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Effects of Shift Length on Nursing Staff's Productivity, Safety, and Well-being

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Abstract

In this thesis the relationship between normal shift length for nurses and fatigue, burnout, intention to leave job, and patient outcomes and satisfaction. A review of literature has been done and conclusions have been made about the previous research reviewed in the thesis. A proposal for further research has been included and details how the author plans to provide further clarification to the questions at hand in order to better clinical nursing practice for the future. The proposed study includes sending out a survey to members of the Sigma Theta Tau Honors Nursing Society. It will inquire about shift length, job satisfaction, percentage of work finished, intention to leave job, as well as state of mental and physical health. The data will be analyzed using ANOVA to compare the means of data using shift length, which will be separated into three incremental categories, to compare. The aim of the study will be to use the existing literature and expand upon it looking specifically at nurses in the San Francisco Bay Area and even more specifically at members of Sigma Theta Tau Honors Society.

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Introduction

Shift length has become something of a hot topic in recent years and is a topic very pertinent to the nursing field specifically. The most popular length of shifts, seen worldwide, are either eight or twelve hours. This length does not, however, include any overtime one may work rather is simply representative of normal, scheduled shifts.

In nursing, the patient is the main client and therefore, patient satisfaction and outcomes of patient care are what most look at to determine the effectiveness of a healthcare team. However, things such as nursing staff job satisfaction, nurse burnout, and the physical and mental health of the nursing staff are equally important when calculating such a measure. All of these things, and more, are potentially affected by the length of shift which nurses in these institutions are working.

In this thesis, we will be exploring the effects of shift length on the measures stated above. We will look at studies which have already been completed and look at previous literature on the subject. Using these studies, we will try to make connections between shift length, namely eight versus twelve-hour shifts, and not only patient satisfaction and outcomes, but also burnout, job satisfaction, health (physical and mental), and ability to complete work as it pertains to the nurses working these shifts.

Although there has been plenty of research done on this topic, the answers have been inconclusive. With the importance of this topic it is vital that we ask questions such as "do twelve-hour shifts lead to poorer patient outcomes?" and "Are longer shift lengths associated with higher rates of job burn out for nurses?" and explore the answers that come out of the

studies in order find a more conclusive answer to this worldwide issue and possibly implement stricter regulations in order to improve outcomes on all measures.

Problem Statement

The question of, are hospital nurses' perception of their job, their health, and outcomes of care affected by shift length, is a very important topic that has come up quite a bit in recent years. Though some research has told of the benefits of limiting shifts to eight hours (Jarrar et. al, 2019), no definitive answer has been given and there are still many hospitals who adhere to twelve-hour shifts. The problem of whether shift length has an effect on outcomes and on the nurses themselves, is not only something that is pertinent right now, but also will be important for the future. Nursing is a field where you have to be ready for anything and is very detail oriented. Many argue that after a twelve-hour shift nurses are unable to give their job their all. It is also argued that working that many hours in one shift is putting a toll on nurses physical and mental health (Thompson, 2019). Still there are others who advocate for these twelve-hour shifts and argue that there is no real difference in work performance, job satisfaction, and patient outcomes when compared to eight-hour shifts (Ballie et. al. 2019). Looking at these two sides of the coin and adding to the already compiled data can only be beneficial to the betterment of nursing practice in the future.

Research questions

Are longer nursing shifts associated with higher rates of nurse burnout, lower rates of job satisfaction, and poorer patient care outcomes and satisfaction? Is there a marked difference in mental and physical health of nurses working twelve versus eight-hour shifts in a hospital?

Literature Review

The studies used in this thesis were gathered using online databases, accessed through the Dominican University of California Library system. Articles were also found through The National Institute of Health (NIH) website. Key study objectives included comparison of eight and twelve-hour nursing shifts, how shift length played a role in nursing staff's satisfaction with their jobs, and effect of shift length on patient outcomes in nursing.

While many articles were related to the overall topic, those chosen for inclusion in this literature review were only original, primary studies that were most relevant to the research questions. Additional studies may be referred to in order to reveal background information and historical context.

Eight studies have been reviewed in this thesis. These studies are separated into four categories based upon what country each study took place in, including: United States (US), United Kingdom's National Health Service (NHS), all other countries, and a prospective study done in the US. The majority of research pertaining to this topic is conducted in the United Kingdom's NHS system and in the United States with a few studies taking place in other countries throughout Europe and the rest of the world.

