operationalizes unit-based education. Healthcare has evolved to be technology-driven and specialized. A unit-based educator can assist nurses with their patients by supporting them through education to provide safe patient care on their inpatient units (Topley, 2009). Unit-based educators offer personal educational programs tailored to individual nurses' needs rather than wide-ranging education programs (Topley, 2009). They aim to meet the nursing staff's continuing educational needs and encourage professional growth and development (Leslie & Churilla, 1998). The responsibilities associated with assuming a unit-based educator's role differ among healthcare organizations (Lockhart, 2006). For example, a designated nurse or a group of nurses on an inpatient unit may assume staff education activities in some healthcare institutions. Regardless of the method, it is essential to understand that the unit-based educator's primary role may include determining the staff's learning needs, coordinating and developing an overall education plan, implementing it, and evaluating its effectiveness (Lockhart, 2006).

Monforto et al., (2020) aimed to use a quality improvement project to regulate core

content applicable to all critical care areas. The authors found that the National Academies of Sciences, Engineering, and Medicine endorsed the need for new and experienced nurses to master the complexities of care and advanced technology so they will be able to contribute decisively on teams, understand health policy, analyze information to make critical decisions and support the well-being of everyone. To achieve this goal, nurse educators can actively engage new-to-practice nurses and experienced nurses in orientation programs designed to transfer knowledge and skills needed to provide bedside care to patients (Monforto et al., 2020). The authors also mentioned that unit leadership perceived unit-based education as the desired method to help newly hired nurses become skilled clinicians, enabling them to learn the skills and culture of the unit where they worked.

Unit-based education is important for nurses working night shifts and weekends. For example, Sievers et al, (2012) recognized the need for accurate assessment of patients' skin upon admission and developed a program of skin group members. At this institution, the role of the unit-based clinical nurse specialist (CNS) included assisting staff nurses in identifying wounds and developing care plans for treating pressure ulcers and skin tears. These unit-based CNSs worked Monday through Friday during business hours only, and because of this standard, some patients were not being seen promptly. However, results indicated that with the assistance of the skin group members, the unit-based educator CNS, and the tools developed by the skin group, nursing staff could get skin and wound care questions answered regardless of the day or shift. In this study, the CNS functioned as a unit-based educator and directed the skin group members to provide education regarding pressure ulcer prevention and care on the weekends. This example illustrates the value of having a dedicated educator for the inpatient unit.

A pilot study by Disher et al. (2014) examined the effects of a unit-based, high-fidelity simulation initiative where nurses were assessed on identifying and managing deteriorating patients. The authors recognized that nurses must be trained effectively to identify and respond appropriately, contributing to positive patient outcomes. Results indicated that knowledge scores improved significantly after education compared with before education. In addition, the authors embraced the use of unit-based, high-fidelity simulation as a valuable teaching method for staff nurses at the bedside.

Unit-based education and decentralized staff development have slight differences. The concept of decentralization is the process of "flattening out" the hierarchy so that one layer of management (supervisor) is removed. The head nurse in each department assumes 24-hour responsibility for every facet of unit operation (Haggard, 1984). Decentralization also provides individual practitioners additional autonomy and empowers each unit to set its practice. Unit-based education, however, focuses on the learning needs of staff nurses at the unit level. An educator is assigned to that unit as the source of information, mentorship, and support. Thus, unit-based educators are competent nurses assigned to meet bedside staff nurses' educational and clinical needs. The unit-based educators' existence in inpatient units allows them to capitalize on spontaneous teachable moments (Roshotte & Thomas, 2002) and promotes a safety culture for patients and staff (Foisy, 2012). In addition, unit-based educators have years of experience, are highly proficient in nursing practice, and endorse professional growth among nurses (Lockhart, 2004; Lockhart & Bryce, 1996).

Advantages and Disadvantages of Unit-based Education

Unit-based education is an essential concept that aids in the educational development of staff nurses at the unit level. As with most educational approaches, there are advantages and

disadvantages. One advantage of unit-based education is that it provides one-on-one sessions with a nurse educator. Nurses can ask questions in these smaller in-service groups and receive timely feedback. Another advantage is the nurse educator's accessibility to staff nurses' especially when patients' urgent care is in play. In addition, unit-based educators have some autonomy, taking the lead in planning unit-based skills fairs and developing orientation folders for their specific units (Siehoff, 2003). Disadvantages of unit-based education may be that educators don't always have timely access to new clinical information, and there is confusion and disagreement over which educators are responsible for meeting identified learning needs. In addition, they can become overwhelmed when there is an influx of new staff on the unit. Siehoff (2003) also reported that challenges unit-based educators experience includes identifying learning needs, motivating staff to attend educational offerings, improving presentation skills, and lacking advanced warning about policy and procedural changes.

Theoretical Framework

The theoretical framework used to guide this study on unit-based education is Malcolm Knowles's *Adult Learning Theory* (1980). Knowles's *Adult Learning Theory* is practical and easy to apply when designing continuing education activities for staff nurses (Textor & Porock, 2006). Knowles has explored and written on adult learning principles and described andragogy as the art and science of facilitating learning in adults. Andragogy is derived from the Greek word "man," which Knowles used in contrast to "pedagogy," helping children learn. Adult Learning Theory expands on the concept of the needs of the learner. It focuses on self-directed learning involving adults being in charge of their learning (Mitchell, 2005). Knowles's *Adult Learning Theory* in staff education enables the development of competencies, knowledge, and abilities and supports personnel to do the work required and accomplish the

organization's meaningful goals (Knowles, Holton, & Swanson, 2020). Knowles (1980) developed six assumptions that support the concept that adults learn best when they (1) know the reason they should learn something; (2) are self-directed; (3) can use what they have learned; (4) are motivated; (5) can draw from experience; and (6) use a task, problem, or life-centered approach.

The Knowles *Adult Learning Theory* supports unit-based education because staff nurses are significant stakeholders in building and sustaining education programs. Adults learn best when they feel their needs are heard and addressed (Holmes, 1989). Therefore, assessing and analyzing their needs prepares them for their required tasks and helps identify knowledge and skill gaps. These actions provide an essential framework for the strategic provision of suitable educational interventions (Knowles, 1980; O'Shea & Spike, 2005). Therefore, Knowles's *Adult Learning Theory* is appropriate to guide unit-based education. According to the theory, the learning environment should include acceptance, respect, support, and mutual learning that permits personal autonomy (Textor and Porock, 2006). A unit-based education model is consistent with these concepts. Also, the theory requires educational techniques that emphasize the practical application of the information and actively engage the learners in the learning process. However, with a centralized staff development model, the education of staff nurses occurs on a broader scale. In centralized staff development, nurse educators control the learning environment and dissemination of content with minimal input from staff nurses. Even though centralized education does not preclude active learning, its structure does inhibit staff nurses from interacting with the centralized educator more frequently to practice a skill or engage in simulations.

Purpose

The purpose of this study was to compare the perceptions of nurses who work on hospital units that used unit-based or centralized staff development models with respect to their evaluations of their clinical educators.

Method

Design

A descriptive comparative, cross-sectional, intact group design was used. The following research questions were addressed:

Research Question 1:

Are nurses who practice in unit-based education environments more likely to report that their instructors' methods are consistent with Malcolm Knowles's *Adult Learning Theory* six assumptions than nurses who practice in centralized education environments?

Research Question 2:

Are nurses who practice in unit-based education environments more likely to report that their instructors are better clinical teachers than nurses who practice in centralized education environments?

Study Participants

Convenience sampling was used to recruit staff nurses from preselected units from a tertiary care medical center, Montefiore Medical Center Moses and Weiler Campuses, and the Children's Hospital at Montefiore (CHAM) in the Bronx, New York. The nurses were recruited from a target sample of 198 staff nurses from two adult

medical-surgical units, one pediatric medical-surgical unit, and one adult emergency department (E.D.). The unit-based units were the emergency room at the Weiler campus and a pediatric unit at the CHAM) campus. Both centralized units were from the Moses campus.

The inclusion criteria for this study were (1) registered nurses who worked full and part-time, day and night shifts, (2) who had more than 3 months of experience, (3) who worked in preselected medical-surgical or emergency departments, and (4) who have been exposed to either centralized or unit-based education.

The exclusion criteria for this study were personnel who were not registered nurses and nurses who worked per-diem, in the float pool, or from an agency. Also excluded were nurses who worked in other settings that were not medical-surgical or emergency departments and nurses on disability or leaves of absence.

Power analyses by G-Power 3.1 based on a *t* test between independent groups with a medium effect size of .50, power of .85, and a two-tailed probability of .05 resulted in a sample size of 146. The researcher targeted a sample of 150 study participants. There were two groups in the study representing four different units. Two units exposed to unit-based educators, and two units exposed to the Learning Network (centralized) clinical educators.

Human Subjects Protection

Before data collection was initiated, preliminary approval was received from the hospital's Director of Research and Evidence-Based Practice (see Appendix A). Next, Institutional Review Board (IRB) approval was granted from Teachers College and Montefiore Medical Center. Once IRB approval was given, the data collection process was initiated. Finally, written informed consent (see Appendix B) was obtained from each participant before

they proceeded to answer the study survey.

Study Setting

The study was conducted on four units in Montefiore Medical Center, a prominent academic and teaching hospital in the Bronx, New York. The units were the emergency department at the Weiler campus, two adult medical-surgical units at the Moses campus, and one pediatric medical-surgical unit at The Children's Hospital at Montefiore (CHAM) located on the Moses campus. Staff development is handled by clinical educators who are either unit-based or from the Learning Network, which represents centralized education.

Instruments

A demographic questionnaire, the Clinical Educator Evaluation Questionnaire (CEEQ), and the Nursing Clinical Teacher Effectiveness Inventory (NCTEI) comprised the instruments for the study.

Demographic Questionnaire

The demographic questionnaire (see Appendix C) assessed age, gender, race/ethnicity, education level, years as a nurse, years at Montefiore Medical Center, years in the unit they are currently working on, shift worked, area of practice, interaction with a clinical educator, and whether they perceived that a unit-based clinical educator or an educator from the Learning Network serves their unit.

Clinical Educator Evaluation Questionnaire (CEEQ)

The Clinical Educator Evaluation Questionnaire (CEEQ) (see Appendix D) measured nurses' perceptions of the extent to which their clinical educators' methods were consistent with Malcolm Knowles's *Adult Learning Theory.* The researcher developed this instrument after an extensive search of the literature, which revealed no instrument

measuring nurses' perception of their clinical educators based on Malcolm Knowles's *Adult Learning Theory*. Initially, 54 items were created, some based on Conti's (2004) Principles of Adult Learning Scale concepts. Other items were based on Zinn's (2004) Philosophy of Adult Education Inventory (PAEI).

Conti and Zinn's scales were not used in this current study because, first, the Principles of Adult Learning Scale identified actions that teachers of adults might do in a classroom. The Philosophy of Adult Education Inventory (PAEI) was developed to assist adult educators in identifying their philosophy of education and comparing it with other disciplines in the field of adult education. Therefore, both scales were designed for educators, not for people evaluating educators. However, the scales provided useful concepts for constructing a scale for evaluating educators.

Content validity was attained with the help of two experts in adult learning from a graduate school of education who rated how well the items represent Knowles's assumptions. The experts agreed on 42 items; 33 were chosen, including two revised ones for the final questionnaire. The final version of the survey consisted of 33 items, each describing a clinical educator's behavior. Each item was written to represent one of Knowles's *Adult Learning Theory* assumptions. For example, "The clinical educator promotes independence regarding your learning," represents Knowles's assumptions that "adults are self-directed." The item "Your clinical educator stimulates your interest in the topic being presented," represents Knowles's assumption that "adults are motivated to learn."

