

2019

A Systematic Review of Nurse Staffing Models

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Walden University

College of Health Sciences

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Elizabeth Ubochi

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Walden University

2019

Abstract

A Systematic Review of Nurse Staffing Models

by

Elizabeth Ubochi

MS, Walden University, 2017

BS, Florida Hospital College of Health Science 2011

Project Submitted in Partial Fulfillment

Of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

February 2020

Abstract

Appropriate nurse staffing is essential to the delivery of high-quality patient care. Nursing leadership identifies nurse staffing model as an evidence-based staffing model following problems with nursing staff retention on 4 acute care units in a recently opened hospital. The linkage model guided the review of evidence on nurse staffing models and the relationship to nurse job satisfaction and nurse retention and to explore strategies that could lead to recommendations to nursing leadership. The 466 articles found were reduced to 7 articles, 2 at Level I (systematic review), 4 at Level VI (quantitative descriptive), and 1 at Level VII (expert opinion). Based on the key findings organized on 4 components of the linkage model (nurse job satisfaction, retention, burnout, and decision-making autonomy), flexibility with work schedules and a self-scheduling model were recommended, providing nurses with the freedom to organize shifts around non work responsibilities. Successful implementation of the self-scheduling model would require staff involvement and support of the organizations to improve nurse job satisfaction, confidence, professionalism, and work-life balance for nurses. In addition, the organization should foster the delivery of quality care in a work environment with an appropriate nurse staffing and patient to nurse ratio. These recommendations have the potential to (a) impact this facility's design of a more evidence-based nurse staffing model with the known benefits of patient-centered care, (b) promote nurse job satisfaction, (c) promote retention, and (d) promote social change within the organization and community.

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Dedication

I want to thank God for his blessings and for providing his wisdom, knowledge and strength throughout this process; to my mother Gladys Roman; to my husband Prince Jasper Ubochi; and my children Ifeayichukwu Ubochi, Chidinma Ubochi, Chukwuebuka Ubochi, Chiedodie Ubochi and Chioma Ubochi for their unconditional love and understanding over the years. I wish to express my sincerest gratitude to Dr. Whitehead for her guidance and engagement throughout the doctoral process and finally, to my project committee members, my preceptor, my friends, and my coworkers.

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Section 1: Nature of the Project

Introduction

Nurse staffing is a complex process. Adequate staffing has presented extreme challenges to the nursing profession and is the basis of job dissatisfaction among nursing staff. Appropriate staffing models can be cost-effective and promote safety in patient care delivery as well as quality measurement in nursing outcome benchmarks (Weston, Brewer & Peterson, 2012). There are many factors which impact the complexity of nurse staffing. Historical full-time equivalent (FTE) staffing strategies have presented significant issues such as job dissatisfaction, staff retention, and high turnover rates. Traditionally, healthcare organizations have projected anticipated nursing staff positions at the beginning of a fiscal year (FY). However, this method of projecting nurse staffing needs does not account for scheduled or unscheduled staff retention needs, staffing variations in response to changing patient census, or changes in patient acuity (Johnson-Carlson, Costanzo, & Kopetsky, 2017). Nurse executives who hold key leadership positions in healthcare organization are well positioned to promote patient-centered care and address the need for improved patient care delivery standards. Evidence exists that indicates a direct connection between inadequate nurse staffing and optimal patient outcomes (Johnson-Carlson et al., 2017). The American Nurses Association (ANA) has identified the impact of adequate staffing patterns on the care of complex patients, reduction of medication errors, decreased mortality rates, elevated patient care satisfaction, decreased reports of nurse burnout, and increased job satisfaction leading to decreased nursing staff turnover rates (Shimp, 2017). The ANA policies emphasize the

need for adequate staffing patterns, through utilization of appropriate staffing models, that empower staff nurses' engagement and participation in the creation of staffing plans that meet nursing unit demands. This approach clearly indicates the need for flexible staffing models which take into consideration changes in patient care requirements, promotion of nursing outcomes, and requisite administrative responsibilities and budgetary compliance (Shimp, 2017)

Problem Statement

Appropriate nurse staffing is essential to the delivery of high-quality patient care, reported in studies which have demonstrated registered nurse (RN) staffing policies and perceptions of workload as essential predictors of RN outcomes: job satisfaction, retention, and the quality of patient care provided (Choi & Miller, 2018). I completed my practicum at a large, public, acute care facility in the southeast United States (US). At this facility, executive leadership members identified concerns related to job satisfaction and retention among professional nurses and paraprofessional nursing staff, specifically related to the current staffing model in use. The staffing model currently in use only configures nursing hours per patient day (NHPPD) in determining daily nursing staff needs; the NHPPD calculates the number of hours of care available divided by the number of patients across a 24-hour period, essentially a skill mix per shift distribution staffing practice. The model does not have fixed ratios, rather it is guided by staffing allocation ratios based upon census, skill mix, and shifts. For example, a 24-bed medical unit could have six registered nurses (RNs) and two nursing assistants (NA) or seven RNs and one NA on the 12-hour day shift. The 12-hour night shift could have five RNs and

two NAs or six RNs and one NA, in other words the same number of staff with only differences in skill mix.

In this staffing pattern, patients could be evenly assigned to seven RNs or the charge nurse could assign patients to six RNs and have the seventh RN function as a resource nurse responsible for promotion and maintenance of patient care, management of nursing operations, nursing education activities, or training on organizational procedures, policies, practices, and organization standards. Nursing assistants would perform direct patient care activities, assisted as needed by the resource nurse.

As the census decreases, skill mix requirements change. The problem with this staffing model is that, while it works for a 24-bed medical unit, it may not work for the Intensive Care Unit (ICUs) or the step-down units where intermediate levels of care are provided. Unit acuity levels and patient populations are likewise not considered. Nurses can be assigned to acute care units, where patients may demonstrate sudden changes in activities in daily living (ADLs) related to patients' age groups and respective limitations. The charge nurse is included in the mix and can have a full assignment, especially at night when the staffing methodology decreases the number of RNs from six to five for 24 patients. Nurses who come from organizations where there is a hierarchy consider the RN/NA assignment a dissatisfier (Nursing Administration, personal communication, July 21, 2019).