US Studies

Stimpfel, Sloane & Aiken (2012), aimed to study the relationship between shift length and nurses' job satisfaction, burnout, and intent to leave their job. They examined both patient and nurse satisfaction in relation to shift length and aimed to make a connection between longer shift length and lower satisfaction, as well as higher rates of burnout and intention to leave current job among nurses.

This study was conducted as a secondary analysis of cross-sectional data. The data was gathered from three surveys conducted from 2006-2008 and included The Multi-State Nursing Care and Patient Safety Study, The Hospital Consumer Assessment of Health Care Providers and Systems Survey, and The American Hospital Association Annual Survey of Hospitals from 2006. 22,275 Registered Nurses working in Medical Surgical units and Intensive Care Units (ICU) were included in this study. These subjects came from 577 hospitals in four US states; California, Pennsylvania, Florida, and New Jersey. Shift length for these nurses last documented shift was then categorized into 8-9, 9-11, 11-13, and over 13-hour shifts taking into account any overtime the nurse may have worked during that specific shift.

More than 80% of nurses reported being satisfied with their institution's scheduling practices (Stimfel et. al. 2013). However, the researchers found that as shift length increased, so did rates of job burnout, dissatisfaction, and intention to leave in the near future. Nurses who worked more than thirteen hours had the highest risk of poor outcomes compared to all other shift lengths measured.

In regards to patient outcomes, it was found that patient satisfaction was most adversely affected at hospitals with nursing staff that worked shifts of thirteen hours or greater. Though there were not many nurses working these shifts, their presence still played a significant role in the overall satisfaction of the patients with their hospital experience and their recommendation of the hospital after their stay. It was also found that working shorter shifts, namely those between eight and ten hours, was associated with lower rated of dissatisfaction among patients on these floors.

Stimfel, Lake, Barton, Gorman, Aiken (2012), conducted a study in which they tried to draw relations between shift length and quality of patient care and safety as well as nursing

outcomes in the pediatric population. They did this by determining "burnout, job dissatisfaction, intent to leave, frequency of adverse events and assessment of quality and safety" (Stimfel et. al. 2012).

This study was done as a secondary analysis of cross- sectional survey data. Researchers included information from a staff nursing survey to assess effect of shift length on measurements. They also took data from the Multi-State Nursing Care and Patient Safety study in order to reach their conclusions. Answers from the American Hospital Association (AHA) annual survey study was included as well in order to give the researchers some information on the characteristics of hospitals being used in the study.

3,710 Registered Nurses (RNs) responded to researchers Survey. These nurses came from 342 different hospitals throughout California, New Jersey, Pennsylvania, and Florida. Representation from Neonatal intensive care (NICU), Pediatric intensive care (PICU), Newborn Nursery, and General Pediatrics was present in the study. Nurse's Shift length was grouped into three categories which included eight, twelve, and more than thirteen-hour shifts.

Job satisfaction was assessed by asking "how satisfied are you with your job" which nurses then answered using a 4-point Likert scale with answers ranging from very satisfied to very dissatisfied. Answers were then translated into either satisfied or dissatisfied for data assessment. The Maslach Burnout Index (MBI) was utilized by researchers when assessing nurse burnout. The tool uses a nine-question survey which nurses answer using a 7-point Likert scale with answers from zero, never, to six, every day. These scores are then totaled and those scores which compute to twenty-seven or greater classified as high emotional exhaustion (Stimfel et. al. 2012). Intention to leave current job was asked as a simple yes or no question on the survey.

With regard to frequency of adverse events and assessment of quality of patient care and outcomes, "Nurses reported the frequency of central line associated bloodstream infections (CLABSI), urinary tract infections (UTIs) and complaints from patients/family on a 7-point Likert question ranging from never to everyday. Infections were classified as frequent if the nurse reported they occurred more often than a few times per year while complaints were classified as frequent if the nurse reported they occurred more than a few times per month. Previous research has shown that nurses reliably recall adverse patient events (26) and that nurse reports are consistent with documented adverse events (27)." (Stimfel et. al. 2012).

As a whole, the study found that shift length plays a significant role in nursing and paint outcomes on pediatric units. Regardless of shift length, poor nurse outcomes, job dissatisfaction, and intent to leave employer were reportedly high. Those who worked eight-hour shifts, however, were two times less likely to report these outcomes than those who worked thirteen or more hours on their last shift. Similarly, reports of adverse events increased as shift length went up. Those who worked thirteen or more hours were two and a half times more likely to report a CLABSI and one-point-eight times more likely to report frequent complaint on their unit than those working eight-hour shifts.

Thompson (2019) performed a study which aimed to explore the idea that working three consecutive twelve-hour shifts would accumulate stress and fatigue on nurses and nursing aides.