The researcher also created five reverse-scored items to identify acquiescence bias by the participants. Participants were asked to rate their clinical educators on a 5-point

Likert-type scale (1 = *strongly disagree* to 5 = *strongly agree*). The Cronbach's alpha for the CEEQ was .97, which included the reverse-coded items.

Nursing Clinical Teacher Effectiveness Inventory (NCTEI)

The Nursing Clinical Teacher Effectiveness Inventory (NCTEI) (see Appendix E), developed by Knox and Morgan (1985), measured staff nurses' perceptions of their current clinical educator. The Nursing Clinical Teacher Effectiveness Inventory (NCTEI) was designed to determine the degree to which respondents felt that clinical nursing faculty demonstrated effective teaching characteristics (Knox & Morgan, 1985).

The NCTEI contains 47 items with higher scores indicating more perceived effectiveness of the clinical educator. There are no reverse-scored questions. The total score is the sum of all item scores. Participants were asked to rate each item on a 7-point Likert-type scale (1 = *not descriptive* to 7 = *very descriptive*) according to its perceived importance. The items, divided into five categories, evolved from a former study assessing students' perceptions of clinical teacher effectiveness (Knox & Morgan, 1985) and an extensive literature review.

The instrument was tested for internal consistency reliability and test-retest reliability. Internal consistency reliability estimates were established for each of the five categories of teacher characteristics with reliability coefficients, $\alpha = .89$ for Teaching, $\alpha = .84$ for Nursing Competence, $\alpha = .82$ for Evaluation, $\alpha = .86$ for Interpersonal Relationship, and $\alpha = .83$ for Personality. Morgan and Knox (1987) stated that the validity of this instrument was difficult to assess because of the lack of a clear definition of effective teaching and an even more imprecise concept regarding effective clinical teaching. Therefore, they used two methods to measure content validity. First, corresponding traits were found in the literature regarding each teacher's behavior described by students. Second, the importance of items was determined by

all groups generally involved in teacher evaluation: students, peers, and graduates. The entire faculty, students, and graduates highly rated all items.

For this study, the instrument's instructions were modified, requesting staff nurses to evaluate their current clinical educator's behaviors rather than rating the best and worst clinical educator they had in nursing school. Cronbach's alpha for this study was.98.

The Digital Repository Librarian from the University of British Columbia granted permission (See Appendix I) to use the NCTEI. This instrument is a licensed Attribution-Noncommercial-Share Alike 3.0 Unported (CC BY-NC-SA 3.0), which can be shared and adapted if attribution to the original is provided.

Procedure

Data were collected by a self-administered questionnaire. Data collection (was conducted from the first week of September 2022 to the first week of December 2022, and participants were asked to dedicate about 30 minutes to complete the survey through Qualtrics. Prospective participants were recruited through Outlook Web Access, the organization's email management system, flyers, and unit huddles. In addition, the researcher visited each unit weekly to remind the staff nurses to fill out the survey and answer any questions. The email (see Appendix E) described the study, its purpose, and the consent (see Appendix B). Participants were informed that they had the right not to participate in the research and there would be minimal risk in participating. In the consent form, participants were informed that the study did not benefit the participants involved; however, subsequent staff nurses and the nursing profession may benefit from the findings.

Participants were told at the beginning of the survey that they could enter a lottery to win a $50, $100, or $150 Amazon gift card after completing the survey, and the winners would be

notified via email. At the end of the survey, participants were directed to a link to a different survey where they would enter their email addresses if they were interested in the lottery. The email addresses were not connected to the participants' answers and were destroyed after all winners were selected.

At the end of data collection, the lottery winners were selected using the randomization technique in Excel. Next, the researcher emailed the winners and requested a response to the initial email for further identification. Once the nurses responded to the researcher, instructions were sent with codes to access the Amazon gift cards.

Data analyses

The researcher utilized SPSS (version 29) statistical software to analyze the collected data. A total of 118 participants began the survey, and 86 nurses completed the survey. Descriptive statistics were used to summarize sample characteristics and scores on the measures of staff nurses' evaluations of their clinical educators. Frequencies and percentages were used to summarize nominal data; means and standard deviations were used to summarize continuous data. Differences between the group responses for independent sample comparisons were examined using *t* tests. Chi-square analyses were conducted to compare the groups on categorical variables. In addition, a factor analysis was conducted on the CEEQ questionnaire developed by the researcher, and Pearson's correlation analysis between the results of the two surveys, the CEEQ and the NCTEI, was also conducted.

Results

Description of the Sample

There were two groups in the study representing four different units. Group 1 represented nurses from two units exposed to unit-based educators, a pediatric and emergency

room unit, and Group 2 represented nurses from two medical-surgical units exposed to centralized educators. There were 198 nurses on the four units. Of the 198 staff nurses to whom recruitment emails were sent, 137 logged on to the survey site, yielding a response rate of 69%. Of 137 who logged on to the site, 118 (86.1%) responded to at least some items on the survey, while 19 (16%) nurses logged on to the site and did not continue. Out of the 118 nurses who started the survey, 86 completed the entire survey for a completion rate of 73%. Group 1, which included nurses from the two units exposed to unit-based educators, had 48 completed and 22 incomplete surveys. Group 2, which included nurses from the two units exposed to centralized educators, had 38 completed and ten incomplete surveys. However, the sample response for each scale differed due to missing data from participants who started the survey and stopped along the way (see Table 2.1). The power analyses for the new sample size were calculated using G-Power 3.1 with a resulting power of .62 for a .50 medium effect size and alpha .05 with groups $n = 38$ and $n = 48$.

The majority of respondents (see Table 2.2) (83.05%) were female, a majority (60.54%) were in the age range of 23—36, and 39% were in the age range of 37 or older. In addition, most nurses (42.4%) had been employed at Montefiore Medical Center for 5 to 10 years, and 23% for 10-plus years. Regarding education level, 71.2% were baccalaureate prepared, 20.3% master prepared, and 3% were doctorally prepared. Nurses from Group 1 represented 59.32% of the sample, and Group 2 comprised 40.68%. Most nurses worked-the day shift (61.86%). Forty percent of the nurses interacted with their clinical educator from about once to several times a week. Interactions several times monthly were reported by about 27%, and several times yearly were reported by 18%.

Nurses were asked to report if their clinical educator was either unit-based or

centralized (from the Learning Network). The researcher found that 10 out of the 77 nurses from units with a unit-based educator incorrectly reported that they were from units with a centralized educator. Two nurses from the units with a centralized educator incorrectly reported that they were from units with a unit-based educator. Fifteen nurses who stated they were unsure what type of educator served their units were from units with centralized educators. Lastly, 77 staff nurses from units with a unit-based educator and 41 from units with a centralized educator participated in the study to some degree.

Comparison of Groups on Demographic Variables

Chi-square analyses showed no significant differences between groups on gender, ethnicity, shift worked, and level of education (see Table 2.3). However, Chi-square analyses showed significant differences on how often staff nurses interacted with their clinical educator, how often in-service was offered by the clinical educator, area of practice, the specific unit the staff nurses worked on, and the type of clinical educator on the unit. Analyses showed that nurses on the unit-based units interacted with their staff educator more often and education sessions were offered more frequently than on centralized units. As expected, staff nurses in the unit-based group were more likely to be emergency room and pediatric nurses and working in the ER and on the pediatric unit while the staff nurses in the centralized groups were medical-surgical staff nurses working on medical-surgical units. In addition, the groups differed on the perception of what type of staff education model was offered with 96% of the unit-based nurses perceiving that they were on a unit-based floor, and 48% of the nurses in the centralized group perceiving they were on a centralized floor (see Table 2.3).

An independent samples *t* test showed that the groups did not differ in age $t(74) = -1.48$, $p = .14$; however, results showed that nurses on the centralized units had worked longer

at Montefiore Medical Center $t(116) = -2.39$, $p = .018$, and had worked longer on their respective units $t(116) = -2.69$, $p = .008$ than nurses in unit-based education settings.

Psychometric Evaluation of the CEEQ

An exploratory factor analysis was conducted on the 33-item in CEEQ. The scree plot indicated that one or two factors were appropriate. Two factors accounted for 60.4% of the variance. A Varimax rotation of the two factors revealed that the first factor comprised 28 items loading at .40 or above. Based on the content of the items this factor was labeled Support (M = 102.38, SD = 2.93). The second factor comprising five reversed-scored items, was labeled Nonsupport because the items represented reverse coded versions of the Support items (M = 18.05, SD = 3.71). A second-factor analysis done with the Promax rotation revealed the same result regarding the number of the items loading on the first factor (28) and the five items loading on the second. The factors were correlated $r = .549$. Therefore, it was decided that the data were better represented by a single factor with a Cronbach's alpha for the 33 items of .95. The items of the scale relate to Knowles's theory because they addressed the six assumptions. For example, one of the items was: "The clinical educator helps solve the clinical problems nurses were having on the unit." This item assumes that adult learners are ready to learn and use a task, problem, or life-centered approach.

Correlation between the CEEQ and NCTEI

Pearson's correlation analysis indicated a strong, positive, and significant correlation between the Clinical Educator Evaluation Questionnaire (CEEQ) and the Nursing Clinical Teacher Effectiveness Inventory (NCTEI) scales, $r = .70$, $p = .001$.

Research Questions

Research Question 1

To address the research question concerning staff nurses' perceptions of whether their clinical educators' methods were consistent with Malcolm Knowle's *Adult Learning Theory*, independent samples *t* tests were used. The 59 participants in the unit-based group (M = 119.76, SD = 19.62) compared to the 43 participants in the centralized group (M = 106.86, SD = 19.17) demonstrated significantly higher scores, $t(100) = 3.31$, $p = .001$, regarding nurses perception on the consistency of their instructors' methods with the adult learning theory.

Research Question 2

Research question 2 asked how effective staff nurses felt their clinical educators were at teaching. The 55 participants who represented the unit-based group (M = 250.5, SD = 70.34) compared to the 41 participants in the centralized group (M = 212.8, SD = 66.14) demonstrated significantly higher scores, $t(94) = 2.66$, $p = .009$, regarding how nurses perceived the effectiveness of their clinical instructors.

Discussion

This comparative study showed significant differences between staff nurses from the two staff development models regarding their perceptions of their clinical educator's teaching effectiveness and the consistency of their instructors' methods with Malcolm Knowles's *Adult Learning Theory*. In addition, the researcher developed CEEQ was significantly related to the NCTEI instrument, indicating support for the concurrent validity of the new measure.

Compared to nurses from units with centralized clinical educators, staff nurses with unit-based educators rated their clinical educators' teaching methods higher (i.e., more consistent with Malcolm Knowles's *Adult Learning Theory* assumptions). These assumptions

hold that adults learn best when they (1) know the reason they should learn something; (2) are self-directed; (3) can use what they have learned; (4) are motivated; (5) can draw from experience; and (6) use a task, problem, or life-centered approach.

However, some nurses from both groups were mistaken about the type of staff development model they had on their unit. The study findings were based on the actual type of staff education model on each unit and not on what the participants thought regarding the type of staff development model on their units. Participants on the centralized units were more confused even though they were assigned to their units and employed at the institution longer than the staff nurses on the unit-based units. These findings indicate that the two staff development models used at the institution where the study was conducted were not salient features to some of the staff nurses who participated in the study.

Knowles (1980) recognized that the role of the instructor was to be more of a facilitator than a traditional teacher. Knowles also implored educators to teach students by involving them in tasks and gaining their insights. For example, nurses on units with a unit-based educator scored higher on the item "the clinical educator promotes independence regarding your learning" and on the item "Your clinical educator identifies your strengths and limitations objectively." These findings are similar to those in a study by Lamont, Brunero, and Woods (2015), who showed that instructors in the clinical area facilitate student nurses to achieve their learning objectives and become active learners.