Achieving quality outcomes within healthcare organizations depends on interpersonal, reliable, integrated, and databased staffing systems driven by patient needs and demands (Trepanier, Lee, & Kerfoot, 2017). The goal of this project was to present a

systematic review of the literature on staffing models that have contributed to retention and nurse satisfaction. Results of the review will be shared with the healthcare facility to provide current evidence of strategies that support nurse retention and satisfaction. This project will support social change within the facility by supporting a healthy work environment.

Purpose Statement

The purpose of this project was to complete a systematic review of literature on nurse staffing models and present recommendations that have been shown to promote nurse retention and satisfaction. The practice question was: what are recommended strategies for nurse staffing that promotes nurse retention and satisfaction? The target facility is a few years old and has had difficulty retaining nursing staff. Leadership has expressed the need to identify a staffing model that has demonstrated improved nurse retention and satisfaction. This systematic review was shared with nursing leadership along with recommendations for a possible staffing model.

Nature of the Doctoral Project

Sources of evidence published between 2015 and 2019 were reviewed. The following databases were used: CINAHL, ProQuest, MEDLINE, Cochrane Database of Systematic Reviews, and Google Scholar. The following key search terms were used: *nurse staffing x models, nurse staffing, nurse staffing x patient acuity, nurse staffing x nurse retention, nurse staffing x nurse burnout, nurse staffing x autonomy*. A system for recording, tracking, organizing, and analyzing the evidence, as well as the procedure to assure integration of the evidence, were considered. The SQUIRE2.0 Revised Standards

for Quality Improvement Reporting Excellence were followed (SQUIRE, 2019). The PRISMA flow diagram documented the studies to be included (Moher, Liberati, Tetzlaff, Altman, and PRISMA Group 2009). Flemming, Koletsi, and Pandis (2014) support using the PRISMA guideline in the development of a systemic review project in order to minimize bias and random errors with documentation of articles and project.

The evidence was graded according to the Melnyk Levels of Evidence tool (Fineout-Overholt et al., 2010). Recommendations were aligned with the evidence presented and the project question by using the *DNP Systematic Review Manual*. Results of this systematic review and recommendations for possible staffing models were given to the facility.

Significance

The stakeholders for this project included nursing administration, staff nurses, and patients. According to Minnick, Kleinpell, and Norman (2018), evidence-based nursing education and clinical practice are essential for building a healthy community of nursing professional and for strategies designed to promote staff satisfaction and retention, as well as for creating a healthcare community of scholars that will advance the nursing profession. This project was designed to support positive social change in a clinical setting to promote job satisfaction and retention among nurses.

Summary

The fundamental concept of nursing practice is to ensure patient safety and provide quality patient care. This project was designed to address the importance of nurse staffing on nursing retention and nurse satisfaction. Section 1 introduced the problem of

nurse staffing and the challenges associated with the lack of an effective model. The purpose of the project, the project question, and the nature and significance of the project were discussed. The purpose of this project was to complete a systematic review of the literature on nurse staffing models and present recommendations to the nursing management, supervisor and staffs with evidence supporting nurse retention and satisfaction. The practice question was: What are the recommended strategies for nurse staffing that promote nurse retention and satisfaction?

Section 2 explored the model supporting this project and the evidence relevant to the project.

Section 2: Background and Context

Introduction

The purpose of this doctoral project was to conduct a systemic review of literature in order to identify a model or models that have demonstrated support for job satisfaction and retention among nurses. The practice question was: What are the recommended strategies for nurse staffing that promote nurse retention and satisfaction? Section 2 presents evidence related to staffing models and their effect on nurse satisfaction and retention. The linkage model as a framework for the project was introduced.

Concepts, Models, and Theories

Employee and management relationships are essential factors in healthcare settings as they can positively or negatively affect patients care outcomes, nurses job retention, and satisfaction. The conceptual framework employed in this systemic review project was the linkage model, with a focus on the components of the linkage model that focus on the nurse as an individual. According to Scotti and Harmon (2014), the linkage model illustrates the structural relationship between nurse retention and job satisfaction in the clinical work environment. The linkage model research identified specific work environment features such as leadership support, and Staff work engagement from the employee's perspective and connects them with significant organizational outcomes. Although many studies have been associated with the patient acuity staffing model and organizational outcomes in job satisfaction, the following factors may influence staff relationship with patients and management: autonomy work effectiveness, better accountability and decrease in nurse burnout, the perceptions of RNs of management's

understanding of leadership and support for nurses, and providing adequate resources (Smith, 2016). The linkage model identified two components that are essential to delivering patient-centered care: adequate staffing based on patient acuity and the influence of management in positive employee and patient experience outcomes as they relate to the patient acuity model. This model included a numeric scale to classify patient acuity. These numeric acuity scores play a crucial role in formulating and balancing nursing assignments. While helpful, the tools using patient acuity still lack the consistency of a standardized staffing methodology.

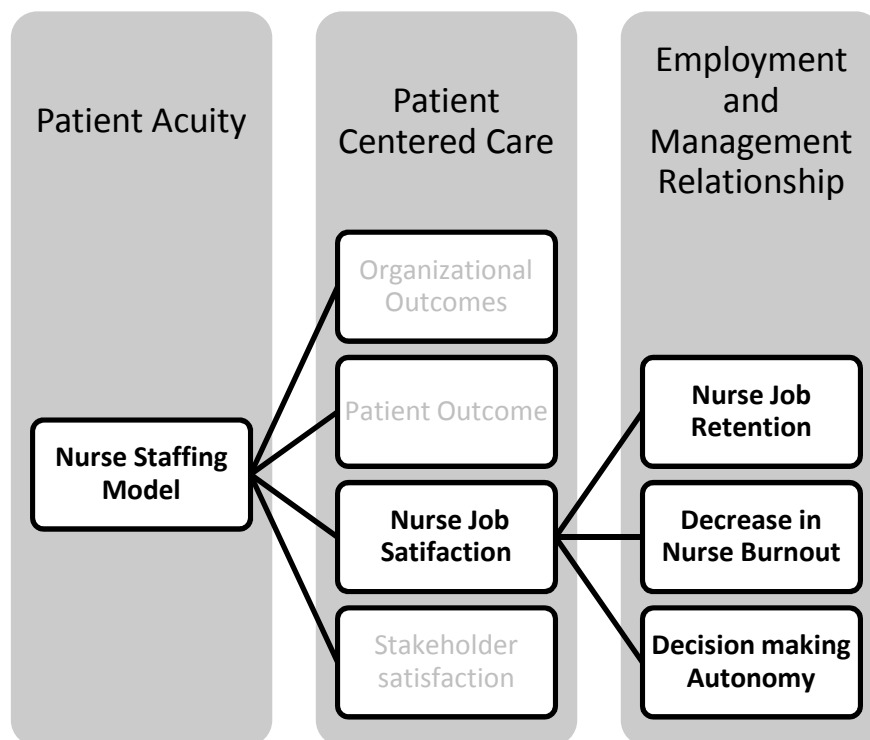


Figure 1. *Linkage model*. Adapted from “A nurse agency model effect on registered nurse retention and patient satisfaction” by S. Filosa 2008, p. 13-14. *ProQuest Dissertations & Theses Global*. (304488599).

