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Scheduling Practices of Acute Care RN’s and Nurse Fatigue: Assessment and Development of an Educational Program for Nurse Managers

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Miranda Adkins, Student

Dr. Debra Anderson, Advisor
DNP Final Project Report

Scheduling Practices of Acute Care RN’s and Nurse Fatigue: Assessment and Development of an Educational Program for Nurse Managers

Miranda Adkins, BSN, RN

University of Kentucky

College of Nursing

Spring 2018

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Deborah Bryant, DNP, RN—Committee Member/Clinical Mentor
Dedication

This project is dedicated to my two daughters, Kate and Claire. My hope is that this work above all shows them that you can be a mother and chase your dreams. Be brave and work hard my loves, anything is possible. This is also for my husband whose unwavering support and sacrifice have made this possible. He has proofread more papers than he ever hoped but it would never have been achievable without him. This is for my parents, who taught me that education opens doors and often had to push me through them.
Acknowledgements

I would like to express my sincere appreciation to my advisor, Dr. Debra Anderson, for sharing her knowledge and kindness over the course of this program. It would not have been possible without her dedicated time and guidance. I would also like to thank Dr. Chizimuzo Okoli and Dr. Deborah Bryant for serving on my committee. Dr. Okoli, the instruction I received while taking your NUR 909 course was instrumental in the development of this project and to the personal development of my writing. Your expertise and feedback enhanced this work significantly. Dr. Bryant, my clinical mentor and friend, your constant support throughout the entirety of my nursing career has been central to my professional success. You have been there from the beginning, supporting and believing in me. I hope to mentor others along the way as you have me, thank you. I would also like to thank Dr. Nora Warshawsky and Dr. Karen Stefaniak for their support and taking their time to meet with me over the years. Lastly, my thanks to two special classmates, Rebecca Thomas and Matthew Proud, who made this journey actually a lot of fun.
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Abstract

PURPOSE: The purpose of this project is to develop an evidence-based organizational fatigue climate assessment to understand the current culture as it relates to nurse fatigue. This study includes the use of a fatigue measurement scale and the development of a fatigue reduction educational program for nurse managers.

METHODS: Using a cross-sectional survey design, data assessing organizational climate and actual fatigue levels among nurses employed at Saint Joseph East Hospital was obtained through an electronic questionnaire. Results were used to create a workplace fatigue educational program for nurse managers. The target sample consisted of 361 acute-care registered nurses for a survey period from January 2018 to February 2018.

RESULTS: Of 361 nurses, only 41 responded to the survey; and 31 (8.6%) had completed data. Substantial and extreme fatigue was identified in the majority of respondents. No association between fatigue and both nurse and employer characteristics was distinguished. Participants reported various lifestyle characteristics that are associated with fatigue and rest such as sleep, exercise, medications, and commute time. Additionally, respondents reported employer and scheduling characteristics that affected fatigue such as overtime, shift rotations, number of shifts and rest/meal breaks.

CONCLUSION: Nurses and employers must work collaboratively to implement fatigue reduction policies and garner a culture that supports prudent anti-fatigue practices. A cultural assessment and subsequent nurse manager training may be effective methods in which to begin an organizational anti-fatigue plan. By designing and promoting comprehensive personal and workplace strategies to increase rest and sleep, individuals and organizations can reduce nurse fatigue and mitigate its associated risks.
Introduction

In the United States, the majority of acute care registered nurses work extended shifts that require constant accountability. Additional scheduling practices such as mandatory overtime, on-call shifts, and rotating day-night schedules are extremely common. These scheduling procedures can create provider fatigue and place nurses at risk for committing patient care errors, suffering occupational exposures, sustaining workplace injury, and developing cardiovascular illness (Smith-Miller, Shaw-Kokot, Curro, & Jones, 2014). The Joint Commission (TJC), the American Nurses Association (ANA), and other governing agencies have implored healthcare organizations to reduce work related nurse fatigue (TJC, 2011; ANA, 2014). In order to effectively address this issue, organizations must examine their culture related to fatigue and take deliberate action to correct this previously accepted practice (ANA, 2014; Steege, Pinekenstein, Rainbow, & Arsenault Knudsen, 2017). Healthcare institutions can no longer tolerate unsafe scheduling practices and healthcare worker fatigue. This type of immense culture change will require a comprehensive plan that permeates nearly every facet of the organization (Steege, Pinekenstein, Rainbow, & Arsenault Knudsen, 2017).