The researcher used the NCTEI instrument developed by Morgan and Knox (1987) to explore differences and commonalities in the perception of the clinical educators between the staff nurses from the two groups. The mean scores from the NCTEI scale were higher among nurses on the unit-based units on all sub-scale items. Li (1997) found that clinical teaching

behavior is a significant contributing factor to the quality of clinical learning experiences of student nurses. This study's results suggest clinical educators' teaching behaviors are important to staff nurses as well.

Limitations

There were some limitations to this study. The first issue was the study's cross-sectional design. A longitudinal design that follows nurses across time before and after the staff development model is instituted would be more sensitive to differences in the models. Secondly, nurses were not randomly assigned to different staff development models; therefore, selection bias could also have occurred. Another limitation was the difference in the type of units. The acuity of the units that represented unit-based education was higher than that of the units with centralized education. The ER, which was in the unit-based group, serves acutely ill patients who need immediate attention. The pediatric unit, which also was unit-based, serves a mix of acutely ill children and children with less severe conditions. The centralized units, however, were medical-surgical units generally caring for stable patients with chronic illnesses.

A convenience sample of nurses from four specifically selected acute care nursing units was recruited for the study, which could have introduced a sampling bias. In addition, the sample may not represent the general population of acute care nurses. The researcher anticipated a sample size of 150, but the final sample was 86. A post hoc power analysis using the sample size of 86 indicated a power of .62 to detect a significant result. This power was lower than the desired power of .85 because of the departure of staff nurses before and during data collection due to the Covid-19 pandemic. The study’s response rate of 69% might have been improved if a gift card incentive had been provided to all participants rather than offering a lottery. In addition, the participants were given a self-administered questionnaire with 80 questions, which could take

up to 30 minutes, a possible explanation for why 51 staff nurses started but did not complete the survey and were excluded from the analyses. Finally, a limitation of this study was that the CEEQ was researcher-developed. Further research should be carried out on its reliability and validity in measuring staff nurses' evaluation of their clinical educators.

Implications

This study documented the value and importance of unit-based education. In addition, staff nurses rated unit-based educators more highly than educators working in a centralized system. Therefore, studies addressing staff nurses' educational needs in a centralized environment should be explored. In addition, experimental studies comparing unit-based and centralized education models and using a longitudinal multisite design could strengthen results and incorporate different nurses' perspectives. Furthermore, future research could explore whether unit-based education can improve other variables such as patient satisfaction, patient outcomes, length of stay, attrition, and medication errors. Additionally, research should explore the learning needs of staff nurses from different staff development models.

The institution where the study was conducted is a large tertiary hospital in New York City comprising multiple inpatient units. Therefore, having a unit-based educator on each unit could have significant financial implications. This should be investigated to address the cost-benefit analysis of different staff development models.

Conclusions

In conclusion, the results of this study showed that the nurses differed on their evaluations of their clinical educators, with unit-based education perceived as more effective than centralized education. However, the centralized model meets important needs of the organization. A centralized staff development model is essential in this study's healthcare facility

because it conducts onboarding new staff nurses, is involved in policymaking and dissemination, and organizes conferences regarding overarching issues relating to nurses, such as diversity, leadership, and research. In addition, this centralized model offers staff education to nurses on assigned units that do not have a unit-based educator. However, compared to the unit-based education model, this function of the centralized education model limits interaction between clinical educators and staff nurses due to the other responsibilities of the centralized educators.

This research begins to address the gaps in the literature, which contains little research on staff development models. The two staff development models discussed in this study were perceived differently among staff nurses. In addition, staff nurses exposed to the unit-based education model felt more supported by their clinical educators. This suggests that unit-based education is effective in delivering education and supporting staff nurses on the inpatient units.

Finally, this study’s findings indicated that Malcolm Knowles's adult learning theory could guide the development of competencies, knowledge, and abilities necessary to improve staff nurses' practices (Knowles, Holton, & Swanson, 2020).

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Table 2. 1

Clinical Educator Evaluation Questionnaire and The Nursing Clinical Teacher Effectiveness Inventory Sample Response Explained

Scale	***M***	***SD***	**Min**	**Max**	**Alpha**	**N**	**Missing**
CEEQ	120.44	23.96	33	165	.95	102	16
NCTEI	242.39	65.06	47	329	.98	96	22

Table 2.2

Demographics Characteristics of Staff Nurses Sample

Baseline Characteristics	***N***	***%***	***M***	***SD***	**Missing Data %**
Age	76		35.46	10.63	(35.5)
Gender					(13.9)
Female	98	71.5			
Male	17	12.4			
Nonbinary	1	0.7			
Prefer not to say	2	1.5			
Have you been an RN for more than 3 months?					
Yes	118	100			

Baseline Characteristics	N	%	M	SD	Missing Data %
Ethnicity					
Asian	24	17.5			
Black or African American	24	17.5			
Hispanic or Latino/a/x or Spanish origin, including Cuban or Puerto Rican	21	15.3			
Native Hawaiian or Pacific Islander	2	1.46			
White	27	19.7			
Other	20	28.5			
How long have you been employed at Montefiore Medical Center?			8.31	10.3	(13.9%)
Less than 1 year	23	16.8			
2 to 5 years	18	13.1			
6 to 10 years	50	36.5			

Baseline Characteristics	N	%	M	SD	Missing Data %
10 plus years	27	19.7			
What is your highest education level?					(13.9%)
Associate degree	6	4.4			
Bachelor's degree	84	61.3			
Master's Degree	24	17.5			
Doctorate	3	2.2			
Prefer not to answer	1	0.7			
What shift do you work regularly?					(13.9)
Day	73	53.3			
Night	45	32.8			
How long in months/years have you worked on your current unit?			8.31	10.3	(13.9)
About how often do you interact with a clinical educator?					(13.9)

Baseline Characteristics	N	%	M	SD	Missing Data %
Daily	17	12.4			
About several times a week	26	19.0			
About once a week	22	16.1			
About several times a month	9	6.6			
About once a month	13	9.5			
About once every three months	10	7.3			
Several times a year	13	9.5			
Once a year	4	2.9			
Less than once a year	3	2.9			
How often does the clinical educator offer in-service on your unit?					(13.9)
Daily	13	9.5			

Baseline Characteristics	N	%	M	SD	Missing Data %
About several times a week	20	14.6			
About once a week	10	7.3			
About several times a month	19	13.9			
About once a month	17	12.4			
About once every three months	14	10.2			
Several times a year	16	11.7			
Once a year	6	4.4			
Less than once a year	3	2.2			
Which type of educator serves your unit?					(13.9)
Unit-base educator	77	56.2			
Learning Network faculty	41	29.9			

Table 2.3 *Crosstabulation of Sample Demographics and Staff Development Groups*

Variable		**Unit-based**		**Centralized**		**Total**				
		N	%	N	%	N	%	*df*	*p*	X^2
Gender								3	.48	2.45
	Female	56	80	42	87.5	98	83.1			
	Male	11	15.7	6	12.5	17	14.4			
Ethnicity								12	.26	14.52
	American Indian or Alaskan Native	6	1.4	4	0.0	10	0.8			
	Asian	17	24.3	7	14.6	24	20.3			
	Black or African American	17	24.3	7	14.6	24	20.3			
	Hispanic or Latino/a/x or Spanish, including Cuban or Puerto Rican	10	14.3	11	22.9	21	17.8			

Variable		Unit-Based		Centralized		Total				
		N	%	N	%	N	%	*df*	*p*	X^2
	Mexican or Mexican American, Chicano/a/x	0	0	0	0	0	0			
	White	15	21.4	12	25.0	27	22.9			
	Some other race, ethnicity, or origin, please specify	1	1.4	3	6.3	4	3.4			
	I prefer not to answer	6	8.6	4	8.3	10	8.5			
Shift worked								12	.61	.25
	Day	42	60	31	64.6	73	61.9			
	Night	28	40	17	35.4	45	38.1			
Education level								4	.88	1.15
	Associate Degree	4	5.7	2	4.2	6	5.1			

Variable		Unit-based		Centralized		Total				
		N	%	N	%	N	%	*df*	*p*	X^2
	Diploma Nursing Degree	0	0	0	0	0	0			
	Bachelor's degree	48	68.6	36	75.0	84	71.2			
	Master's Degree	15	21.4	9	18.8	24	20.3			
	Doctorate	2	2.9	1	2.1	3	2.5			
	Prefer not to answer	1	1.4	0	0.0	1	0.8			
Area of practice								3	<.001	114.89
	Adult Medical-Surgical	0	0.0	45	93.8	45	38.1			
	Pediatric Medical-Surgical	22	31.4	0	0.0	22	18.6			
	Emergency Room	47	67.1	0	0.0	47	39.8			
	Others (specify)	1	1.4	3	6.3	4	3.4			

Variable		Unit-based		Centralized		Total				
		N	%	N	%	N	%	*df*	*p*	X^2
Specific Unit worked on								3	<.001	118.0
	Cham 8	23	32.9	0	0.0	23	19.5			
	ED	47	67.1	0	0.0	47	39.8			
	NW6	0	0.0	25	52.1	25	21.2			
	NW8	0	0.0	23	47.9	23	19.5			
Interaction with Clinical educator								8	<.001	65.98
	Daily	17	24.3	0	0.0	17	14.4			
	About several times a week	24	34.3	2	4.2	26	22.0			
	About once a week	18	25.7	4	8.3	22	18.6			
	About several times a month	4	5.7	5	10.4	9	7.6			
	About once a month	4	5.7	9	18.8	13	11.0			

Variable		Unit-based		Centralized		Total				
		N	%	N	%	N	%	*df*	*p*	X^2
	About once every three months	0	0.0	10	20.8	10	8.5			
	Several times a year	2	2.9	11	22.9	13	11.0			
	Once a year	1	1.4	3	6.3	4	3.4			
	Less than once a year	0	0.0	4	8.3	4	3.4			
Type of educator on unit								2	<.001	70.43
	Centralized	2	2.9	23	47.9	25	21.2			
	Unit-based	67	95.7	10	20.8	77	65.3			
	Not sure	1	1.4	15	31.3	16	13.6			
Frequency of in-service on unit								8	<.001	57.33
	Daily	13	18.6	0	0.0	13	11.0			
	About several times a week	18	25.7	2	4.2	20	16.9			

Variable		Unit-based		Centralized		Total				
		N	%	N	%	N	%	*df*	*p*	X^2
	About once a week	8	11.4	2	4.2	10	8.5			
	About several times a month	15	21.4	4	8.3	19	16.1			
	About once a month	11	15.7	6	12.5	17	14.4			
	About once every three months	1	1.4	13	27.1	14	11.9			
	Several times a year	3	4.3	13	27.1	16	13.6			
	Once a year	1	1.4	5	10.4	6	5.1			
	Less than once a year	0	0.0	3	6.3	3	2.5			

Chapter 3

Effects of Staff Education on Staff Nurses' Anxiety Levels and Clinical Reasoning

In a changing and challenging healthcare environment, staff nurses are an influential group of healthcare professionals in any tertiary care hospital (Anbazhagan et al., 2016). Scholars have identified staff training and development as crucial to an organization and its effectiveness (Olaniyan & Ojo, 2008). The quality of patient care is strongly correlated to the performance of the nursing staff; therefore, staff development plays a pivotal role in maintaining staff nurses' competence and keeping them abreast of new equipment and procedures. In addition, there is a critical need to educate the nursing workforce and enhance their skills to meet the complex challenges of caring for patients with comorbid physical and mental health problems across all age groups (McCloughen et al., 2012).