Relevance to Nursing Practice

Nurse Staffing Models

Nurse staffing is a complex policy concern. Nurse staffing models are being initiated in many healthcare settings to decrease their turnover rate (Hung, Chen, & Shieh, 2012). A discussion of staffing, nurse satisfaction and nurse retention would not be complete without an overview of the historical significance of the work in this area. Dr. Linda Aiken and colleagues at the University of Pennsylvania began researching staffing issues in 2001. Their early research demonstrated that the relationship between (a) adequate staffing and (b) management or organizational support led to improved quality of patient care and a decrease in nurse job dissatisfaction, turnover, and burnout. This early research also demonstrated that low staffing ratios were linked to needlestick injuries (Aiken, 2002; Clark et al., 2002). Cimiotti, Aiken, Sloane and Wu (2012) detailed an association between patient-to-nurse ratio and both urinary tract infection and surgical site infections. Aiken and colleagues have continued to study the relationships between staffing and issues with nurses and organizations as a system (Aiken, Sloane, Griffiths, Rafferty, Bruyneel, McHugh, & Sermeus, 2017; Olds, Aiken, Cimiotti, & Lake, 2017).

Nurse job satisfaction and burnout. Nurse job satisfaction and burnout are global concern within the nursing workforce as it relates to the potential impact on the quality and safety of patient care. Job dissatisfaction is a contributing factor associated with nurses leaving their jobs however, numerous studies have previously described the different rates of nurses' job dissatisfaction, burnout, and intention to leave due to longer

working hours. 12-hour shifts and nurses' job satisfaction, burnout may be associated with safety risks for patients as well as nurses (Dall'Ora, Griffiths, Ball, Simon, & Aiken, 2015) Brooks Carthon, Hatfield, Plover, Dierkes, Davis, Hedgeland, and Sanders (2019) conducted a study with thousands of nurses across hundreds of hospital settings to determine the relationship between the level of nurse commitment, nurse staffing, and evaluations of patient safety with a proposed improvement in providing patient safety and maintaining adequate nursing staffs. The results show that hospitals where nurses report higher levels of engagement, of 9% ($p < .001$) they are more likely to report errors.

Patient acuity model. An acuity model tool provides nurses with a reproducible means for determining patient acuity or the intensity of nursing care required by the patient. This is significant because appropriate nurse-patient assignments are based on a comprehensive assessment of patient acuity level. Appropriate acuity staffing has been shown to promote nurse job satisfaction, the best quality patient care, and consequently, the best overall and clinical outcomes (DiClemente, 2018). In a descriptive research study information was gathered from bedside nurses to aid nursing leaders in creating effective staffing models and assignments. These fostered a continuity of care within health care environments and nurse staffing patterns that promote nurse retention and satisfaction (Dorval, 2016). This study was implemented to examine Donabedian's structure-process-outcome approach theory that relates to patient acuity, its significant variation and application to many healthcare settings. Dorval (2016) demonstrated substantial inconsistencies in the implementation of various patient acuity model systems. The study concluded that nurses understood the concepts of acuity differently while they agreed that

patient assignments impacted nursing quality outcomes and job satisfaction. There was a connection between patient to nursing ratio, as a contributing factor to nurse job (dis)satisfaction, exhaustion or burnout, nurses' perception of the quality of care, and patient safety. Challenging patient assignments with higher patient to nurse's ratio have led to higher nurse turnover, regardless of the difference in the nurse staffing model (Wynendaele, Willems, & Trybou, 2019). Nurse-to-patient ratios influenced patient outcome, although, more studies would provide more evidence for a recommendation for optimal nurse-to-patient ratios in acute units (Driscoll, Grant, Carroll, Dalton, Deaton, Jones, & Astin, 2018). Ahmad (2019) stated that the patients' acuity tool assignment had several positive outcomes that increase nurses job satisfaction, which in turn serves as a better assignment making tool for improving quality of care. Nurse work adaptability led to reduce job dissatisfaction, increase work engagement, and improve function when faced with workplace difficulties (Yu, Raphael, Mackay, Smith, & King, 2019).

Nursing skill mix model. A two-year study of 487 patients were categorized into two groups according to the mix of nursing staff: 247 patients were cared for by both RNs and nursing aides, and 240 were cared for by RNs only. The study results did not indicate significant differences in the occurrence of infections, such as urinary tract infections, or led to longer days of hospitalization, death, or increased nursing costs. However, significant differences were noted with ventilator patients; more patients were weaned in the RN only model. It was determined that the nursing skill-mix model was associated with the successful weaning of patients from ventilators (Yang, Hung, Chen, Hu and Shieh, 2012).

Primary versus team nursing model. A cross-sectional survey study (Rahn, 2014) was conducted in four acute care hospitals in Taiwan to examine theories of teamwork and nurse job satisfaction as they relate to patient care outcomes. The study was conducted in a religious affiliated hospital setting with multiple acuities, with the number of patient beds ranging from 400 to 1,200. There were 1,475 participants in this study, which included members of the interdisciplinary team--physicians and nurses. Data was collected on teamwork, nurse job satisfaction, and the validity and reliability of the statistics research. This study demonstrated that team nursing contributes significantly to improving quality nursing care within an acute care inpatient medical-surgical setting. This research also confirmed the theory that the lack of cooperation or collaboration amongst nurses in a healthcare setting can affect patient outcomes. The data analysis of this study presented a more detailed and comprehensive picture of teamwork and provided evidence that supported the significant need to invest in improving nursing teamwork within healthcare organizations. However, the data also revealed that the quality of teamwork differed from one nursing team member to another. The authors concluded that the quality of interprofessional relationships had a real influence on the perception of patient outcomes, nurse job satisfaction, and organizational financial resources.