This was a prospective cohort study and looked at twenty-six fulltime nurses and aides who worked in Utah hospitals. Criteria for participation were as follows: "Eligibility criteria required the healthcare workers to be, 1) a currently working registered nurse (RN), licensed practical nurse (LPN) or certified nursing assistant (CNA), 2) working fulltime (36 hours per week) and 12 hour shifts, and 3) between the ages of 18–65 years. In addition, participants were

required to be free of any neuromuscular diseases (e.g., Parkinson's, multiple sclerosis),

medically diagnosed sleep disorders, had no previous musculoskeletal injuries or surgery on their

dominant leg within the previous 1 year, and could not be pregnant. Following screening and

debriefing procedures, participants signed an informed consent document." (Thompson 2019).

Participants came on a volunteer basis and found out about the study via word of mouth and flier

advertisements.

In order to assess fatigue and stress, the researcher looked at three factors; reaction time,

strength, and vertical jump. Reaction time was assessed using the Psychomotor Vigilance task

(PVT). Vertical jump was assessed by participants being required to perform three maximum

effort counter-movement jumps on a jump mat (Thompson 2019). Lastly, strength was assessed

with "isometric strength assessments were performed on the knee extensor, knee flexor, and

wrist flexor (i.e., hand grip) muscle groups" (Thompson 2019). The researcher gave the

participants different exercises to perform in random order which assessed the strength of these

muscle groups. Participants were required to come in a total of four times in order to complete

the study. Once for a "meet and greet" type of meeting in order to obtain personal information

about each participant like age, weight, height, etc. The second time was before their first shift

in order to obtain a baseline for the measures being tested. The third time was after their first

shift and the fourth was after their third consecutive twelve-hour shift.

This experiment showed that even after one twelve-hour shift many of the tasks showed

adverse changes in results. Reaction time generated lapses in attention after the first shift when

compared to pre-shift results. These results showed an even larger adverse effect after the third

consecutive shift when compared to after the first shift. For instance, reaction time was reduced

by eight percent after the first shift and seventeen percent after the third.

Both cross sectional studies looked at lead to the conclusion that longer shift length leads

to higher rates of Nurse and patient dissatisfaction and lower rates of safety for both parties in

the Hospital setting. Some limitations of these studies include that they were both done in the

same states by some common authors. However, both had large sample sizes and included

nurses from a variety of hospitals throughout the states which should make them more applicable

to the Unites States population as a whole. Because they were exclusively done in the US

healthcare system the results may not be applicable on a grander level of world-wide.

Brennan's prospective study showed that there was a largest difference in reaction time

when looking at concurrent shift fatigue. Overall, the research found that there was a

relationship between long, consecutive shifts and building fatigue for nursing. Though some of

the factors were unfounded, most showed a marked difference between the first visit and the

fourth.

NHS Studies

Ballie, Thomas, Lesley, and Nicola (2019) aimed to find out if there was a marked

difference in staffing on units with twelve versus eight-hour work days.   The researchers used

interviews and observational skills in order to ascertain the data used in the analysis for this

study.   The point of the study was to explore how eight-hour work days may affect patient care

and everyday nursing activities of the staff.

This study was conducted as a case study at one acute care facility in South East England

which is a part of the NHS. It looked at two different nursing wards, given the pseudonyms

"ward T" and "ward S" during the study, in order to explore the difference in nursing care

between eight and twelve-hour shifts. Those on "ward T" were made to work two consecutive

eight-hour shifts while those on "ward S" continued to work their normal twelve-hour shift. Nurses on each ward were observed during their shift and then interviewed by researchers after the study was conducted. Researchers also looked at Patient Discharge Surveys to assess quality of patient care on each of these wards while the study was being conducted.

At the end of the study, twelve staff from "ward T" and ten from "ward S" were interviewed. Questions about effect of shift length on patient care as well as on the staff and overall experience with the shift length were asked. Interviews were then transcribed and analyzed using the Ritchie and Spencer's Five-Stage Framework Approach. Observation was also utilized by researchers in this study. They observed both nursing wards during multiple shifts making sure to move through the unit and get a holistic view for data analysis.

Data suggests that there is little difference in the way nurses go about their days nor with how much work gets done during a shift when working twelve versus eight-hour shifts. Most participants stated they simply tweaked their daily plan based on how long their shift was going to be. Similarly, there was little evidence of a marked difference in patient outcomes on the two wards. The biggest difference noted by staff was that they did not like the extra hand-off that came with working eight-hour shifts and prefer the communication aspect of a twelve-hour day to better ensure proper handoff and knowledge of one's patient.