Background

Despite a vast body of evidence that correlates nurse fatigue to adverse events, healthcare organizations have done little to reduce fatigue among the nursing workforce. Healthcare worker fatigue can increase the likelihood of attention lapses, preventable adverse events and errors (The Joint Commission [TJC], 2011). Controversy regarding nurse-scheduling practices has led to a lack of mainstream initiatives for workforce fatigue reduction. This controversy centers around
the immense popularity of extended shifts and the desires of healthcare organizations to maintain high nurse satisfaction.

The American Nurses Association suggests that the healthcare organization bears the responsibility to maintain a culture of safety and implement evidence based strategies for fatigue reduction among its workforce (ANA, 2014). Thus, the initial action of a culture assessment is vital to begin to address this issue and to aid in designing strategies to mitigate adverse practices. Safety climate assessments provide a snapshot of leader and employee perceptions about the norms, policies, and procedures related to safety (Weaver et al., 2013).

The support for prudent scheduling policies is founded in human safety. In December 2011, The Joint Commission released a Sentinel Event Alert, which warned facilities that health care worker fatigue could jeopardize patient safety and recommended steps for immediate action (TJC, 2011). Several studies have associated health care worker fatigue with adverse events. TJC further asserts that those working extended hours are more likely to experience high levels of fatigue and reduced productivity. Furthermore, these studies show that as fatigue increases, so do the risks to patient and nurse safety (TJC, 2011). With the potential for harm to both patients and staff, the argument for safer scheduling practices is solidified in both concept and research.

**Conceptual Framework**

The 2014 American Nurses Association position statement titled “Addressing nurse fatigue to promote safety and health: Joint responsibilities of registered nurses and employers to reduce risks”, was used as the conceptual framework for this study. This document asserts the ANA’s position that workplace fatigue is a collaborative effort on behalf of the employer and the nurse. Additionally, it provides evidence-based recommendations for the nurse and the employer
to prevent fatigue and its consequences. Furthermore, the ANA emphasizes the importance of a safety culture, a healthy work environment, and a thriving work-life balance (ANA, 2014). This document provided the foundation for the survey and the educational program used in the present study.

**Purpose**

The specific aims of this study were to:

1. Examine the current organizational climate for fatigue and fatigue related miscues utilizing survey responses.

2. Assess nurses’ perceptions of fatigue using the Fatigue Assessment Scale (FAS)

3. Develop an educational program for nurse managers that addresses ways in which to minimize worker fatigue.

**Methods**

A climate assessment was constructed and distributed to all eligible participants via the hospital-based email system in January 2018. The Fatigue Assessment Scale (FAS) was distributed in the same manner simultaneously. Responses were anonymous. Demographic variables and individual question responses were recorded on a spreadsheet for analysis. Upon completion of data analysis, responses were utilized to design an in-person educational program for nurse managers and leaders.
Setting

Saint Joseph East Hospital (SJE) is located in Lexington, Kentucky. SJE is a 217-bed acute care community hospital offering maternal and childcare, cardiovascular services, ambulatory surgery and 24-hour emergency care supported through traditional inpatient and outpatient programs. Their mission is to bring wellness, healing, and hope to all including the underserved.

Sample

An electronic survey was disseminated to 361 full and part time registered nurses at SJE. Inclusion criteria for this study were registered nurses employed by Saint Joseph East Hospital during the time period of January – February 2018. Exclusion criteria were nurses less than 18 years of age or over 70 years of age and those not employed in the acute-care setting.

Data Collection

Approvals from the University of Kentucky Institutional Review Board (IRB) and the Kentucky One Health Department of Research were obtained prior to the collection of data. This study was a cross-sectional survey design. A climate assessment was created using the American Nurses Association (ANA) 2014 Position Statement titled “Addressing Nurse Fatigue to Promote Safety and Health: Joint Responsibilities of Registered Nurses and Employers to Reduce Risks”. This tool and the Fatigue Assessment Scale (FAS) were distributed to all eligible participants via the hospital-based email system from January 2018 to February 2018. Demographic variables and individual question responses were recorded on a spreadsheet.
Fatigue Assessment Scale