Nurse staffing and patient satisfaction. Working environments have been shown to affect nurse job satisfaction, reduce turnover, lower the level of stress and nursing burnout (Peeler, 2015). For example, a department that utilizes the patient acuity staffing model promotes a safe balance of patient needs and can be less overwhelming or stressful

for the nurse. Nurses who have a sense of satisfaction in their respective clinical setting would be more apt to appropriately focus attention to more effective patient care interventions that would accomplish optimal function with a decreased length of admission. Brinegar (2017), stated that a nursing shortage can negatively affect patient care. Factors affecting nurse job satisfaction and nurse retention influence the delivery of quality patient care are essential to nursing practice and its determined by the quality of care provided to individuals within the healthcare (Thrun, 2014). Natasha Khamisa, Brian Oldenburg and Karl Peltzer (2013), state that job satisfaction is an interwoven variable to nursing burnout. Therefore, job work-related stress, burnout, job dissatisfaction, and general health, can be well understood if all variables components are analyzed simultaneously.

Nurse staffing and nurse satisfaction. Promoting nurse job satisfaction and the development of better staffing models is a dynamic and complex process that must be included into staffing elements such as number of patients, or acuity (Duffy, 2016). Since the number of clinical staff is continuously decreasing, it is essential for healthcare providers to recognize this significant factor and look for more effective approaches that will lead to positive outcomes and nurse satisfaction (Wieck, Dols, and Landrum, 2010). Many studies have focused on nurse retention and hiring programs but overlooked strategies that will promote nurse satisfaction or provides opportunities for bedside or clinical nurses to participate in staffing decisions (Duffy, 2016).

Employment and management relationship. The lack of organizational or managerial support for nurses has led to nurse dissatisfactions and burn out. Nurse job

satisfaction within an organization is crucial to patients' care, representing an essential role in a healthcare organization. Nurses that experience dissatisfaction in the work environment impact all organizational outcomes (Abdullah, 2015).

Retention. Nurses who are dissatisfied with their work environments and staffing model present a higher turnover within an organization. As a result, the remaining nursing staff must accommodate for this inadequacy by reassignment in unfamiliar areas which negatively influences the nursing dynamics within the organization. The repetitive exodus of nurses within the healthcare organization negatively affects the confidence of current employees. (Kline, 2018). A quantitative study completed by Bissoondial (2014) examined the correlation between job satisfaction and retention within a Canadian healthcare facility. The result of the study revealed that higher level of job satisfaction includes better pay, nurse's autonomy, better patient distribution among nurses based on acuity level, task requirement and organizational policies that are in favor of staffing led to higher level of nurse job retention plan.

Utilizing nurses who obtain a variety of specialty skills is beneficial when addressing patient issues and performing job satisfaction. Nurses with the knowledge and skills to work in multiple departments within a facility can function independently and provide appropriate quality of care (Tevington, 2011).

Local Background and Context

The health care facility discussed in this DNP project is a government-owned facility providing services to over 110,000 veterans in the Southeast U.S. This facility opened in 2015. Discussions with nursing administration revealed challenges related to

nurse retention and nurse satisfaction. The facility is interested in implementing a staffing model that has demonstrated positive nurse satisfaction and nurse retention. Table 1 depicts the current staffing model at the acute care hospital.

Table 1

Staff Mix by Unit

Medical Unit	No Beds	No of FTE (staff)	No RNs	Nurse to Patient Ratio	LPNs	CNAs
Unit A ICU	22	36	36	1:2	N/A	N/A
Unit B Medical	24	44	30	1:5 or 1:6	N/A	14
Unit C Medical/step-down	24	51	37	1:4	N/A	14
Unit D Medical/surgical	24	41	30	1:5	N/A	11
Total	94	172	133	-	N/A	39
Mean	24	43	33	1:4		10

Role of the DNP Student

I have a master's degree in nursing with a background in critical care and nursing education. I have observed over the years that nurse staffing models that do not empower nurses cause dissatisfaction and attrition. The information from this systematic review was used to make recommendations on positive nurse staffing models that promote nurse retention and nurse satisfaction.

Summary

The purpose of this project was to complete a systematic review of the literature on nurse staffing models and present recommendations to the nursing administration on evidence supporting nurse retention and satisfaction. The practice question was:

What are the recommended strategies for nurse staffing that promote nurse retention and satisfaction? Section 2 identified the linkage model as the conceptual framework for this project. The relevance to nursing practice was discussed using the model components to explore the evidence and my role in the project was described in this section. Section 3 identified the scope of this systematic review, defined inclusion and exclusion criteria and discussed the process of appraising and synthesizing the findings. Section 3 included the practice question, sources of evidence, analysis and evaluation and it will end with a summary.

Section 3: Collection and Analysis of Evidence

Introduction

The purpose of this project was to complete a systematic review of the literature on nurse staffing models and present recommendations to the nursing administration on evidence supporting nurse retention and nurse satisfaction. The practice question was: What are the recommended strategies for nurse staffing that promote nurse retention and satisfaction? In this section, I explored the practice-focused questions, the methodology, the sources of evidence, and the analysis and synthesis of the literature.

Sources of Evidence

This project followed the steps in the Walden University *Manual for Systematic Review Doctor of Nursing Practice (DNP) Scholarly Project*. Source of evidence were reviewed from the following database: CINAHL, ProQuest, MEDLINE, Cochrane Database of Systematic Reviews, and Google Scholar. The inclusion criteria were as follows: the time period was from 2015 to 2019, English language and peer reviewed articles only. Other sources of evidence were position statements the American Nurses Association (ANA). The following keyword combinations were used: *nurse staffing x models, nurse staffing x organizational outcomes, nurse staffing x patient satisfaction, nurse staffing x patient acuity, nurse staffing x nurse satisfaction, nurse staffing x stakeholder satisfaction, nurse staffing x nurse retention, nurse staffing x nurse burnout, nurse staffing x autonomy, nurse staffing x nurse decision making*.

The exclusion criteria were as follows: (a) articles that signified a researcher's opinion, (a) non-English language articles, (b) evidence published before the year of

2015. d (c) journals on nurses employed in residential settings, (d) republished journals on nurse staffing of report of nurse emotional exhaustion with staffing, work environment, (f) articles that did not identify a specific method or instrument used to measure job satisfaction, (g) retention and burnout, (h) advanced practice nurses and nurse managers or supervisors.