Staff development models are used in the healthcare environment to educate staff nurses and to reinforce their prior education. Since 1992, staff development models have been used in the healthcare setting (Sheriff & Banks, 2001). In more recent years, frequently used models have been centralized and unit-based. Centralized education meets generalized learning needs and provides nursing departments with a universal orientation, coordinating and implementing intravenous and blood transfusion therapy courses, physical assessment courses, professional update programs, and universal workshops and conferences (Cummings & McCaskey, 1992). Unit-based educators offer personal, educational programs tailored to individual nurses' needs rather than wide-ranging education programs (Topley, 2009). They aim to meet the nursing staff's continuing educational needs and encourage professional growth and development (Leslie & Churilla, 1998).

Unit-based and centralized education staff development models educate staff nurses on the inpatient units; however, they have noted differences. First, unit-based educators are assigned to one unit, whereas centralized educators are assigned to multiple units. This difference implies that unit-based educators are more accessible to staff nurses than educators in a centralized system. For example, the COVID-19 pandemic has had short and long-term effects on frontline workers' physical, social, and psychological health, including nurses globally (Meghani & Lalani, 2020). Staff education has been influential during the COVID-19 pandemic, primarily due to staff shortages and new equipment such as ventilators. These problems required the recruitment of outpatient, agency, travel, and novice nurses who needed swift and continuous education. The units with a unit-based educator were at an advantage because the staff nurses had education support continually versus the units with centralized educators who were either conducting orientation of new employees at different locations throughout the week, attending conferences, providing education on their assigned units, or in organizational meetings. Second, unit-based educators are more familiar than centralized educators with the unit's culture and practices, the staff nurses, and the educational needs of the staff nurses.

Finally, unit-based educators are in the position to alleviate staff nurses' anxiety and improve their clinical reasoning skills because the unit-based educators are present throughout the day to assist and reinforce education. In addition, the staff nurses are generally more comfortable performing a skill or asking questions because they see this individual daily, which builds rapport and trust. In contrast, centralized educators are responsible for several units, so they are not always available when education needs to arise, creating a challenge in contacting an educator. This delay may cause anxiety among the staff nurses, primarily if they are put in the position to ask other staff nurses to assist with an unfamiliar skill, such as troubleshooting or

assessing a chest tube or ventilator. Furthermore, concerning enhancing a staff nurse's clinical reasoning skills, centralized educators do not have access to the staff nurses all the time to observe and assess the staff nurses throughout the day. The centralized educator's functions include meeting the generalized learning needs to staff nurses on their own units and providing nursing departments with scheduled education sessions or impromptu meetings regarding changes to policies and procedures. Centralized educators must be called to the unit by the charge nurse if there is a clinical need, or they schedule a general education session via the unit's manager. Hence, these delays or hiccups can create missed opportunities to enhance staff nurses' clinical reasoning.

A comprehensive search strategy was conducted on anxiety and clinical reasoning using CINAHL and PubMed databases. The search with a timeline from 1970-2022 identified studies that measured staff nurses' and nursing students' anxiety and clinical reasoning. Examples of search terms used were “anxiety and staff nurses,” “anxiety and staff development and staff nurses,” “anxiety and unit-based,” “anxiety and centralized education,” “anxiety, clinical reasoning, and staff nurses,” “clinical reasoning and staff development,” “clinical reasoning, and nursing, anxiety, and nursing,”. The search resulted in studies concerning anxiety as it relates to nursing students and staff nurses and to anxiety related to Covid-19 and educational programs. Studies, including anxiety with preceptorship and work environments, were also found. Regarding clinical reasoning, studies were mainly related to nursing students, not staff nurses.

Anxiety and Learning

Anxiety is a concern that alerts us to potential threats and allows us to evaluate and respond (Dickson-Swift et al., 2014). For example, the healthcare environment generates anxiety for staff nurses Kaushik et al., (2021). In addition, it has also been reported that nurses are the

most stressed among healthcare professionals (Kumar et al., 2016), and it has been observed that nurses spend a longer time than physicians caring for ill people (Chou et., al 2014).

Staff nurses experience anxiety due to inadequate staffing, high acuity, patient deterioration, and lack of education regarding policies and procedures (Arkan et al., 2018). For example, nurses working in high-acuity settings are susceptible to increased anxiety due to a lack of knowledge, unfamiliar surroundings, and fear of the unknown (Lamont et al., 2017). After thoroughly searching the literature, the researcher found no studies measuring anxiety among staff nurses related to unit-based and centralized education. However, studies that measured anxiety among staff nurses were found. For example, Quang (2021) investigated anxiety, depression, and related factors affecting Clinical Medical Staff (CMS) during the COVID-19 pandemic at Dong Da General Hospital and Dong Anh General Hospital in Hanoi. The researchers highlighted the need for educational sessions to equip CMS with the skills to cope with psychological stress during the pandemic. Bayes and Ewens (2017) conducted a review to investigate how nurses view and experience caring for pregnant and postpartum women in non-maternity care settings, such as critical care and medical-surgical units. The review found that the staff nurses were ill-prepared for caring for pregnant and postpartum women in acute care settings. A lack of education and a need to “learn on the job” reportedly evoked stress, trauma, and a sense of professional inadequacy. Whitehead et al., 2010, assessed the ongoing impact of the End-of-Life Nursing Education Consortium program on nurses' death anxiety, concerns about dying, and knowledge of the dying process. The authors stated that clinicians should integrate repeated interventions and not expect long-term improvements due to a single education session. Therefore, ongoing reinforcement is crucial to sustaining desired end-of-life care behaviors among staff nurses and decreasing anxieties.

Staff nurses, in general, display signs of anxiety because of their lack of knowledge and technique regarding the care of patients (Kuroda et al., 2009). Studies have supported the idea that educating nurses through preceptorship is valuable. For example, Kuroda and colleagues studied the relationship between preceptorship and staff nurse anxiety levels through six educational programs. The State-Trait Anxiety Inventory (Spielberger, 1983) measured anxiety levels. The results revealed high anxiety levels among the nurses, which interfered with the nurses' ability to learn (Kuroda et al., 2009). Therefore, nurse educators should understand the skills such as operating a mechanical ventilator or doing tracheostomy care that may be anxiety-provoking and tailor their educational interventions to minimize students' and nursing 'staff's anxiety (Melincavage, 2011). A study among nursing professionals revealed that circumstances in the work environment could provoke anxiety, such as patient health conditions, lack of material, equipment, and staff, as well as high-complexity procedures (de Barros et al., 2003).

This review indicates that anxiety can interfere with learning. Although no research has been done on anxiety during staff education sessions, there are reasons that it may be important. Staff nurses may be anxious about staff education because they do not want to be judged incompetent. Also, taking the extra step to ask a clinical educator may provoke anxiety, especially if the nurse is unfamiliar with the educator. Anxiety among staff nurses may also occur due to the delay in getting help from educators. Because unit-based educators are more accessible and familiar with the nurses on the unit, there is reason to believe that staff nurses may be less anxious during staff development sessions with unit-based educators.

Clinical Reasoning

Clinical reasoning is a crucial characteristic of healthcare professionals. It is used as an indicator to identify an expert nurse (Victor-Chmil, 2017). Clinical reasoning enables the

experienced nurse to evaluate clinical situations to ascertain the need to intervene when a patient is deteriorating (Powers et al., 2019). In addition, it is an essential nursing competence often demonstrated in experienced nurses working in various nursing specialties (Banning, 2008). Clinical reasoning is a complex cognitive process that utilizes formal and informal thinking strategies to gather and analyze patient information, evaluate its significance, and weigh alternative actions (Simmons, 2010). Sommers (2018) stated that clinical reasoning is a process by which nurses and other healthcare professionals gather, sort, interpret information, prioritize problems, and formulate conclusions to solve clinical problems.

Clinical reasoning is essential for safe, high quality patient care in healthcare facilities and in disaster response (Liou et al., 2016). Improving the quality of nursing care hinges on refining nurses' decision and judgment skills and managing the complex uncertainty (Hammond, 1996) that accompanies clinical practice. To identify significant changes in a patient's condition and correctly interpret meaning in very complex systems, nurses must (a) possess adequate clinical reasoning skills, (b) partner with patients, and (c) effectively communicate findings to the team (Lunney, 2010; Massey et al., 2016). However, the challenge of finding teaching strategies and learning experiences to promote the development of this skill in the learner remains a concern (Harmon & Thompson, 2015). Staff development is necessary to update staff nurses with technical and interactive skills (Siehoff, 2003). Limited nursing knowledge and experience can produce detrimental patient outcomes.

The literature search yielded no studies comparing unit-based and centralized education models and their effect on staff nurses' clinical reasoning. However, articles discussed the importance of clinical reasoning in nursing and examined its impact on nursing students and new graduate nurses. For example, Tesoro et al. (2020) conducted a

study to test the impact of clinical reasoning prompts on nursing students' clinical judgment of a written case study. The results were insufficient to improve clinical judgment significantly; however, the students stated that the clinical reasoning prompts assisted with narrowing down and identifying the patient's problems. (Tesoro et al., 2020) implied that nurse educators should provide students with additional education and practice to identify and address complex disease processes. In addition, a study by Marcomini et al. (2021) evaluated an educational activity's effectiveness in improving nursing students' clinical reasoning.

The instrument was the Italian version of the Nurse Clinical Reasoning Scale (NCRS). A paired sample *t* test was used to evaluate possible differences in the students' responses before and after the educational activity. The *t* test indicated that the NCRS scores were significantly higher after the simulation-based triage exercise. Another study by Hu et al. (2021) evaluated the impact of a simulation-based triage exercise on nursing students' self-reported clinical reasoning ability. The results indicated no significant difference in the mean clinical reasoning ability scores between the three groups in the pre-test ($p > 0.05$). However, clinical reasoning ability scores in the post-test among students in the intervention group were significantly higher than those in the control group ($p < 0.001$).

Koivisto et al., 2018 conducted a study involving a simulation game and its effect on nurses' clinical reasoning. Results indicated that elements in the game-based simulation that affected learning clinical reasoning in nursing education were usability, application, nursing knowledge, and exploration (Koivisto et al., 2018). The authors stated that nurse educators are confronted with delivering an engaging and appealing learning environment for clinical nursing education. However, educators also need to be future-oriented and able to design

and adopt new pedagogical innovations. New graduate nurses must receive support and continued education emphasizing the enhancements to their clinical reasoning so that a positive transition and safe nursing practice can occur (Powers et al., 2019).

In addition, continuing education post-graduation is essential to enhance new graduate nurses' clinical reasoning and ability to identify deterioration in patients and prevent failure to rescue deteriorating patients (Kavanagh & Szweda, 2017). Another study (Jessee & Tanner, 2016) developed an instrument to describe and quantify the construct of clinical coaching, defined as the one-to-one teaching, verbal questioning, and feedback behaviors used by a clinical supervisor (e.g., school of nursing faculty or staff nurse preceptor). Results indicated that clinical coaching strategies improved students' clinical reasoning skills. Because the unit-based education model is individualized, it is predicted that it may improve staff nurses' clinical reasoning.

Purpose

This study compared anxiety and clinical reasoning in staff nurses engaged in unit-based and centralized staff development models. The following research questions were addressed:

Research Question 1

Will staff nurses exposed to unit-based education have less anxiety during staff education than staff nurses on units with centralized education?

Research Question 2

Will staff nurses exposed to unit-based education have enhanced clinical reasoning as compared to staff nurses on units with centralized education?

Method

Design

This study used a correlational, cross-sectional, intact group design. A web-based Qualtrics survey was used to collect data to address the research questions.

Study Participants

Convenience sampling was used to recruit staff nurses from preselected units at a tertiary care medical center, Montefiore Medical Center Moses and Weiler Campuses and the Children's Hospital at Montefiore in the Bronx, New York. Participants were recruited from a target population of 198 nurses employed in two adult medical-surgical units, one pediatric medical-surgical unit, and one adult emergency department (E.D.). The unit-based units were the emergency room at the Weiler campus and a pediatric unit at the CHAM) campus. Both centralized units were from the Moses campus.