Ball, Day, Murrells, Dall'Ora, Rafferty, Griffiths, and Maben (2017) sought to "establish whether there was an association between shift length and reported outcomes: nurse job satisfaction, satisfaction with work flexibility, care quality, patient safety, and care left undone" (Ball et.al. 2017).

The study was conducted as a secondary analysis of Survey data. The RN4cast survey, which aims to predict need for nursing protocols and future goals based on current work situations and patient outcomes for nurses in English Hospitals which are a part of the NHS. The forecast covers twelve European countries and three "international partner countries beyond Europe" (Ball et al 2012), however, for this study, data was only collected about hospitals within England's NHS system.

Quality of care, safety, satisfaction with job flexibility, and work schedule were all looked at in this study. Participants answered questions about these topics as "poor" versus "fair" on a dichotomous scale. Another portion of the study included a list of nursing activities with researchers asking participants to select any activity which they had needed to get done on their last shift but could not because of time restraint. Each selected answer was given a score of one with all answers adding up to a score of thirteen. 2,568 nurses were included in this study.

Research found that there was a significant relationship between the factors being assessed and shift length. Quality of nursing care, patient safety, and job satisfaction were all adversely affected by nurses working a twelve-hour or greater shift. Poor quality care was one-point-six-four times more likely to be reported by those working twelve-hour shifts when compared to those working eight-hour shifts. care left undone also increased with shift length with those working twelve-hour shifts having rates of work left undone that was one-point-one-three times higher than those working eight-hour shifts. Shift length was found to have no significant impact on flexibility of work schedule.

Ballie et al. found that there was little difference in the working twelve versus eight-hour shifts, a conclusion unlike most for studies looking at this topic. However, researchers did comment that changing work schedules is a complex ordeal that takes much time and the nurses

in this study were all used to twelve not eight-hour shifts which could skew data. Both studies were completed within the NHS system but Ball et al. had a sample size that was much larger and therefore applicable on a larger scale. Neither study allowed casual inferences to be made due to the nature of their designs but both used rigorous and relevant research methods.

Other Countries Studies

Chiara Dall'Ora, Peter Griffiths, Jane Ball, Michael Simon and Linda H Aiken (2015), had a goal to "examine the association between working long shifts and burnout, job dissatisfaction, dissatisfaction with work schedule flexibility and intention to leave current job among hospital nurses" (Dall'Ora et al 2015).

The study was conducted as a Cross sectional survey. "31 627 registered nurses in 2170 general medical/surgical units within 488 hospitals across 12 European countries" (Dall'Ora et al. 2015) were surveyed. Surveys included 118 questions in five different categories; "'About your job', investigating work environment, burnout and job satisfaction, 'quality and safety', 'About your most recent shift at work in this hospital'" (Dall'Ora et al 2015). Shift length was put into five categories and ranged from eight to thirteen hours. The MBI was used to assess nurse burnout and three sub categories—exhaustion, personal accomplishment, and depersonalization—were used to further classify participants' scores. The tool uses a nine-question survey which nurses answer using a 7-point Likert scale with answers from zero, never, to six, every day. These scores are then totaled and those scores which compute to twenty-seven or greater classified as high emotional exhaustion. A four-point Likert scale was then used for the remaining questions such as "how satisfied are you with your job" and the answers ranged from "very satisfied" to "very dissatisfied" and then combined to create a dichotomous answer of

either satisfied or dissatisfied (Dall'Ora et al 2015). Intention to leave was assessed using a

simple yes or no question.

Data suggests that increased shift length does have a significant adverse effect on the

measures looked at in this study. Not only were burnout rates higher among those working

twelve-hour shift, those working the twelve-hour shifts were also twenty-six times more likely to

get a score congruent with high emotional exhaustion on the MBI than those who worked eight-

hour shifts. These participants were also more likely to experience low personal accomplishment

and high depersonalization in their jobs. Dissatisfaction increased by a marked forty percent in

those working twelve-hours when compared to those working eight.

Ferreira, Moreira, Guo and Noce (2017), aimed to examine the effect of twelve-hour

shifts on the mood and sleepiness of nursing staff.   The researchers also looked at how these

factors may be affected by whether the nurse worked day shift or night shift.

This was a cross sectional qualitative and quantitative study. Research was collected at

Vila De Serra Hospital in Brazil and the study included seventy nurses who worked in the NICU.

The Brunel Mood Scale (BRUMS) and Karolinska Sleepiness Scale (KSS) were tools used by

researchers in this study. Scores were ascertained at the beginning and at the end of shift for

these seventy nurses to explore the effect of a twelve-hour shift on mood and sleepiness.