Analysis and Synthesis

This systematic review was conducted in order to determine the strengths and weaknesses as well as the gaps in the current literature as recommendations related to the practice problem. The aim of the review was to present to nursing administration recommendations for one or more acuity models that have strategies supported by evidence to promote nurse retention and satisfaction. The SQUIRE 2.0 Revised Standards for Quality Improvement Reporting Excellence were followed (SQUIRE, 2019). The PRISMA flow diagram was used to document the studies to be included (Moher, Liberati, Tetzlaff, Altman, PRISMA Group, 2009, see Appendix A). The evidence was graded according to the Melnyk Levels of Evidence (Fineout-Overholt et al., 2010). Data were recorded and organized on a spreadsheet with the following columns.

1. Study title, author, date of publication
2. Problem description
3. Aim of study, setting, sample
4. Design and intervention
5. Ethical considerations
6. Results

7. Limitations
8. Conclusions
9. Level of evidence

The linkage model was used to guide analysis and presentation of the findings.

The evidence was graded using the hierarchy of evidence criteria described by Fineout-Overholt and colleagues (2010). Table 2 explains the assigned levels of evidence.

Table 2

Hierarchy of Evidence Table

Type of Evidence	Level of Evidence	Description
Systematic Review or meta-analysis	I	Synthesis of evidence from relevant RCTs
RCT	II	Experiments where subjects are randomized
Controlled trial without randomization	III	Experiments where subjects are nonrandomly assigned to a group
Case-control or cohort study	IV	Comparison groups or observations of groups to predict or determine outcomes
Systematic Review of qualitative or descriptive studies	V	Systematic Review of gathering data on human behavior or describing background on an area of interest
Qualitative or descriptive study	VI	Gathering data on human behavior or describing background on an area of interest
Expert opinion or consensus	VII	Opinions of experts or consensus of experts

Adapted from Fineout-Overholt, E., Melnyk, B., Stillwell, S., & Williamson, K. (2010). Critical appraisal of the evidence: Part 1. *American Journal of Nursing*, 110(7) p. 48.

Protections

The systematic review followed the Walden University DNP *Manual for Systematic Review Doctor of Nursing Practice (DNP) Scholarly Project* (Walden University, 2019). The required documents were submitted to the IRB upon URR

approval and before beginning implementation of the project. The IRB approval number was 17-19-061618.

Summary

Job satisfaction is a vital area of analysis across the nursing practice. A lack of job satisfaction appears to play a role in the intention of employees to leave the organization for which they work. Section 3 described the planning, implementation and analysis of the systematic review for this project following the guidelines set forth in the Walden University *Manual for Systematic Review Doctor of Nursing Practice (DNP) Scholarly Project*. The practice question was: What are the recommended strategies for nurse staffing that promote nurse retention and satisfaction? Section 4 discussed the findings and implications of the systematic review; recommendations based on the review were introduced; strengths and limitations of the project are identified.

Section 4: Findings and Recommendations

Introduction

The purpose of this project was to explore current evidence on nurse staffing models that have demonstrated job satisfaction and retention. Section 4 presents the findings, analysis and recommendations from this systematic review. The practice question was: What are the recommended strategies for nurse staffing that promote nurse retention and satisfaction?

Findings and Implications

I used the electronic databases CINAHL, Medline, ProQuest, and Cochrane. I searched for articles with terms that limit the results to the English language, peer-reviewed journals and systematically reviewed articles. In searching I used the building block approach with the word joined by (AND). The first block of search terms included *staffing model AND job satisfaction*, the second block consisted of *staffing model AND nurse retention*, *staffing model AND turnover*, *nurse staffing model AND nurse burnout*. The result was a total of 466 and after removal of duplicates copies and analyzing the abstracts for my project inclusion criteria, seven articles met all the inclusion. Table 3 identifies the graded articles by level of evidence.

Table 3

Hierarchy of Evidence for Selected Studies

Type of evidence	Study type	Number of studies
I	Systematic review or meta-analysis	2
II	Randomized controlled trials	
III	Controlled trials without randomization	0
IV	Case controlled trials and cohort studies	0
V	Systematic review of qualitative or descriptive studies	0
VI	Qualitative or descriptive studies	4
VII	Expert opinions or consensus	1

Level I

A systematic review conducted by Whitehead and Myers (2016) was used to explore the influence of hospital nurse staffing models on patient and staff-related outcomes. This study identified staffing models that correlated with better outcomes for patients in the hospital setting and the staffing models that linked with better staff-related results in the hospital setting. In this systematic Review, a wide range of databases from beginning to May 2009, including Cochrane/Effective Practice and Evaluation of Care (EPOC) resources (DARE, CENTRAL, the EPOC Specialized Register), PubMed, EMBASE, CINAHL Plus, CAB Health, Virginia Henderson International Nursing Library, the Joanna Briggs Institute database, the British Library, international thesis databases and generic search engines, were searched. The result identified 45 initial studies. Fifteen studies were included in the review, as the remainder did meet the inclusion criteria; however, excluded were 45 articles following the quality appraisal. The

primary nursing model and self-scheduling were associated with lower staff turnover. The findings suggested that interventions related to hospital nurse staffing models might improve some patient outcomes; and staff related outcomes. The primary nursing model and self-scheduling were associated with lower staff turnover. However, the result of this study should be reviewed and treated with utmost caution due to the insufficient evidence available from the research conducted to date.

Yu et al. (2019) conducted a related study to determine the job demands-resources model to identify factors of job demands and resources, which were associated with nurse resilience to work and personal elements of self-efficacy or satisfaction. Nurse work satisfaction leads to decrease job dissatisfaction, but increase work engagement, and improve function when faced with workplace challenges. The Job Demands-Resources model, developed by Bakker and Demerouti (2007), was used to establish the purpose of this systematic review and findings. A systematic review to identify the associated personal and work-related factors of nurse resilience. Full-text English articles included published between 2000 and 2018 in this study, which consists of a total of 38 journals that met the standard and were systematically reviewed and narratively synthesized. A total of 1444 articles were excluded from the study as it followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses protocol. The systematic search was undertaken between March and April 2018 in five databases: CINAHL Plus, MEDLINE (), PsycINFO, EMBASE, and Scopus. The results of this study were reported to the Preferred Reporting Items for Systematic Review. Nurses who have positive coping skills and a strong sense of self-satisfaction show decrease emotional burnout, which in turn

can raise compliance levels indicating a high degree of self-efficacy. The review recommended that developing institutional strategies in various clinical settings would support nurses in becoming and remaining resilient within their healthcare environment. However, additional study is needed to examine nurse resilience and to develop a consistent measure to identify associated factors within the various clinical settings that would improve nurses' ability to cope with workplace challenges, improve their capabilities, and decrease vulnerabilities.