The inclusion criteria for this study were registered nurses who (1) work full and part-time, day and night shifts, (2) had more than 3 months of experience, (3) work in preselected medical-surgical or emergency departments, and (4) have been exposed to either unit-based or centralized education.

The exclusion criteria for this study were personnel who were not registered nurses and nurses who worked per-diem in the float pool or an agency. Also excluded were nurses who work in other settings that are not medical-surgical or emergency departments and nurses on disability or leaves of absence.

Power analyses by G-Power 3.1 based on a *t* test between independent groups with a medium effect size of .50, power of .85, and a two-tailed probability of .05 resulted in a

required sample size of 146. The researcher targeted a sample of 150 study participants. There were two groups in the study representing four different units. Group 1 represented nurses from two units exposed to unit-based educators, and Group 2 was from two units exposed to centralized clinical educators.

Human Subjects Protection

Before data collection was initiated, preliminary approval was received from the hospital's Director of Research and Evidence-Based Practice (See Appendix A). Next, Institutional Review Board (IRB) permission was granted from Teachers College and Montefiore Medical Center. Once IRB approval was given, the data collection process was initiated. Informed consent was completed by the subject immediately before they began the questionnaire (see Appendix B)

Setting

The study was conducted on four units in Montefiore Medical Center, a prominent academic and teaching tertiary hospital in the Bronx, New York. The units were the emergency department at the Weiler campus, two adult medical-surgical units at the Moses campus, and one pediatric medical-surgical unit at The Children's Hospital at Montefiore (CHAM) located on the Moses campus. Staff development is handled by clinical educators who are either unit-based or from the Learning Network, which represents centralized education.

Instruments

A demographic questionnaire, the State Anxiety Inventory (SAI), and the Nurses Clinical Reasoning Scale (NCRS) comprised the instruments for this report.

Demographic Questionnaire

The demographic questionnaire assessed age, sex, race/ethnicity, education level, years as a nurse, years at Montefiore Medical Center, years in the unit they are currently working on, shift worked, years worked on the current unit, area of practice, the extent of/frequency of interactions with a clinical educator, and whether respondents perceived that a unit-based clinical educator or the Learning Network served their unit. (see Appendix C)

The State Anxiety Inventory (SAI)

The State-Trait Anxiety inventory was developed by Spielberger et al. (1983). Only the state version of the scale was used in this study. The State Anxiety Inventory questionnaire (SAI) (see Appendix G) was used to measure anxiety reported by staff nurses during staff education. The SAI state scale consists of 20 items that ask respondents to describe how they felt at a particular moment in time. Responses were rated on a 4-point Likert-type scale (1 = *not at all*, 2 = *somewhat*, 3 = *moderately so*, 4 = *very much so*). Total scores for state anxiety range from 20–80. Although the scale does not have a cutoff point, it is generally accepted that 39 to 40 points indicate a moderately high anxiety score. Cronbach's alphas were reported as .92 for state anxiety (Spielberger et al., 1983). Anxiety during staff education was assessed because the researcher wanted to know if having an educator on the unit to assist the nurses with complex skills and to provide reinforcement and support would lessen their anxiety during staff education, which could improve their performance. Cronbach's alpha for this study was .93. The scale contains 20 items, with a higher score indicating higher state anxiety. Half of the items are reverse-coded. The total score is the sum of all item scores. Mind Garden granted permission to use this scale. (see Appendix J)

Nurses Clinical Reasoning Scale

The Nurses Clinical Reasoning Scale (NCRS) (see Appendix H) is a self-report scale comprising 15 items. Responses are rated on a five-point Likert scale, and the scoring for each item ranges from 1 = *strongly disagree* to 5 = *strongly agree*. Total scores for the instrument range from 15-75; a higher score indicates a higher level of self-reported clinical reasoning ability (Liou et al., 2015). The instrument was tested for internal consistency and test-retest reliability. In addition, its validity was tested with content, construct, and known-groups validity. Three experts with an average of nine years of clinical experience, two senior faculty members, and one experienced clinical nurse in medical-surgical nursing were invited to establish the scale's content validity. The content validity index (CVI) and scale were 1.0, indicating content adequacy. Cronbach's alpha was.93, and the construct validity of the NCRS was supported based on factor analysis (Liou et al., 2015). The author granted permission to use the NCRS instrument. (see Appendix K)

Procedure

Data collection was conducted from the first week of September 2022 to the first week of December 2022, and participants were asked to dedicate about 30 minutes to complete the survey through Qualtrics. Prospective participants were recruited through Outlook Web Access, the organization's email management system, flyers, and unit huddles. The email (see Appendix F) described the study, its purpose, and the consent (see Appendix B). In addition, the researcher visited each unit weekly to remind the staff nurses to fill out the survey and answer any questions. Participants were informed that they had the right not to participate in the research and there would be minimal risk of participating. In the consent form, participants were informed that the study did not benefit the participants involved;

however, subsequent staff nurses and the nursing profession might benefit from the findings.

Participants were told at the beginning of the survey that they could participate in a lottery to win a $50, $100, or $150 Amazon gift card after completing the survey, and the winners would be notified via email. At the end of the survey, participants were directed to a link to a different survey where they would enter their email addresses if they were interested in the lottery. The email addresses were not connected to the subjects' answers and were destroyed after all winners were selected.

At the end of data collection, the lottery winners were selected using the randomization technique in Excel. Next, the researcher sent emails to the winners and requested an acknowledgment of receipt of the email. Once the nurses responded to the researcher, instructions were sent with codes to access the Amazon gift cards.

Data Analyses

The researcher used SPSS (version 29) statistical software to analyze the collected data. A total of 118 nurses attempted the questionnaire, and 86 completed it. Descriptive statistics were used to summarize sample characteristics and scores on the measures of staff nurses' anxiety levels and clinical reasoning scores. Frequencies and percentages were used to summarize nominal data; means and standard deviations were used to summarize continuous data. Differences between group responses for independent sample comparisons were examined using *t* tests.

Results

Description of the Sample

Nurses from four different units were recruited for the study. Two units were exposed to unit-based education, and two units were exposed centralized education provided by the

Learning Network clinical educators. There were 198 nurses on these four units.

Of the 198 staff nurses to whom recruitment emails were sent, 137 logged on to the survey site, yielding a response rate of 69%. Of 137 who logged on to the site, 118 (86.1%) responded to at least some items on the survey, while 19 (16%) nurses logged on to the site and did not continue. Out of the 118 nurses who started the survey, 86 completed the entire survey for a completion rate of 73%. Group 1, which included nurses from the two units exposed to unit-based educators, had 48 completed and 22 incomplete surveys. Group 2, which included nurses from the two units exposed to centralized educators, had 38 completed and ten incomplete surveys. However, the sample response for each scale differed due to missing data from participants who started the survey and stopped along the way (see Table 3.1). A post hoc power analysis for the new sample size was calculated using G-Power 3.1 with a resulting power of 0.62 for a 0.5 effect size and alpha .05 with groups n=38 and n=48.

The majority of respondents (see Table 3.2) (83.05%) were female and in the age range of 23-36 (60.54%), and 39% were in the age range of 37 or older. In addition, most nurses 42.4% had been employed at Montefiore Medical Center for six to ten years, and 23% for 10-plus years. Nurses from Group 1 represented 59.32% of the sample, and Group 2 comprised 40.68% of the sample. Forty percent of the participants interacted with their clinical educator from several times a week to about once a week. Interactions several times monthly were reported by about 27%, and several times yearly were reported by 18% of the nurses.

Nurses were asked to report if their clinical educator was either unit-based or centralized (from the Learning Network). Ten out of the 77 nurses from units with a unit-based educator incorrectly reported that they were from units with a centralized educator.

Conversely, two nurses from the units with a centralized educator incorrectly reported that they were from units with a unit-based educator. Fifteen nurses who stated they were unsure what type of educator served their units were from units with centralized educators. Thus, 17 (41%) of the 41 nurses from units with centralized education were unsure or mistaken about what type of unit they were on. In comparison, 13% of the 77 nurses with unit-based education were confused about the type of educator on their unit. Data analyses addressing the research questions used groups designated by the units on which they worked not by the type of staff education they thought they were getting.

Research Questions

Research Question 1

An independent sample *t* test was used to address the research question concerning staff education's effects on staff nurses' anxiety. The anxiety of the 48 participants in the unit-based group ($M = 35.7$, $SD = 11.47$) was lower than the anxiety in 38 participants in the centralized education group ($M = 37.2$, $SD = 11.35$). No statistically significant differences were found, $t(84) = -.633$, $p = .528$, in anxiety levels during staff education among staff nurses from the two different staff development models.

Research Question 2

There was no statistically significant difference in means, $t(85) = -.188$, $p = .852$, between the 48 participants who represented the unit-based group ($M = 59.1$, $SD = 6.61$) and the 39 participants in the centralized education group ($M = 59.3$ $SD = 6.80$) related to clinical reasoning.

Discussion

This study is the first to compare two staff development models (unit-based and

centralized) on anxiety and clinical reasoning among staff nurses. The data analyses showed no significant differences between the groups related to anxiety during staff development or clinical reasoning among the staff nurses in unit-based and centralized education models. In contrast, Kuroda et al. (2009) evaluated educational programs and novice nurses' anxiety levels using the State-Trait Anxiety Inventory (STAI). They found that the nurses' anxiety levels were reduced after they received an education through preceptorship. These findings are relevant to this study because preceptorship is a form of individualized education similar to unit-based education. A preceptor performs as a role model, teacher, evaluator, and supporter for an individual preceptee. Unit-based educators are similar to preceptors due to the individualized education and reinforcement they provide to staff nurses.

It should be noted that the anxiety assessed in this study was anxiety during staff education, and such education can be perceived as stressful. Unit-based education can allay anxiety because these educators are assigned to the unit, and when providing education or assisting a staff nurse with a skill or procedure, the staff nurses are more likely to feel at ease because they are familiar with that educator and have built a relationship with him/her. However, centralized educators are not as accessible as unit-based educators because they are assigned to several inpatient units and are not always on-site due to other responsibilities, such as orienting new staff. The staff nurses may also be unfamiliar with their centralized educators due to different schedules, vacations, and illnesses. Staff nurses work three days a week. Centralized educators present education sessions for groups of nurses. These sessions could occur on days when nurses are off or otherwise unavailable. On the other hand, the staff nurses will see the unit-based educator more regularly. One indication of staff nurse familiarity with the educator was that 41% of the nurses on centralized units were confused or mistaken about what type of

educator served their unit compared with 13% of those who worked with unit-based educators.

One problem with this study was that staff nurses were from four units with different acuity levels. For example, the unit-based units included the adult emergency room, which serves high-acuity patients and a pediatric unit which served a mix of acutely ill children and children with less severe conditions. Acuity on inpatient units can interfere with staff nurses' education due to disruptions and increase the anxiety levels of nurses. Patients on these high acuity units require more attention, which may prevent nurses from attending education sessions conducted by the unit-based educator. In addition, the education session may be canceled or rushed because of the deteriorating health status of the patient.

Even if the unit-based educator is present 100% of the time for support or education, some nurses will still report anxiety during staff education on any given day. In addition, new nurses may be especially vulnerable to the disruptive effects of acuity. Because the unit-based education units were more likely to have less experienced nurses than the units with centralized education, the combination of high acuity and less experienced nurses might have neutralized any salutary effects on anxiety that unit-based education might have had. Finally, a unit's acuity can produce less personalized education sessions, which are missed opportunities for nurses to learn or reinforce their skills.