The Fatigue Assessment Scale (FAS): A 10-question likert scale that assesses mental and physical fatigue was used (Michielsen, De Vries, & Van Heck 2003). Five questions each assess physical and mental fatigue. For each statement respondents chose one out of five answer categories, varying from never to always. 1=never, 2=sometimes; 3=regularly; 4=often; and 5=always. A total summary score was calculated ranging from 10 to 50 with greater scores indicating higher fatigue. FAS scores of 10-21 indicate no fatigue, 22-50 indicates substantial fatigue with a score >35 demonstrating extreme fatigue. The FAS has a Cronbach alpha of 0.90 and has been proven as a uni-dimensional measure of fatigue with strong validity and reliability (De Vries, Michielsen, & Van Heck 2003).

Data Analysis

A total of 41 nurses participated in the survey. Ten partial responses were eliminated due to gross incompleteness. An additional two partial responses could not be analyzed for nurse and employer characteristics due to incompleteness; n=31 and n=29 respectively. Thus, the total response rate was 8.6%.

Descriptive statistics summarized the demographic information, climate survey questions, and FAS total scores. Means with standard deviations were used to describe interval/ratio variables and frequencies with percentages utilized for nominal variables. The independent samples t-test was used to examine associations between climate survey questions by age, while the chi-square test of association was used for tenure and shift. Differences in FAS total by shift type were also examined using Pearson’s correlation coefficient. All analyses were conducted using SPSS version 24; an [alpha] level of .05 was used for statistical significance throughout.
Results

Sample Characteristics

The sample was overwhelmingly female (96.8%); see Table 1. The primary age group was 35-44 years of age and 64.5% of the sample worked a primary shift type of days. The median tenure of the group was 3 years (range=0-20).

Nurse Lifestyle Characteristics

A majority of respondents endorsed that their environment was conducive to sleep (83.9%; see Table 2) and that they do routinely rest prior to the beginning of their shift (89.7%). On average, nurses reported sleeping 6.6 hours (SD=1.37) every 24-hours. Less than one in five (17.2%) indicated that they were aware of the side effects of any over-the-counter medications that they consumed prior to their shift. Slightly less than half (48.3%) reported taking scheduled meal or other breaks while at work and no one reported having taken a nap while on shift. Employer provided resources such as fitness centers, staff rest areas, and/or wellness programs were utilized by 37.9% of respondents. The mean shift length was 12 hours (SD=1.16) with the median time between shifts being 11.3 hours. Drowsy driving was reported by 58.6% of respondents with a mean commute time of 33 minutes (SD=16.22).

Employer and Scheduling Characteristics

Of those surveyed, the majority (62.1%; see Table 3) reported that their unit currently had mandatory overtime requirements in place while only very few (3.4%) felt they had the ability to accept or reject a work assignment based on personal fatigue. The vast majority (86.2%) were aware that their employer had an anonymous reporting system for errors and near misses. There
was minimal (3.4%) rotation from days to nights or vice versa. Most employees (96.6%) were involved in creating their own work schedule while less than one-third (31%) reported that their schedule followed a regular and predictable pattern. Mandated time off after three consecutive shifts was required for 10.3% of respondents. The average number of breaks taken per shift was 1.12 (SD=0.81). Only 6.9% of the sample reported ever receiving any fatigue management training.

**Fatigue**

The mean fatigue score was 25.5 (SD=4.8; potential range 10-50). All but 7 respondents (77.4%) scored within the substantial fatigue range with 1 person experiencing extreme fatigue. There was no difference in fatigue and employer scheduling practices. Additionally, employment and nurse lifestyle characteristics also demonstrated no effect on fatigue. This is most likely due to the limited variability in the sample where the vast majority of respondents were fatigued.

**Discussion**

The purpose of this study was to develop and distribute an organizational climate assessment in order to examine nurse fatigue. Additional objectives included measuring personal fatigue and developing an education plan for nurse managers to address facility specific concerns and recommendations for fatigue reduction. The climate assessment may suggest an overall tired workforce with both positive and negative lifestyle characteristics that have been associated with fatigue. Employer practices and scheduling characteristics within the organization reveal some areas in need of improvement. Statistical analyses performed in this
study did not demonstrate any association between lifestyle or organizational characteristics and fatigue.