The KSS is a seven-point Likert scale with answers ranging from 1, alert, to 9, very

sleepy. A score of seven or greater is classified as very sleepy (Ferriera et al 2015). The

BRUMS consists of twenty-four items which assess for six mood dimensions—tension,

depression, anger, vigor, fatigue, and confusion (Ferriera et al 2015). Before the shift nurses

filled out a questionnaire about things such as their socioeconomic status and job experience to

determine confounding factors. After their shift they were given another questionnaire which asked about their shift, if they got adequate breaks, and what their specific stressors were for the shift.

Overall, researchers found no significant changed in the BRUMS or KSS at the beginning and end of shifts. Factors which did seem to play a role in these scores were all extraneous and included things such as quality of life outside of work. No real connection was able to be made between shift length and mood or sleepiness nor was there the ability to see a marked difference between the scores of participants working day shift versus night shift.

Jarrar, Minai, Al-Bsheish, Jaber (2019) explored the effects of shift length on patient centered care and quality outcomes for the patient and the nurse as well as patient safety.

This was a cross sectional survey study that was performed on twelve private hospitals in Malaysia.   1055 nurses were selected and were given a survey to answer. Surveys included questions about patient centeredness, likeliness of the participant to recommend their hospital to family and friends, and quality of care. These were answered on a five-point Likert Scale which ranged from one to five. Participants were also asked to recall the frequency of adverse events during their last shift to assess for patient safety and give the number of hours worked on their last shift (these ranged from seven to twelve and up).

After statistical analysis using the Hayes regression model, researches came to the conclusion that there was only an indirect link between patient outcomes and length of shift. They stated that there is an insignificant impact of shift length on both service and quality with these participants. Though this is the case, they also found that while there is no direct link, some relationship does exist between these factors and therefore concluded that while there is no direct

relationship, an indirect link between length of shift and quality outcomes for patients does exist

(Jarrar et al 2019).

Both studies came to the conclusion that there is no direct relationship between nurses

working longer shifts and poorer quality outcomes or mental and physical health of the nurses

themselves. Jarrar et al. while using methods that were appropriate for such a study, only had a

39% response rate for their survey making their study's rigor and validity decrease significantly.

Similarly, Ferriera et al. had a small sample size limited to one unit in one hospital and therefore

may not be applicable to a larger scale. Both studies, however, did use appropriate tools and

methods for research

Overall Literature Review Discussion

Overall, there were varied findings from the studies. While most researchers concluded

that there was a relationship between longer shift lengths and not only lower patient health

outcomes and satisfaction, but also with those of the nursing staff. Many factors were assessed

beyond patient satisfaction and safety, including mood, sleepiness, body fatigue, job burnout,

intention to leave, and more.

Most of the studies had large sample sizes and therefore were able to be applied on a

greater scale than just the participants in each study. Jarrar et al (2019) would be the only

exception to this as their response rate was only 39% which is a strong limitation. All of the

research used appropriate design methods and statistical analysis, when applicable, as well as

known and rigorous tools of assessment (In cases using scales like BRUMS and BMI).

There is definitive reason to believe that the conclusions brought forth by this research

should be taken into account when proposing a plan and/or protocols for the future of nursing

practice. All of the researchers raised valid and relevant questions and received useful

information in return. Looking at all of the studies and taking pieces from each could be

extremely helpful in deciding the next steps in nursing practice in order to be able to better the

quality of patient care and to be able to ensure that the nurses and hospital workers of present and

future can work in the best circumstances possible.

<div align="center">**Proposal for further Study**</div>

Although there is ample research on this question, no definitive conclusion has been

come to. The questions that have been raised need to be explored further: Is there a correlation

between longer shift lengths and rates of nurse burnout, job satisfaction, and safety of work

environment for nurses as well as for patients?

Additional research is needed to validate previous research findings and also to give more

clarity to the problem at hand.

Theoretical Framework

The theoretical framework most applicable to this topic is the Neuman System Theory.

In this theory, a holistic approach is used to look at specific systems. It looks at the role of stress

in the reactions of those in the system and takes into account internal as well as external factors

when looking at outcomes. This is very applicable to the topic being discussed as stress is a

major issue when looking at nurse and patient outcomes in the healthcare system. It is important

for the system as a whole to look at moving parts, both internal and external, when determining

efficiency of the system. This is exactly what is being done in the available literature as well as

in the proposed research; look at all parts in order to better the whole.