The centralized units were adult medical-surgical units with less acuity, but at any given time, emergencies do occur, and staff nurses' anxiety levels would be heightened. Such anxiety may be reflected in anxiety during staff education. The Covid-19 pandemic also has disrupted staff nurses' practices resulting in heightened stress and anxiety (Gupta, 2020). Therefore, this could explain why there were no differences in anxiety levels among the staff nurses from the two staff development models.

Regarding staff nurses' clinical reasoning, most studies on clinical reasoning involved using an educational method or strategy to improve nursing students and new graduates' clinical reasoning. These studies demonstrated that types of educational offerings could have a positive impact on nurses' clinical reasoning abilities (Koivisto et al., 2018; Tesoro et al., 2020; Marcomini et al., 2021; Fen et al., 2021; Jessee & Tanner, 2016; Molly et al., 2022). The lack of difference in the clinical reasoning scores could be related to the self-report nature of the clinical reasoning scale and that nurses felt that their clinical reasoning skills were competent. Additionally, the COVID-19 pandemic may have disrupted operations across units so profoundly that it overwhelmed any effect that staff development models could have had.

Limitations

There were limitations to this study. The cross-sectional design made it difficult to ascertain the cause and effect of the variables studied. In addition, the inability to randomize the staff nurses into groups representing the different staff development models may have introduced selection bias. The acuity of the units that represented unit-based education in the adult emergency room and the pediatric unit was higher than that of the adult medical-surgical units with centralized education.

The convenience sample of nurses from four specifically selected acute care nursing units was recruited for the study, which could have introduced sampling bias. The sample may not represent the general population of all acute care nurses interacting with a clinical educator from the unit-based or centralized education model. The researcher anticipated a sample size of 150, but the final sample was 86. A post hoc power analysis using the sample size of 86 indicated a power of .62 to detect a significant result. This power was lower than the desired power of .85 because of the departure of staff nurses before and during data collection due to the Covid-19

pandemic. This low power may be responsible for the finding on anxiety which showed a non-significant advantage for the unit-based groups.

The study's response rate of 69% might have been improved if a gift card incentive had been provided to all participants rather than offering a lottery. Another limitation could be that the staff nurses may have overestimated their clinical reasoning abilities because the NCRS was designed primarily for nursing students rather than for staff nurses. Finally, unit-based educators may not be oriented to allaying anxiety during staff education and may not have the skills to improve staff nurses' clinical reasoning.

Implications

Since the findings showed no differences between unit-based and centralized education concerning staff nurses' clinical reasoning and anxiety levels, there is a need for more research that measures the role of staff development and its effect on staff nurses' anxiety and clinical reasoning in acute care settings. For example, replicating this study utilizing other methods, such as observations or interviews, could shed light on staff nurses' perception of their clinical reasoning and anxiety during unit-based or centralized education and study anxiety and educational need versus staff development.

In addition, experimental studies with larger sample sizes, multiple sites, and longitudinal would be more generalizable. Studies that compare similar units, such as emergency departments with and without unit-based education or medical-surgical units with or without unit-based education, could also benefit the nursing literature and explain this study's findings. Moreover, other variables such as patient satisfaction scores, medication errors, fall prevention, or staff nurse retention could be more sensitive to different types of staff education.

Finally, mixed-method design studies regarding this study's topic could provide a better

insight into how staff nurses perceive their clinical reasoning skills and their anxiety levels during staff education or anxiety overall.

Conclusions

In conclusion, this is the first research study to examine the relationships of staff development models to clinical reasoning and to anxiety levels during staff education. Findings suggested that there were no significant differences between the groups. However, the study's limitations may have influenced the results of this study, necessitating further research.

Clinical reasoning in nursing is an essential function of health care to ensure safe practice (Carvalho et al., 2017). However, the challenge of finding teaching strategies and learning experiences to promote the development of this skill in staff nurses remains a concern. Therefore, investment in teaching and learning methods is required to enhance clinical reasoning skills in staff nurses. Most clinical reasoning studies were conducted on nursing students and new graduate staff nurses versus experienced staff nurses. The findings of this study suggest that unit-based educators may need better education on how to fulfill the potential of unit-based education to encourage the growth and development of staff nurses' clinical reasoning and enhance staff nurses' abilities to provide patient care.

In addition, anxiety among nurses has been a catalyst for impaired clinical reasoning. Other ways to address anxiety in staff nurses might include individual interventions such as mindfulness meditation and organizational interventions such as better patient-to-nurse ratios, placing unit-based educators on each inpatient unit, or conducting skill fair so staff nurses can practice skills they need reinforcement with. These interventions may affect staff nurses' anxiety.

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Table 3.1

State Anxiety Inventory and Nursing Clinical Reasoning Scale Sample Response Explained

Scale	***M***	***SD***	**Min**	**Max**	**Alpha**	**N**	**Missing**
SAI	36.36	11.37	20	80	.93	86	32
NCRS	63.26	7.12	15	75	.94	87	31

Table 3.2

Demographics Characteristics of Staff Nurses Sample

Baseline Characteristics	*n*	*%*	*M*	*SD*	Missing Data %
Age		76	35.46	10.63	
Gender					(13.9)
Female	98	71.5			
Male	17	12.4			
nonbinary	1	0.7			
Prefer not to say	2	1.5			
Have you been an RN for more than 3 months?					
Yes	118	100			
Ethnicity					
Asian	24	17.5			
Black or African American	24	17.5			
Hispanic or Latino/a/x or Spanish origin, including Cuban or Puerto Rican	21	15.3			
Native Hawaiian or Pacific Islander	2	1.46			
White	27	19.7			
Other	20	28.5			
How long have you been employed at Montefiore Medical Center?			8.31	10.3	(13.9%)
Less than 1 year	23	16.8			
2 to 5 years	18	13.1			
6 to 10 years	50	36.5			
10 plus years	27	19.7			

Baseline Characteristics	n	%	*M*	*SD*	Missing Data %
What is your highest education level?					(13.9%)
Associate degree	6	4.4			
Bachelor's degree	84	61.3			
Master's degree	24	17.5			
Doctorate	3	2.2			
Prefer not to answer	1	.7			
What shift do you work regularly?					(13.9)
Day	73	53.3			
Night	45	32.8			
How long in months/years have you worked on your current unit?			8.31	10.3	(13.9)
About how often do you interact with a clinical educator?					(13.9)
Daily	17	12.4			
About several times a week	26	19.0			
About once a week	22	16.1			
About several times a month	9	6.6			
About once a month	13	9.5			
About once every three months	10	7.3			
Several times a year	13	9.5			
Once a year	4	2.9			
Less than once a year	3	2.9			
How often does the clinical educator offer in-service on your unit?					(13.9)
Daily	13	9.5			
About several times a week	20	14.6			
About once a week	10	7.3			
About several times a month	19	13.9			

Baseline Characteristics	n	%	*M*	*SD*	Missing Data %
About once a month	17	12.4			
About once every three months	14	10.2			
Several times a year	16	11.7			
Once a year	6	4.4			
Less than once a year	3	2.2			
Which type of educator serves your unit?					**(13.9)**
Unit-base educator	77	56.2			
Learning Network faculty	41	29.9			

Chapter 4

Conclusions

The two main chapters of this dissertation were based on a comparative cross-sectional study with intact groups. Guided by Knowles's assumptions of Adult Learning Theory, the study aimed to compare nurses' perceptions of their clinical educators from unit-based and centralized staff development models. In addition, the study examined whether staff nurses' anxiety and clinical reasoning differed under the two staff development models. A web-based Qualtrics survey was used to collect data from a convenience sample of staff nurses from four preselected units at Montefiore Medical Center Moses and Weiler Campuses and the Children Hospital at Montefiore in Bronx, New York. The nurses were recruited from a target population of 198 nurses employed in two adult medical-surgical units, one pediatric medical-surgical unit, and one adult emergency department (E.D.).

The fives instruments used in the two studies were a demographic questionnaire, the Clinical Educator Evaluation Questionnaire (CEEQ), the Nursing Clinical Teacher Effectiveness Inventory (NCTEI), the State Anxiety Inventory (SAI), and the Nurses Clinical Reasoning Scale (NCRS). The researcher developed the CEEQ instrument after an extensive literature search, which revealed no instrument measuring nurses' perception of their clinical educators based on Malcolm Knowles's *Adult Learning Theory*. Content validity was attained with the help of two experts in adult learning from a graduate school of education who rated how well the items represent Knowles's assumptions. Cronbach's alpha for the CEEQ was.97, which included the reverse-coded items. A Pearson's correlation analysis between the two surveys, the CEEQ and the NCTEI, was also conducted and showed a strong, positive, and significant correlation, respectively, indicating the concurrent validity of the CEEQ. A Chi-square analysis and

independent *t* test were conducted to compare demographic variables among the unit-based and centralized education groups.

Chapter 2 compared staff nurses' perceptions of their clinical educators from hospital units that used unit-based or centralized staff development models. Results demonstrated significantly higher scores among the nurses from the unit-based group compared to nurses from the centralized groups regarding nurses' perception of their instructors' methods and consistency of those methods with adult learning theory. Results also showed that the nurses from units with different staff development models significantly differed in their clinical instructors' perceived effectiveness. These findings indicated that staff nurses on the unit-based units found their clinical educators more effective than those from the centralized units. It also suggests that unit-based education effectively delivers education and support to staff nurses on inpatient units.

Chapter 3 examined whether staff nurses' anxiety during staff education was lowered, and clinical reasoning enhanced by staff nurses' exposure to unit-based education compared to centralized education. Results indicated no statistically significant differences between the groups regarding the effect of types of staff education on staff nurses' anxiety levels and clinical reasoning. The Nurse Clinical Reasoning Scale is used in nursing education but has not been used in staff education. As a result, staff educators may not emphasize clinical reasoning or know how to increase it in the nurses on their unit. In addition, experienced staff nurses may be loath to report that they cannot do the items covered in the instrument. This limitation may explain the nonsignificant results concerning clinical reasoning.

The outcomes of the studies have implications for further research. First, the need for more research that assesses the effects of staff development on learning outcomes, clinical expertise, and perhaps patient satisfaction with care. Second, employing other methods, such as

observations or interviews, could shed light on staff nurses' perception of their clinical reasoning and anxiety during unit-based or centralized education. In addition, experimental studies with larger sample sizes, multiple sites, and longitudinal designs would be more generalizable. Moreover, studies that compare similar units, such as emergency departments with and without unit-based education or medical-surgical units with or without unit-based education, could benefit the nursing literature on staff development. Finally, mixed-method design studies could provide a better insight into how staff nurses perceive their clinical educators.

Appendix A: Site Authorization Cooperation Letter

Site Authorization/Cooperation Letter

COMPANY NAME: Montefiore Medical Center (MMC).
ADDRESS: 111 E 210 street Bronx NY, 10467
FULL CONTACT INFORMATION OF SITE CONTACT: Dr. Una Hopkins
Uhopkins1@Montefiore.org

Date: April 11 2022

DNP Office

To whom it may concern,

After reviewing the proposed study, "A Comparison Between Unit-Based Education and Centralized Education Among Staff Nurses" to conduct research at Montefiore Medical Center (MMC), pending IRB approval from Teachers College, Columbia University and submission and approval of this research study at Montefiore.