**Similar Studies**

Similar studies have demonstrated high levels of fatigue specifically among the nursing workforce with no difference in shift type (Smith-Miller, Shaw-Kokot, Curro, & Jones, 2014). Also in congruence with other findings, fatigue levels in this study were no different among the various age groups (Smith-Miller, Shaw-Kokot, Curro, & Jones, 2014). This study also confirms conclusions from others that demonstrate nurses routinely do not take scheduled rest and meal breaks (Smith-Miller, Shaw-Kokot, Curro, & Jones, 2014). Nurses surveyed also reported resting prior to shift as well as similar inter-shift sleep time as that which has been found in other nurse fatigue research (Geiger-Brown, Rogers, Trinkoff, Kane, Bausell, & Scharf, 2012).

Although many similarities exist, this study suggests variance in some areas when compared with other research. Commute time was longer among this sample than in others (Allen, Park, Adhami, Sirounis, Tholin, Dodek, Ayas, 2014). This particular organization is located in an area that would attract commuters and thus may explain this finding. Allen et al measured sleep time among those working a primary night shift schedule versus a day shift schedule and found reduced sleep times among night shifts workers (Allen, Park, Adhami, Sirounis, Tholin, Dodek, Ayas, 2014). This study did not find any differences in sleep between the two shift types. This was most likely due to the modest sample size with limited variability.

**Mandatory Overtime**

The organization selected for this study has areas that should be enhanced to further meet the standards set by the 2014 ANA position statement. First, the majority of respondents report
that their work area currently has mandatory overtime in place. The ANA recommends eliminating mandatory overtime as a staffing solution (ANA, 2014). A 2014 comprehensive literature review revealed negative effects such as musculoskeletal disorders, illness, injuries and absenteeism all increase in the presence of mandatory overtime. Two studies in this review also found that catheter associated urinary tract infections and decubitus ulcers increased in patients when nurses were working overtime (Bae & Fabry, 2014). Similar international studies confirm that the presence of overtime corresponds with lesser quality care (Griffiths, Dall’Ora, Simon, Ball, Lindqvist, Rafferty, & Aiken, 2014).

**Napping**

The second important deficit noted in this sample was the lack of strategic workplace napping. No respondents reported napping while on shift. Napping, although a relatively new phenomenon in healthcare, has been shown to have positive effects on sleep related miscues. Several studies including a 2014 large-scale systematic review indicate that planned napping reduces sleepiness and decreases the likelihood of sleep-related performance deficits. Organizations should adopt a culture that supports napping in the workplace (Ruggiero & Redeker, 2014; Warren, Hinds, Szeles, Geiger-Brown, Sagherian, Zhu, Blair, 2016).

**Nurse Managers**

The 2014 ANA position statement on fatigue provides guidelines for nurses and organizations to follow in order to limit workplace fatigue and its subsequent consequences. Healthcare organizations cannot begin to tackle this complex issue without first conducting an assessment of their current risk and culture. It is imperative this information be shared with nurse managers who have direct responsibility for scheduling and line level access to employees.
Nurse managers have the direct visibility of staff to recognize fatigue among the workforce. Every employee should receive fatigue reduction education but the nurse manager has the greatest ability to impact fatigue within the organization and should be central in all activities. For example the nurse manager can implement evidence-based strategies such as napping and regularly audit schedules for concerning patterns (ANA, 2014).

**Educational Program**

Upon completion of the climate assessment, survey responses were reviewed for opportunities and gaps pertaining to the American Nurses Association 2014 Position Statement titled “Addressing Nurse Fatigue to Promote Safety and Health: Joint Responsibilities of Registered Nurses and Employers to Reduce Risks”. An educational PowerPoint presentation was developed that described opportunities for improvement and best practices specific to the facility. The power-point presentation is an important tool that can be delivered by the organization in an in-person, in-service session for nurse managers and leaders.