The aim of this research will specifically examine nurses in the San Francisco Bay Area to determine if there is a correlation between shift length as independent variable, and job satisfaction, intention to leave job, percent of work completed in an average shift, and mental and physical health of the participants as dependent variables.

This study will look at the perspectives of nurses who are fully able to give consent to participating in the study. Information, such as participants full names, dates of birth, and place of employment, are all pieces of information that would be private information not to be shared with anyone but the researcher. The study will be reviewed by the institutional review board for all ethical considerations.

The proposed study design is quantitative in nature. In this study, a questionnaire will be given to nurses to ask about normal shift length, job satisfaction, intention to leave job, percent of work completed in an average shift, and mental and physical health. All questions will be answered on a 7-point Likert Scale from 1-7, with intention to leave job being a yes/no/ do not know or choose not to answer question.

This questionnaire will then be sent out to nurses who are members of the Sigma Theta Tau Honors Society Rho Alpha chapter. While unique data will be generated, a small sample size limits generalizability of the results. Each participant will be assigned a participant number and will only be looked at using this number. Ideal sample size for this specific study is 15-20 nurses.

Recruitment will be based on the response to the researcher email. An email survey will be sent using Google Forms which outlines the study and contains the questionnaire. Those who respond will be the participants in the study. Data will be collected anonymously to help protect

participants privacy. The population at hand is not a vulnerable one and are able to consent to

their participation fully.

Analysis of Data

Data generated by the study was put into SPSS for data analysis. One-way ANOVA,

LSD, and Sheaffe tests were run with an alpha of 0.5.

Results

Overall, there were nineteen respondents to the survey. Data was found to be evenly

distributed and results are considered reliable. Of the nineteen respondents, 72.8% considered

themselves satisfied with their job while 27.2% reported being unsatisfied. When comparing

those RNs who had been licensed for 4-6 years and those who had been licensed for more than

12 years, the data found that those working more than 12 were overall more satisfied with their

job and their current shift length. Those who had been an RN for more than 12 years also

reported the best perception of their mental health when compared to all other groups. No

significant correlation was found between length of shift and satisfaction, mental/physical health,

or intention to leave job.

Discussion

The results found in this study were semi-congruent with those found in the previous

literature. One commonality is the fact that the research data concluded that, as a general rule,

nurses consider themselves happy, healthy, and want to stay at their jobs. Unlike the literature

however, the research did not find any significant relationship between shift length and nurses'

perceptions of these things. Some things to take into consideration are the fact that this study did

not include all of the factors looked at in the literature. For instance, some previous research

took into account the unit on which a RN worked and found it to play a role in the nurses' overall

satisfaction. This is something that was not taken into account with the most recent research. In

order to come to a more definitive conclusion, more extensive research would have to be done

looking at a much larger population.

Conclusion

The questions explored in this literature review and research study were "Are longer

nursing shifts associated with higher rates of nurse burnout, lower rates of job satisfaction, and

poorer patient care outcomes and satisfaction? Is there a marked difference in mental and

physical health of nurses working twelve versus eight-hour shifts in a hospital?".   Through

literature review, we have seen much research on these questions and more. The research has

brought forward many answers to the aforementioned questions but has no conclusive answer

has been given.

Each of the studies looked at, as well as the research done by the author, gives answers to

the questions proposed, but many of these answers give conflicting views on similar subjects.

Because of this, there is a great need for further research on the same/similar topics related to

burnout, satisfaction, and mental and physical health of nurses as they relate to shift length.

This research, as well as any future research on the matter, is very pertinent to clinical

nursing. There are currently no guidelines about length of shifts for nurses and many work 8, 12,

and longer shifts. Having a clearer answer about the effect of shift length on not only the

efficacy of nurses at their job but also on their personal mental and physical health, will make it

possible to better nursing practice for patients and for nurses. Ensuring nurses are able to be

their best during their whole shift will hopefully lead to reduction of medical errors, readmission

rates, and patient dissatisfaction with their hospital stays.