Una Hopkins DNP
Director of Research and Evidence Based Practice
Montefiore Medical Center
111 East 210th St.
Bronx, NY 10467
718 920 2263

Appendix B: Informed Consent

Informed Consent

INTRODUCTION

You are invited to participate in this research study called "A Comparison between Unit-Based Education and Centralized Education among Staff Nurses." You may qualify to take part in this research study because you are a nurse who is over 18 years old, works full or part-time, day and night shift, with more than three months of experience, and works on a medical-surgical unit or the emergency department, who has exposure or not to unit-based education and works at Montefiore Medical Center and /or Children's Hospital at Montefiore. You will be excluded from this study if you are a nurse who: is employed perdiem, in the float pool or agency, works in other settings that are not medical-surgical or the emergency department, is on disability, or is on a leave of absence. Approximately 150 people will participate in this study, and it will take approximately 30 minutes of your time to complete in one sitting. Funding is being sought for this study from the Teachers College at Columbia University.

WHY IS THIS STUDY BEING DONE?

This study is being done to compare Unit-Based Education and Centralized Education among Staff Nurses. This study will also determine staff nurses' perception of their clinical educators.

WHAT WILL I BE ASKED TO DO IF I AGREE TO TAKE PART IN THIS STUDY?

If you decide to participate, the primary researcher or one of the research assistants will reach out to you via email and ask you to complete an online survey. The online survey will include questions relating to demographics, anxiety levels, your clinical reasoning skills, and your perception of your clinical educator. The Demographic items are personal, and you may opt not to answer if you feel uncomfortable. The survey will be anonymous, and no identifiers will be

linked to your survey responses. The procedure will be done at Montefiore Medical Center and The Children's Hospital at a time most convenient to you.

WHAT POSSIBLE RISKS OR DISCOMFORTS CAN I EXPECT FROM TAKING PART IN THIS STUDY?

This is a minimal risk study, which means the harms or discomforts that you may experience are not greater than you would ordinarily encounter in daily life while taking routine physical or psychological examinations or tests. However, you can stop participating in the study at any time without penalty. If you feel concerned that things you say might get back to your manager, your information will be kept confidential. The primary researcher is taking precautions to keep your information confidential by keeping all information on a password-protected computer.

WHAT POSSIBLE BENEFITS CAN I EXPECT FROM TAKING PART IN THIS STUDY?

There is no direct benefit to you for participating in this study.

WILL I BE PAID FOR BEING IN THIS STUDY?

You will not be paid to participate. However, you have a chance to win a $50, $100, or $150 Amazon gift card after you have completed the survey. If you wish to be entered into the raffle, you will be prompted to click on a link to a second survey not linked in any way to the primary survey. In the second survey, you will be asked for your email address so you may be contacted about the raffle. Winners will be contacted by email. There are no costs to you for taking part in this study.

WHEN IS THE STUDY OVER? CAN I LEAVE THE STUDY BEFORE IT ENDS?

The study is over when you have completed the survey. However, you can leave the study at any time even if you have not finished.

PROTECTION OF YOUR CONFIDENTIALITY

Neither the primary researcher nor anyone on the research team will have access to your name. Any electronic or digital information related to your responses will be stored on a computer that is password protected. For quality assurance, the study team, and/or members of the Teachers College Institutional Review Board (IRB) may review the data collected from you as part of this study. Otherwise, all information obtained from your participation in this study will be held strictly confidential.

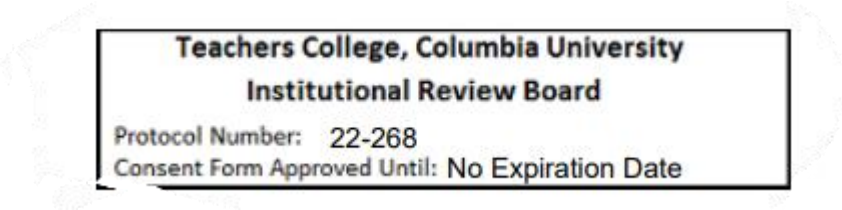
HOW WILL THE RESULTS BE USED?

The results of this study will be published in journals and presented at academic conferences. This is an anonymous survey, therefore, no identifying information will be included in a publication or used for educational purposes. This study is being conducted as part of the dissertation of the primary researcher.

WHO CAN ANSWER MY QUESTIONS ABOUT THIS STUDY?

If you have any questions about taking part in this research study, you should contact the primary researcher, Marilyn Campbell MSN RN-BC, at 646-709-9070 or at mjc2292@tc.columbia.edu or Dr. Kathleen O'Connell at oconnell@tc.columbia.edu. If you have questions or concerns about your rights as a research subject, you should contact the Institutional Review Board (IRB) (the human research ethics committee) at 212-678-4105 or email IRB@tc.edu or you can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY 10027, Box 151. The IRB is the committee that oversees human research protection for Teachers College, Columbia University. Also, please contact the IRB of the Albert Einstein College of Medicine and Montefiore Medical Center at 718-430-

2253 or email IRB@einsteinmed.edu.The IRB is the committee that oversees human research protection for the Albert Einstein College of Medicine and Montefiore Medical Center.



Link to Informed Consent

Appendix C: Demographic Questionnaire

Please answer the following questions.

1. **What is your age in years? _____**
2. **What is your gender?** (Check one)
    1. Female
    2. Male
    3. Genderqueer
    4. Agender
    5. Non-binary/third gender
    6. Transgender
    7. Prefer not to say
    8. Prefer to self-describe_____

3. **How do you describe your Race/Ethnicity? (Check all that apply)**
    1. American Indian or Alaskan Native
    2. Asian
    3. Black or African American
    4. Hispanic or Latino/a/x or Spanish origin, including Cuban or Puerto Rican
    5. Mexican or Mexican American, Chicano/a/x
    6. Native Hawaiian or Other Pacific Islander
    7. White
    8. I prefer not to answer
    9. Some other race, ethnicity, or origin, please specify _____

4. **Have you been an RN for more than 3 months?**
    Yes
    No
5. **How long have you been employed at Montefiore Medical Center? _____**
6. **What is your highest education level? (Check one)**
    1. Associate Degree
    2. Diploma Nursing Degree
    3. Bachelor's degree
    4. Master's Degree
    5. Doctorate

7. **What is your current area of practice? (Check one)**
    1. Adult Medical-Surgical
    2. Pediatric Medical-Surgical
    3. Emergency Room
    4. Others (specify)
8. **Which specific unit do you usually work on? Please indicate below**.

    _____

9. What shift do you work regularly? (Check one)

1. Day
2. Night

10. How many years have you worked on your current unit? _____

11. About how often do you interact with a clinical educator? (Select one answer)

1. Daily
2. About several times a week
3. About once a week
4. About several times a month
5. About once a month
6. About once every three months
7. Several times a year
8. Once a year
9. Less than once a year

12. How often does the clinical educator offer in-service on your unit? (Select one answer)

1. Daily
2. About several times a week
3. About once a week
4. About several times a month
5. About once a month
6. About once every three months
7. Several times a year
8. Once a year
9. Less than once a year

13. Which type of educator serves your unit? Please check the correct answer

1. Unit-based educator
2. Learning Network faculty
3. Not sure

Appendix D: Clinical Educator Evaluation Questionnaire guided by Knowles' Assumptions

Number	Questions	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	Your clinical educator provides learning objectives before each educational encounter.					
2	The clinical educator promotes independence regarding your learning.					
3	The clinical educator helps you solve the clinical problems you are having on the unit.					
4	Your clinical educator does not make educational encounters interesting.					
5	Your clinical educator provides opportunities to practice skills already learned.					
6	Your clinical educator stimulates your interest in the topic being presented.					

Number	Questions	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
7	Your clinical educator addresses the desired outcomes for each learning opportunity.					
8	The clinical educator does most of the work for you during mock clinical exercises.					
9	Your clinical educator explains the process involved in learning opportunities.					
10	The clinical educator encourages reflection on your prior clinical experiences.					
11	The clinical educator encourages dialogue among you and your colleagues during educational encounters.					

Number	Questions	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Disagree
12	Your clinical educator identifies your strengths and limitations objectively.					
13	Your clinical educator is available to answer questions related to new equipment or skills that you struggled with.					
14	The clinical educator works alongside preceptors and experienced nurses to assess clinical competencies and skills.					
15	Your clinical educator conducts individual conversations to identify your educational needs.					
16	The clinical educator encourages you to assess your own clinical needs.					

Number	Questions	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
17	Your clinical educator explains the rationale behind specific procedures or information.					
18	Your clinical educator helps you identify gaps between your clinical goals and your present level of performance.					
19	Your clinical educator incorporates demonstration, simulation, and technologies in the learning environment.					
20	The clinical educator does not explain the rationale behind specific procedures or information.					
21	The clinical educator allows adequate time to practice new skills and concepts.					

Number	Questions	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
22	Your clinical educator encourages professional development.					
23	Your clinical educator helps you relate new learning to your prior clinical experiences.					
24	Your clinical educator provides an environment where you can share ideas and experiences.					
25	Your clinical educator challenges you constructively during educational encounters.					
26	The clinical educator does not encourage you to work on your own.					
27	The clinical educator presents all the information you need to know during a session without suggesting you go to other resources.					

Number	Questions	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
28	Your clinical educator embraces errors as a natural part of the learning process.					
29	The clinical educator encourages questions about your clinical needs.					
30	Your clinical educator plans group discussions, allowing personal experiences and knowledge sharing.					
31	The clinical educator allows you to make practical applications of new knowledge.					
32	The clinical educator does not deal with clinical problems you are having on the unit.					
33	Your clinical educator provides orientation on new policies and procedures					

CEEQ Scoring Instructions

The CEEQ measures nurses' perceptions regarding if their clinical educators' methods are consistent with the adult learning theory self-perceived nursing clinical reasoning ability. The scale contains 33 items with higher score indicating how well clinical educator's methods are consistent with the adult learning theory. There are 5 reverse questions. The total score is to sum all item scores. Above is the scale.

Regular scores instructions

Strongly disagree = 1
Disagree = 2
Neither agree nor disagree = 3
Agree =4
Strongly agree = 5

Items 4, 8, 20, 26, and 32 are reversed scored---------all other items are scored regularly

Reverse scores instructions

Strongly disagree = 5
Disagree = 4
Neither agree nor disagree = 3
Agree =2
Strongly agree = 1

Sum = 33

Participants Instructions

Please read each item and select the number that best describes your current clinical educators teaching methods. There is no right or wrong answer.

Appendix E: NCTEI Survey Instrument

NCTEI Survey Instrument:
Best Clinical Teacher

DIRECTIONS: Think about your interactions with your clinical educator on your unit. Think back to specifically what this person did to make him/her the
most effective clinical educator. For each statement, indicate how descriptive the behavior of this individual was.