Level VI. Liu and Aunguroch (2017) used a cross sectional survey design to determine how a theoretical model can provide a comprehensive understanding of the structural relationships among influencing factors and nurse assessed quality nursing care. Nurse work environment, nurse staffing, and outcome model, for which the abbreviation of NWE NSOM is used for this study and has been internationally used in nursing research to guide healthcare outcome research (Aiken, 2002). This model revealed that the nurses' work environment and patient to nurse ratio significantly influenced nurse outcomes. The purpose of this study was to examine the hypothesized theoretical model and use it to examine fundamental relationships amid work environment, patient to nurse ratio, job satisfaction, burnout and intention to leave, and Nurse assessed quality nursing care (NAQNC) in Chinese tertiary general hospitals applying a structural equation model (510 self-reported questionnaires were analyzed). This NWE NSOM model confirms that the work environment and patient to nurse ratio can significantly influence NAQNC. This also provides new knowledge about the work

environment as having a significant total effect on NAQNC through a direct and indirect impact on job satisfaction and burnout.

Rantanen, Pitkänen, Paimensalo, Elovainio and Aalto (2016) conducted a cross sectional research study, which was carried out in one of the Hospital University in Finland. This study was conducted to determine the differences between the primary nursing model and the individual patient allocation model in (a) work related motivational aspects; (b) work related work stress factors; and (c) job satisfaction. Each of the managers was given a structured questionnaire in somatic specialized care wards ($n = 39$), where they were asked to choose the right nursing practice model from five alternative models to describe the best nursing approach for their unit.

This study analyzed factors related to nurse's job satisfaction in two different nursing practice models: the primary nursing model (PNM) and the individual patient allocation model (IPAM). Nurses in both study groups were both satisfied with the continuity of their employment, their salary, and their colleagues. However, nurses who worked in IPAM wards were more pleased with the action of the unit manager, and this may be that with PNM, nurses do not feel unsupported or receive assistance from their unit manager with patient care management throughout hospital admission. The result also shows that nurses' turnover caused more stress to nurses that worked in the PNM unit than nurses who worked in IPAM units; however, satisfaction with personal growth was noted to be equal in both nursing model groups.

Roche, Spence Laschinger and Duffield (2015) conducted a cross-sectional study to examine the nursing work-life model (NWM) proposed by Leiter and Laschinger

(2006). The NWM describes a model of relationships that support nursing practice related to nursing turnover and satisfaction. Adequate nurse staffing is vital for promoting positive nurse and patient outcomes. Insufficient nurse staffing has been linked to nurse burnout as studies have shown that nurses working in practice environments with inadequate nurse staffing levels experience a decrease in job satisfaction. There is a higher perception of adequate staffing, collaboration, and teamwork positively influenced satisfaction with current position and job. This study was initiated using a model measuring design, where the proposed model was analyzed using cross-sectional data. The model was tested using a structural equation modeling approach. The results of this study provide further support for the NWM in two different countries. The NWM was shown to be valid in both countries, implying that the effect of management efforts to ensure that elements of supporting practice environments are in place to promote retention, nurse job satisfaction relevant to nursing resources.

Thériault, Dubois, Borgès da Silva and Prud'homme (2019) in the province of Quebec, Canada, did a descriptive study Nurse staffing conceptual model adapted from the American Nursing Association. This study was conducted in an acute care setting to evaluate staffing practice in a multidimensional method while concurrently recognizing various variables relating to nurse staffing team stability. This dimension was on the ability to maximize staff involvement with the available workforce and to ensure staff retention, as staff retention is often linked to an optimal work environment and to work satisfaction. This dimension is in five operationalized variables: workforce status, absenteeism, the use of float teams, supplemental use of agency staff, and the turnover of

nurse's turnover. The care teams in Quebec constituted of several groups of staff, such as RNs, licensed practical nurses, and assistive staff.

Data were collected from January to March of 2016, from 40 facilities in four separate hospitals in one of the largest cities in Quebec, and four distinct nurse staffing groups emerged from this study. The most limited resourced model group depended on less qualified personnel and agency staff. The moderately resourced primary model was viewed as the average across all staffing dimensions, but employed less overtime, relying mostly on auxiliary staff nurses. The most resourced group maximized highly skilled staff and minimized instability in the nursing team. The staffing characteristics of the least resourced group corresponded to what was defined as a primary functional group in another study and considered as the farthest from the ideal staffing group. The care provided by the least resourced group was unstable and responded poorly to staffing needs from the perspective of healthcare demand. The least resourced group was likely to lead to an unfavorable chain reaction in a care unit, and the lack of resources potentially promotes challenges, which can lead to increased instability and difficulties with attracting and retaining staff. The results of this research study provided new data on experimental groups of nurse staffing in acute care in Quebec, similarly to other developed countries. This study could be beneficial to healthcare managers in similar contexts to plan and promote nursing resources that will support staffing interventions, staff retention, and work satisfaction. This study also provided a current picture of nurse staffing in the acute care setting in Quebec, which can significantly contribute to the first step needed for any optimization efforts in the health system. The limitation of this study

is due to the broad range of variables involved in nurse staffing, which explains the presence of the difference between and within staffing groups.

Level VII. Pearce, Morgan, Matthews, Martin, Ross, Rochin and Welton (2018) discussed the ANA's principle of staffing acknowledged, and a task force produced the Principles of Nurse Staffing in 1999, updated in 2012. ANA recommended that clinical care nurses should be actively engaged and contributing to staffing plans and decision-making processes. The task force members selected the Institute of Medicine's six domains of healthcare quality as a means of unifying framework in redeveloping the principles of nurse staffing within these domains to allow key stakeholders to coordinate with nurse staffing and organizational strategic plans to include safety, patient-centered care, timely, adequate, and equal. This task force addressed a wide range of current issues relevant to nurse staffing. Current topics such as the principal goals of the institute for healthcare improvement is towards the patient experience of care, promoting population health, decrease per capita cost of health care, and clinician and staff satisfaction. The task force further identified areas to be discussed in future studies and measures to maintain high quality, safe patient care within a diverse healthcare system, and to provide a work environment that supports nurse effectiveness and autonomy to represent the further significance of nurses. The purpose of this current work was to update the 2012 ANA Principles of Nurse Staffing, as this study concluded that a single conventional model or an individual approach to nurse staffing levels does not fit all situations.