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Appendix A

Authors/Citation	Purpose/Objective of Study	Sample - Population of interest, sample size	Study Design	Study Methods	Major Finding(s)	Strengths	Limitations
Stimpfel, A. W., Sloane, D. M., & Aiken, L. H. (2012). The longer the shifts for hospital nurses, the higher the levels of burnout and patient dissatisfaction. *Health Affairs (Project Hope), 31*(11), 2501-2509. doi:10.1377/hlthaff.2011.1377	To compare the length of nursing shifts to patient outcomes, Turn-over, and patient wellbeing.	22275 Nurses from 57 California, New Jersey, Pennsylvania, and Florida Hospitals who worked in Med-Surg and ICU.	The study was a secondary analysis of cross-sectional data which looked at survey results from 2006-2007. The researchers looked at multiple pieces of data including the Multi-state Nursing Care and Patient Safety study, the surveys on job satisfaction and burnout from 2007-2008, and American Hospital association Annual survey of hospitals for 2006.	Job satisfaction was scored on a four-point Likert scale, the Maslach burnout index was used to assess burnout in the nurses and their intention of leaving their current job in the near future was assessed using a yes/no question. Patients were given a survey to ask about their satisfaction with their hospital stays.	Shift length does have an effect on patient satisfaction, nurse burnout, and job satisfaction for nurses. Those who work twelve-hour shifts were two and a half times more likely to experience burnout from their job as well as have intentions of leaving compared to those who worked eight-hour shifts. however, eighty percent of nurses said they were satisfied with their current shift length whether it was twelve or eight hours.	The sample size was very large and the population at hand was diverse making it better suited to represent the nursing population as a whole.	The study was cross-sectional which did not allow researchers to make casual leaps of inference. It was also not a nationwide survey.
Jarrar, M., Minai, M. S., Al-Bsheish, M., Meri, A., & Jaber, M. (2019). Hospital nurse shift length, patient-centered care, and the perceived quality and	To study the effects of nursing shift lengths on perceived quality and safety of nursing.	1055 nurses from 12 Malaysian Hospitals were given a survey.	This was a cross sectional survey sent to 12 nursing units.	The surveys used a 5-point Likert scale about perceived outcomes of care as well as patient-centeredness of care. The nurses were also	The study found that there is a relationship between shift length and patient outcomes. The longer the nursing shift the worse patient outcomes, as well as	The study only looks at shifts that are considered "normal" and did not at double shifts or overtime which account for a	Only 652 of the 1055 nurses sent the survey gave acceptably complete answers to include in the study.

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patient safety. *The International Journal of Health Planning and Management, 34*(1), e387-e396. doi:10.1002/hpm.2656				required to state how long their average shift was (8, 7, or 12).	the focus on the patient, became. Nurses because less able to properly communicate with their patients the longer they worked.	large majority of long nursing shifts.	
Ferreira, T. S., Moreira, C. Z., Guo, J., & Noce, F. (2017). Effects of a 12-hour shift on mood states and sleepiness of neonatal intensive care unit nurses. *Revista Da Escola De Enfermagem Da USP, 51* doi:10.1590/s 1980-220x2016033203202	To look at the effect of 12-hour shifts on mood and sleepiness of NICU nurses.	The study looked at 70 NICU nurses from the Vila Da Serra hospital in Brazil.	The study was a cross-sectional Mixed method study which looked at the sleepiness and moods of NICU nurses at the beginning and end of their 12-hour shift.	Researchers used the BRUMS, and KSS scales via questionnaire. This questionnaire was administered at the beginning of a 12-hour shift and then again at the end. The BRUMS is a 25-item survey and the KSS is a 9-point Likert scale which assesses sleepiness.	There were no major differences in the KSS or BRUMS scores of the nurses on either shift. The biggest differences in mood came from personal issues in the nurse's life rather than their shift.	The Study used reliable tools to measure the sleepiness and moods of the nurses.	This study only includes ICU nurses and a majority of the nurses surveyed were women.
Ball, J., Day, T., Murrells, T., Dall'Ora, C., Rafferty, A. M., Griffiths, P., & Maben, J. (2017). Cross-sectional examination	This study looked at the effect of shift length on Patient outcomes, nursing satisfaction, patient	The study included 401 wards at 31 different NHS hospitals in the UK.	This was a cross-sectional examination which looked at survey data from the English RN4cast study.	Five questions were surveyed as yes/no Fair/not fair type questions to ask about job satisfaction, patient outcomes, and	Twelve-hour shifts were associates with poorer patient outcomes, nurses' satisfaction, and getting work done.	The sample size in this study was large and therefore well represented.	This study relied on interpretation due to its nature.