Teaching Behavior	**Not at all**						
	Very Descriptive						**Descriptive**
Teaching Ability	1	2	3	4	5	6	7
1. Explains clearly	1	2	3	4	5	6	7
2. Emphasizes what is important	1	2	3	4	5	6	7
3. Stimulates student interest in the subject	1	2	3	4	5	6	7
4. Remains accessible to students	1	2	3	4	5	6	7
5. Demonstrates clinical procedures and techniques	1	2	3	4	5	6	7
6. Guides students' development of clinical skills	1	2	3	4	5	6	7
7. Provides specific practise opportunity	1	2	3	4	5	6	7
8. Offers special help when difficulties arise	1	2	3	4	5	6	7
9. Is well prepared for teaching	1	2	3	4	5	6	7
10. Enjoys teaching	1	2	3	4	5	6	7
11. Encourages active participation in discussion	1	2	3	4	5	6	7
12. Gears instruction to students level of readiness	1	2	3	4	5	6	7
13. Quickly grasps what students are asking or telling	1	2	3	4	5	6	7
14. Answers carefully and precisely questions raised by students	1	2	3	4	5	6	7
15. Questions students to elicit underlying reasoning	1	2	3	4	5	6	7
16. Helps students organize their thoughts about patient problems	1	2	3	4	5	6	7

17.	Promotes student independence	1	2	3	4	5	6	7
Nursing Competence		1	2	3	4	5	6	7
18.	Demonstrates clinical skill and judgment	1	2	3	4	5	6	7
19.	Demonstrates communication skills	1	2	3	4	5	6	7
20.	Reveals broad reading in his/her area of interest	1	2	3	4	5	6	7
21.	Discusses current development in his/her field	1	2	3	4	5	6	7
22.	Directs students to useful literature in nursing	1	2	3	4	5	6	7
23.	Demonstrates a breadth of knowledge in nursing	1	2	3	4	5	6	7
24.	Recognizes own limitations	1	2	3	4	5	6	7
25.	Takes responsibility of own actions	1	2	3	4	5	6	7

26.	Is a good role model	1	2	3	4	5	6	7
Evaluation		1	2	3	4	5	6	7
27.	Makes specific suggestions for improvement	1	2	3	4	5	6	7
28.	Provides frequent feedback on students' performance	1	2	3	4	5	6	7
29.	Identifies students' strengths and limitations objectively	1	2	3	4	5	6	7
30.	Observes students' performance frequently	1	2	3	4	5	6	7
31.	Communicates expectations of students	1	2	3	4	5	6	7
32.	Gives students positive reinforcement for good contributions, observations or performance	1	2	3	4	5	6	7
33.	Corrects students' mistakes without belittling them	1	2	3	4	5	6	7
34.	Does not criticize students in front of others	1	2	3	4	5	6	7
Interpersonal Relations		1	2	3	4	5	6	7
35.	Provides support and encouragement to students	1	2	3	4	5	6	7
36.	Is approachable	1	2	3	4	5	6	7
37.	Encourages a climate of mutual respect	1	2	3	4	5	6	7
38.	Listens attentively	1	2	3	4	5	6	7
39.	Shows a personal interest in students	1	2	3	4	5	6	7
40.	Demonstrates empathy	1	2	3	4	5	6	7
Personality		1	2	3	4	5	6	7
41.	Demonstrates enthusiasm	1	2	3	4	5	6	7
42.	Is a dynamic and energetic person	1	2	3	4	5	6	7
43.	Self -confidence	1	2	3	4	5	6	7
44.	Is self-critical	1	2	3	4	5	6	7
45.	Is open-minded and non-judgemental	1	2	3	4	5	6	7

46.	Has a good sense of humour	1	2	3	4	5	6	7
47.	Appeasers [Appears] organized	1	2	3	4	5	6	7

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NCTEI Scoring Instructions

The NCTEI measures staff nurses ‘perception of their clinical educator’s effectiveness. The scale contains 47 items with higher scores indicating perceived effectiveness of the clinical educator. There are no reverse questions. The total score is to sum all item scores.

Above is the scale**.**

Sum = 47

Appendix F: Recruitment Email for Potential Participants

TC IRB ID: 22-268

Dear Staff Nurse,

My name is Marilyn Campbell, and I am a staff nurse at Montefiore. I am currently working on a research project about staff education that may be of interest to you. To be eligible to participate in this study, you must be a staff nurse more than three months and work full or part-time day or night shifts. Please be aware that, even if you are eligible, your participation in this or any research study is completely voluntary. There will be no consequences to you whatever if you choose not to participate, and your employment at Montefiore Medical Center will not be affected by that choice. If you do choose to participate, the study will involve completing an online survey. I will be visiting your unit throughout the upcoming weeks to inform you more about the study. You may choose not to respond to this email or speak to me when I visit your unit. If you do speak or respond to me, any questions you have about the study will be answered. I can be reached at maricamp@montefiore.org

If you want to participate and have at least 30 minutes now, click the link below.

https://tccolumbia.ca1.qualtrics.com/distributions/surveys/SV_eJyCc7hNJuWZUvc/anonymous-links#:~:text=https%3A//tccolumbia.qualtrics.com/jfe/form/SV_eJyCc7hNJuWZUvc

Appendix G: SELF-EVALUATION QUESTIONNAIRE STAI AD Form Y-1

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then choose the appropriate response to indicate how you feel when **your staff educator is providing education on your unit**. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your feelings during staff education.

	Not At All	**Somewhat**	**Moderately So**	**Very Much So**
1. I feel calm	1	2	3	4
2. I feel secure	1	2	3	4
3. I am tense	1	2	3	4
4. I feel strained	1	2	3	4
5. I feel at ease	1	2	3	4
6. I feel upset	1	2	3	4
7. I am presently worrying over possible misfortunes	1	2	3	4
8. I feel satisfied	1	2	3	4
9. I feel frightened	1	2	3	4
10. I feel comfortable	1	2	3	4
11. I feel self-confident	1	2	3	4
12. I feel nervous	1	2	3	4
13. I am jittery	1	2	3	4
14. I feel indecisive	1	2	3	4

	Not At All	Somewhat so	Moderately So	Very Much So
15. I am relaxed	1	2	3	4
16. I feel content	1	2	3	4
17. I am worried	1	2	3	4
18. I feel confused	1	2	3	4
19. I feel steady	1	2	3	4
20. I feel pleasant	1	2	3	4

STAI Scoring Instruction for regular items

Not At All = 1
Somewhat = 2
Moderately So
= 3 Very
Much So = 4

STAI Scoring Instructions for reverse items

Not At All = 4
Somewhat = 3
Moderately So
= 2 Very
Much So = 1

The SELF-EVALUATION QUESTIONNAIRE STAI AD Form Y-1 measures nurses' anxiety at the current moment. The scale contains 20 items with higher score indicating higher anxiety levels. The reverse coded items are 1, 2, 5, 8, 10, 11, 15, 16, 19, 20. The total score is to sum all item scores. Above is the scale.

Appendix H: Nurses Clinical Reasoning Scale

Directions: Please read each item and select the number that best describes your current clinical performance. There is no right or wrong answer.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. I know how to collect an admitted patient's health information quickly.	5	4	3	2	1
2. I can apply proper assessment skills to collect a patient's current health information.	5	4	3	2	1
3. I can identify abnormalities from the collected patient information.	5	4	3	2	1
4. I can identify a patient's health problems from the abnormal information collected.	5	4	3	2	1
5. I can recognize possible early signs or symptoms when a patient's health deteriorates.	5	4	3	2	1
6. I can explain the mechanism and development associated with the early signs or symptoms when a patient's health deteriorates.	5	4	3	2	1
7. I can accurately prioritize and manage any identifiable patient problems.	5	4	3	2	1
8. I can correctly explain the mechanism behind a patient's problems.	5	4	3	2	1
9. I can set nursing goals properly for the identified patient problems.	5	4	3	2	1
10. I can provide appropriate nursing intervention for the identified patient problems.	5	4	3	2	1
11. I am knowledgeable of each nursing intervention provided.	5	4	3	2	1
12. I can identify and communicate vital information clearly to the doctors based on the patient's current condition.	5	4	3	2	1
13. I can anticipate the prescription ordered by the doctor according to the patient information provided.	5	4	3	2	1
14. I can accurately evaluate and identify whether a patient's condition is improved.	5	4	3	2	1
15. I know the follow-up steps to take if the patient's condition does not improve.	5	4	3	2	1

NCRS Scoring Instructions

The NCRS measures self-perceived nursing clinical reasoning ability. The scale contains 15 items with higher score indicating self-perceived higher level of clinical reasoning ability. There are no reverse questions. The total score is to sum all item scores. Above is the scale.

Strongly agree
=5 Agree = 4
Neutral = 3
Disagree = 2
Strongly
disagree = 1

Appendix I: NCTEI Permission for Use

TCApps

Campbell, Marilyn <mjc2292@tc.columbia.edu>

NCTEI Instrument

Stephens-Kyte, Tara <tara.stephens-kyte@ubc.ca> Mon, Dec 6, 2021 at 3:14 PM
To: "Bunnell, Keith" <keith.bunnell@ubc.ca>
Cc: "mjc2292@tc.columbia.edu" <mjc2292@tc.columbia.edu>

Dear Marilyn,

I hope this message finds you well. Your question regarding permissions to use the instrument in the following items was forwarded to me by Keith Bunnell (cc'd): *Nursing clinical teacher effectiveness inventory*: http://hdl.handle.net/2429/29816

This item is licensed Attribution-NonCommercial-ShareAlike 3.0 Unported (CC BY-NC-SA 3.0) which indicates that you can share and adapt the material in this work as long as you provide attribution to the original. Details regarding the license can be found on the Creative Commons site: http://creativecommons.org/licenses/by-nc-sa/3.0/ Please see our FAQ on citing items in cIRcle if you have questions about this: https://circle.ubc.ca/about/faq/

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I hope the above information answers your question. If you have any additional questions regarding rights for items from the cIRcle repository, please contact us at circle.repository@ubc.ca

Best,

Tara

Tara Stephens-Kyte MLIS, MA (She/Her/Hers)
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Phone 604 822 6577
tara.stephens-kyte@ubc.ca | @cIRcle_UBC
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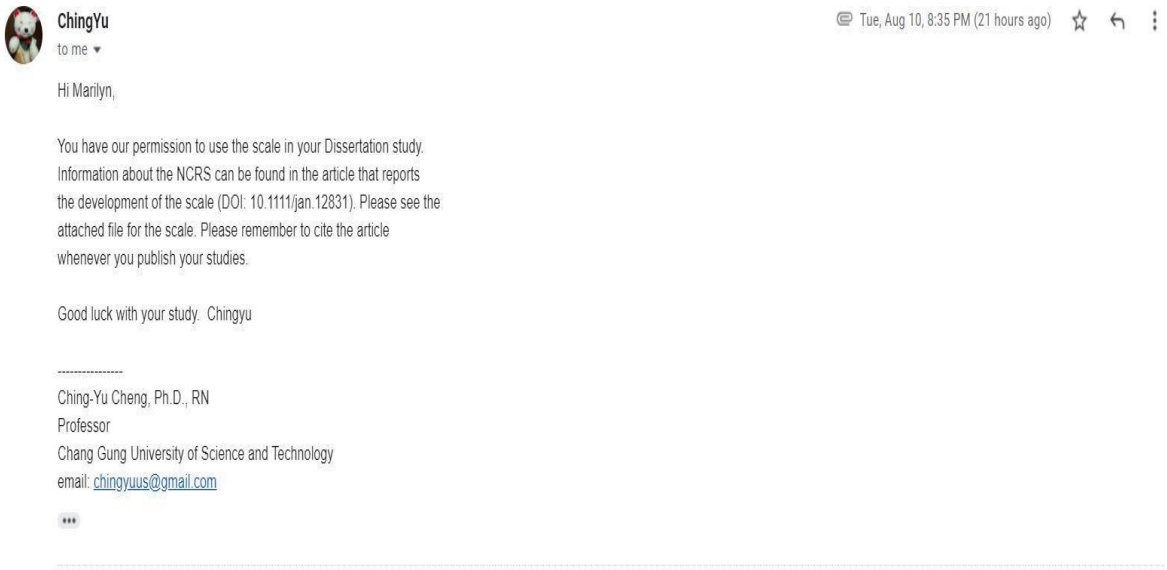
Appendix J: Stait-Trait Anxiety Inventory Permission for Use

State-Trait Anxiety Inventory for Adults™

(Forms Y1 and Y2)

Appendix K: The Nurse Clinical Reasoning Scale Permission to Use



ChingYu
to me

Tue, Aug 10, 8:35 PM (21 hours ago)

Hi Marilyn,

You have our permission to use the scale in your Dissertation study. Information about the NCRS can be found in the article that reports the development of the scale (DOI: 10.1111/jan.12831). Please see the attached file for the scale. Please remember to cite the article whenever you publish your studies.

Good luck with your study. Chingyu

Ching-Yu Cheng, Ph.D., RN
Professor
Chang Gung University of Science and Technology
email: chingyuus@gmail.com