Summary

Results of this review revealed the importance of staffing models that can support job satisfaction and improving outcomes for nursing staff. The recommendation to support better nurse-patient assignments can lead to satisfaction amongst nursing staff. Inefficiencies of in-hospital staffing model lead to dissatisfaction, and nurse job dissatisfaction can create barriers to flexibility and teamwork.

Synthesis

Evidence from peer reviewed journals of nurse staffing models as it relates to nursing satisfaction and nurse retention was limited to the last 5 years. The identified sources included systematic review conducted in 2016 (Whitehead & Myers, 2016) of 15 studies. The results suggested that interventions related to hospital staffing models might improve some patient outcomes and staff related issues, as the primary nursing model and self-scheduling were linked to lower staff turnover. Yu et al. (2019) supported the Whitehead and Myers (2016) results. The survey conducted by Liu and Aunguroch (2017) offered supported the importance of the work environment having a significant overall impact on job satisfaction and burnout. The current recommendations presented the ANA principles of staffing acknowledge and concluded that a single conventional model or an individual approach to nurse staffing levels, does not fit all situations. The ANA also recommended that clinical care nurses should be actively engaged in and contributing to staffing plans and decision making. Hospitals should support a staffing committee with 55% clinical care to meet staffing needs.

Conclusion

Although research on staffing models related to nurse retention and nurse satisfaction for the past 5 years was limited, there was consensus in the results: there is no preferred staffing model that will fit all situations and primary nursing and self-scheduling options have demonstrated limited positive results related to nurse satisfaction and retention. Although, there is no support for any one nurse staffing model, the findings may be used to make suggest some recommendations to improve the existing model. Based on the key findings organized around the four components of the linkage model that are most nurse focused, I have outlined some recommendations that may improve existing models. See Appendix B for key findings by job satisfaction, retention, burnout, and autonomy.

Recommendation

1. The third edition of ANA's *Principles for Nurse Staffing* is available free of charge as a download from the ANA website available at <https://www.nursingworld.org/practice-policy/nurse-staffing/staffing-principles/> To promote research to build the evidence needed relating to nurse job satisfaction, retention with a better staffing model for better patient outcomes.
2. The ANA model recommends that hospitals establish a staffing committee with the membership of at least 55% clinical care RNs and representation from each of the units. ANA (2019) recommends that RNs should be provided

with a professional nursing practice environment in which they have control over nursing practice and have autonomy in their workplace.

3. The nurse work environment has a significant effect on NAQNC through a direct and indirect impact on job satisfaction and burnout. I will recommend to leadership to establish a work environment that will foster nurse effectiveness, appropriate nurse staffing mix. patient-to-nurse ratio based on an adequate number of competent nurses to meet patient-centered, promote nurse job satisfaction, retention, reduce burnout, and achieve organizational outcomes.
4. I propose that management evaluates the current staffing model to determine the need for change. I recommend that the administration supports the management and nurse staff coordinator to establish primary nursing and self-scheduling opportunities. Primary nursing and self-scheduling foster a high level of job autonomy, satisfaction, and improve retention. However, further study is needed to determine the effects of the primary nursing model on numerically measurable outcomes, such as medication errors during patient's hospital care and the length of treatment periods.
5. Management is encouraged to review the result of the Quebec study to establish mix staffing such as RNs, licensed practical nurses, and assistive staff in an acute care setting. The result could be useful for supporting nursing autonomy, staffing interventions, plan and manage nursing resources, and

provide an up-to-date picture of nurse staffing workload in an acute care setting.

Strengths and Limitations of the Project

Nurse staffing and scheduling are leading issues facing today's nurse administrators as they seek to create high-performance healthcare environments. For nurse staffing models to support care needs with costs, metrics must be developed and employed to the care requirements of the patient situation or the overall care delivery of care in a clinical setting (Nickitas & Mensik, 2015). Nurse leaders are well-positioned to meet the intensity, complexity, and emerging requirements of accrediting and regulatory bodies. The strength of this systematic review project was to assist nurse leaders to recognize the value of mixed staffing models and the need to build the metrics of safety, quality, efficiency, and patient and nurse engagement. The project limitations included challenges with finding adequate data to support topic on staffing model as it relates to nurse job satisfaction and retention. Since the initial publication of the ANA *Principles for Nurse Staffing* (1999) research was focused primarily on staffing and patient outcomes versus nurse outcomes.

Section 5: Dissemination Plan

Dissemination

This systematic review project was conducted to identify staffing models that support nurse job satisfaction and retention. The written summary below was presented to nursing administration.

Written Summary

Nurse staffing is a complex process, and adequate staffing has been a significant challenge for the nursing profession. Staffing issues have continued to be a considerable dissatisfier within healthcare organization. A review of evidence on staffing models and nurse satisfaction or nurse retention for the past 5 years revealed limited research being conducted in this area. Since the initial publication of the ANA *Principles for Nurse Staffing* (Gallagher, Kany, Rowell, & Peterson, 1999) research has been focused primarily on staffing and patient outcomes. Although research on staffing models related to nurse retention and nurse satisfaction for the past five years was limited, there was consensus in the results: there is no preferred staffing model that will fit all situations. Although primary nursing and self-scheduling options have demonstrated limited positive results related to nurse satisfaction and retention, there is no one specific staffing model that can meet all nursing staffing demands. I recommend that we form a nurse staffing council consisting of at least 55% direct care nurses and develop a proposal for a staffing model or models that will meet our individual staffing needs following the ANA current principles for nurse staffing (2019).

Analysis of Self

Conducting a systematic review involves many skills, which include having a strong understanding of the researched topic. Reviewing, analyzing, and integration of published articles from multiple databases to have an understanding and to be able to conduct a systematic review was difficult. In conducting a systematic review, I encountered challenges with finding multiple data relating to the problem topic facing nurse job satisfaction as it relates to the staffing model. However, the knowledge obtained through this process enabled me to become more informed in the research process. The results of this systematic review project have made me realize how much impact decisions made by management and leaders have on management, staffing, the unit, and, most importantly, the nurse.