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of the association between shift length and hospital nurses job satisfaction and nurse reported quality measures. *BMC Nursing, 16*(1), 26. doi:10.1186/s12912-017-0221-7	safety, and undone work.			more. The last issue, work that needed to be done but was not, the nurses were given 13 activities of which to choose from and were asked to choose those that they should have but could not do on their last shift and they were given a score of 0-13.	Those who worked eight-hour shifts were overall more effective at their job than those who worked twelve-hour shifts.		
Baillie, L., & Thomas, N. (2019). Changing from 12-hr to 8-hr day shifts: A qualitative exploration of effects on organising nursing care and staffing. *Journal of Clinical Nursing, 28*(1-2), 148-158. doi:10.1111/jocn.14674	To look at how length of shift affects staffing on nursing units.	The study looked at 2 nursing units in an English hospital. A total of 22 participants (10 on one ward and 12 on the other) were interviewed.	This was a case study design which also looked patient discharge surveys.	The researchers conducted interviews on 22 RNs from two different wards in an English Hospital. The Researchers also used observation methods to assess the RNs during their shifts.	Researchers found that the effects of shift length depend on which unit the nurse was on. Though other studies have found negative outcomes around 12-hour shift lengths this case study does not strongly indicate this to be true.	Interviews were recorded and used for this study which allows what the participants said to be accurately decoded and used in the study.	This study changed the length of shift for one unit rather than using a unit in which 8-hour shifts were already established which may have altered the results of the study.
Stimpfel, A., Lake, E., Barton, S., Gorman, K., & Aiken, L. (2013). How differing shift lengths relate to	To look at how shift length effects outcome of care as well as job satisfaction for pediatric nurses.	The sample was composed of 3710 nurses from 342 Hospitals in California,	The study was a cross sectional analysis of primary data.	Researchers looked at answers to survey questions give to pediatric nurses about job satisfaction,	Longer shift lengths were found to be associated not only with higher rates of dissatisfaction and	The states in question represent a quarter of the US population therefore they are considered a good	The study was a cross sectional study and used observational techniques.

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quality outcomes in pediatrics. *JONA: The Journal of Nursing Administration, 43*(2), 95-100. doi:10.1097/NNA.0b013e31827f2244		Florida, New Jersey, and Pennsylvania.		burnout, and perceived patient outcomes and occurrence of negative events/experiences while working. Satisfaction was scored using a 4-point Likert scale, the MBI was used to assess burnout, and a 7-point Likert scale was used to describe how often events such as CLABSI and UTI occur.	burnout but also with higher incidence of negative patient outcomes were found. Those who worked 13+ hours (overtime) were twice as likely to want to leave their job as those who worked an eight-hour shift.	representation of Pediatric nursing in the united states.	
Thompson, B. J. (2019). Does work-induced fatigue accumulate across three compressed 12 hour shifts in hospital nurses and aides? *PloS One, 14*(2), e0211715. doi:10.1371/journal.pone.0211715	To look at long term physical effects of job associated fatigue in those working in the medical field and to determine if shift length plays a role in this fatigue.	This study looked at 36 RNs, LPNs, and CNAs who were working full time jobs in their field.	This was an experimental study performed by the researchers.	The researches had participants work three twelve-hour shifts in a row. The participants visited four times for testing and were tested on vertical jump, strength testing, and reaction time. These results were then compared to each other and the number of shifts was taken into consideration.	After working one twelve-hour shift many people showed signs of fatigue such as lack of attention and lessening strength. In a lot of cases, these were exacerbated by accumulation of shifts lasting twelve hours.	The study was well thought out and very thorough taking into consideration many issues that may arise with mind and body fatigue and used tools which were reliable.	This study got its participants on a volunteer basis and therefore could have some bias.

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Dall' Ora C,Griffiths P,Ball J,et al.Association of 12 h shifts andnurses' job satisfaction,burnout and intention toleave:findings from a cross-sectional study of 12European countries. BMJOpen 2015;5:e008331.doi :10.1136/bmjopen- 2015- 008331	To look at associations between longer shift lengths and rates of nurse burnout, job dissatisfaction, and intention to leave current job.	The study looked at 31,627 RNs from 488 hospitals in twelve European countries all working on Medical Surgical Units.	This study was performed as a cross sectional survey.	The participants were given a survey consisting of 118 questions which were separated into 5 sections; 'About your job', investigating work environment, burnout and job satisfaction, 'quality and safety', 'About your most recent shift at work in this hospital'. Shift length was grouped in order to be able to perform statistical analysis. Burnout was measured using the Maslach Burnout Inventory (MBI), and satisfaction as well as intention to leave were asked with simple "yes" or "no" questions.	Longer shifts are associated with higher rates of burnout and overall dissatisfaction among nurses. Nurses working 12 hours or more were more likely to have reported emotional exhaustion than those working 8 hours or less. Overall, those working 8.1 hours and above reported higher rates of dissatisfaction and intention to leave their job than those working 8 hour or less than 8-hour shifts.	The sample size was very large (31,627) and spanned twelve countries which means the study is representative of a larger population. The study also used tools, such as the MBI, which are well known and accepted.	This was a cross sectional survey which limits researches ability to make casual relationships.