Summary

The purpose of this project was to complete a systematic review of literature regarding nurse staffing models and present recommendations that have been shown to promote nurse retention and satisfaction. The practice question was: What are the recommended strategies for nurse staffing that promote nurse retention and satisfaction? The results of this project were presented to the leadership team, at the medical facility care unit. Looking beyond the local organization, other healthcare organizations could use the data from this systematic review to understand staffing models.

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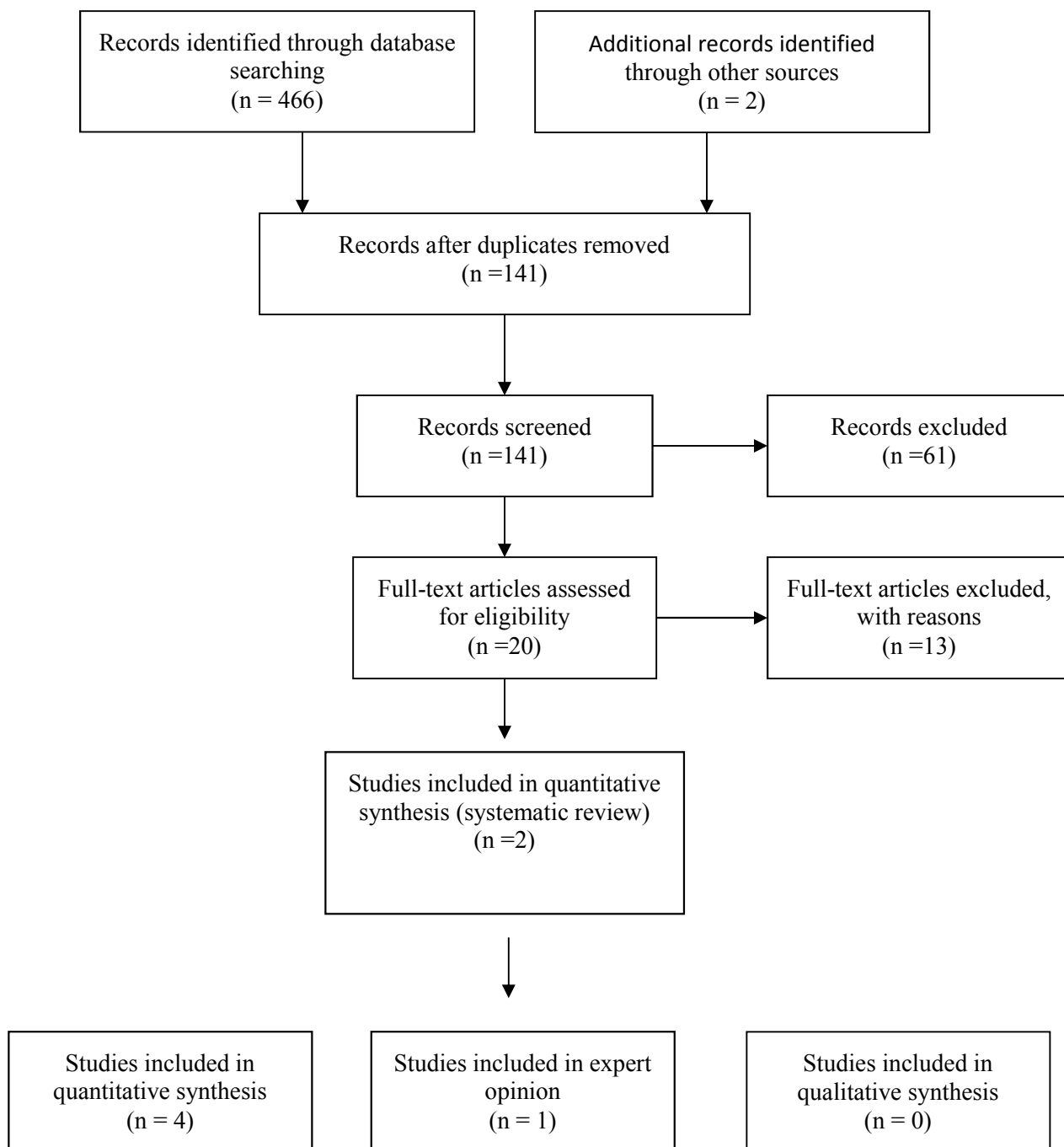
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Appendix A: PRISMA Flow Diagram

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Appendix B: Table of Key Findings by Linkage Model Components

Title	Author(s)	Linkage Model Components					Level of Evidence
		Nurse Staffing Model	Nurse Job Satisfaction	Nurse Job Retention	Decrease in Nurse Burnout	Decision-Making Autonomy	
The effect of hospital nurse staffing models on patient and staff-related outcomes	Whitehead & Myers (2016)	Primary nursing	Improves staff satisfaction	Lowers staff turnover		Self-scheduling associated with lower staff turnover	I
Personal and work-related factors associated with nurse resilience: A systematic review	Yu et al. (2019)	Job Demands-Resources	Positive coping skills and strong self-satisfaction		Associated with decrease emotional burnout.		I
Factors influencing nurse-assessed quality nursing care: A cross-sectional study in hospitals	Ying, Liu & Aunguroch (2017)	NEW-NS-OM	patient-to-nurse ratio significantly influenced nurse job satisfaction	Job retention and intension to leave	direct and an indirect impact on job burnout.		VI
Two models of nursing practice: a comparative study of motivational characteristics, work satisfaction and stress	Rantanen et al. (2016)	Primary nursing model and the Individual patient allocation model	Individual patient allocation model job satisfaction	Nurse turnover rate			VI

(continued)

Testing the Nursing Work life Model in Canada and Australia: A multi-group comparison study	Roche et al. (2015)	The Nursing Work-Life Model	supporting practice environment promote nurse job satisfaction	Promote the retention	Decrease nurse burnout with adequate staff		VI
Nurse staffing models in acute care: A descriptive study	Therriault et al. (2019)	Nurse staffing conceptual model adapted from the American Nursing Association	Work satisfaction	Staff intervention and retention		Promoting nursing autonomy with staffing	VI
The Value of Nurse Staffing: ANA Principles Redevelopment and Direction for the Future	Pearce et al. (2018)	ANA: there is no single conventional model or an individual approach to nurse staffing levels does not fit all situations	clinician and staff satisfaction			Autonomy: nurses actively engaged in and contributing to staffing plans and decision making and staffing	VII