**Limitations**

Several limitations were identified in this study. The sample size was small, only data from 8.6% of eligible participants could be used for analysis in the survey. Hence, the findings of this study may not appropriately represent all nurses in the setting. Future studies may use random sampling from the target population and provide a longer survey time-line to better enroll participants. Furthermore, the study was conducted within a single institution and had only one male respondent; therefore the ability to generalize across the population is difficult. The lack of variability in the sample prohibited the identification of nurse and organizational characteristics that could negatively impact fatigue.
Suggestions for future study

Nursing is far behind other professions in anti-fatigue research and regulations (Lothschuetz & Geiger-Brown, 2010). Future studies should focus on investigation of the ideal shift length and the maximum amount of extended shifts that can safely be worked. Nursing researchers should also seek to examine employer policies and scheduling practices that foster a more rested and safer bedside nurse. Further investigation of nurse fatigue may be helpful to enhance the nursing care of patients and prevent negative consequences from reaching the nurse.

Conclusion

Nurse fatigue is widespread among the profession and a major concern for nurses, administrators, and patients. Nurses and employers must work collaboratively to implement fatigue reduction policies and garner a culture that supports prudent anti-fatigue practices. A cultural assessment and subsequent nurse manager training may be effective methods in which to begin an organizational anti-fatigue plan. By designing and promoting comprehensive personal and workplace strategies to increase rest and sleep, individuals and organizations can reduce nurse fatigue and mitigate its associated risks.
References


American Nurses Association. (2014). *Addressing nurse fatigue to promote safety and health: Joint responsibilities of registered nurses and employers to reduce risks* [Position statement].


### Table 1. Summary of demographic and employment characteristics (N=31)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency (%)</th>
<th>Median (range)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1 (3.2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>30 (96.8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age in years</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24</td>
<td>3 (9.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-34</td>
<td>6 (19.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-44</td>
<td>12 (38.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-54</td>
<td>6 (19.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55-64</td>
<td>4 (12.9%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shift Type</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Days</td>
<td>20 (64.5%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nights</td>
<td>11 (35.5%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Years at SJE</strong></td>
<td>3 (0-20)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 2. Nurse lifestyle characteristics (N=29)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Percent yes; Median (range) Mean (SD); n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is your environment conducive for sleeping?</td>
<td>83.9%</td>
</tr>
<tr>
<td>Do you routinely rest prior to shift?</td>
<td>89.7%</td>
</tr>
<tr>
<td>Are you aware of side effects of OTC medications taken prior to shift?</td>
<td>17.2%</td>
</tr>
<tr>
<td>Have you ever used employer wellness resources?</td>
<td>37.9%</td>
</tr>
<tr>
<td>Do you routinely take scheduled meal/other breaks?</td>
<td>48.3%</td>
</tr>
<tr>
<td>Do you routinely nap on shift?</td>
<td>0.0%</td>
</tr>
<tr>
<td>Do you routinely experience drowsiness while driving?</td>
<td>58.6%</td>
</tr>
<tr>
<td>Weekly exercise (days)</td>
<td>2.07 (1.65)</td>
</tr>
<tr>
<td>Commute time (minutes)</td>
<td>33.93 (16.22)</td>
</tr>
<tr>
<td>Sleep in 24 hour period (hours)</td>
<td>6.62 (1.37)</td>
</tr>
<tr>
<td>Shift length (hours)</td>
<td>12.06 (1.16)</td>
</tr>
<tr>
<td>Time in between shifts (hours)</td>
<td>11.25 (8-168)</td>
</tr>
<tr>
<td>Fatigue subscale score (FAS)</td>
<td>25.48 (4.78)</td>
</tr>
<tr>
<td>Fatigue category</td>
<td></td>
</tr>
<tr>
<td>Substantial fatigue</td>
<td>24 (77.4%)</td>
</tr>
<tr>
<td>No fatigue</td>
<td>7 (22.6%)</td>
</tr>
</tbody>
</table>
Table 3. Employer and scheduling characteristics (N=29)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Percent yes; Mean (SD); n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your unit have mandatory overtime in place?</td>
<td>62.1%</td>
</tr>
<tr>
<td>Can you accept or reject a work assignment based on personal fatigue?</td>
<td>3.4%</td>
</tr>
<tr>
<td>Do you have an anonymous reporting system for errors?</td>
<td>86.2%</td>
</tr>
<tr>
<td>Are you involved in creating your own work schedule?</td>
<td>96.6%</td>
</tr>
<tr>
<td>Does your schedule follow a regular, predictable pattern?</td>
<td>31.0%</td>
</tr>
<tr>
<td>Do you ever rotate your shifts from days to night or vice versa?</td>
<td>3.4%</td>
</tr>
<tr>
<td>Is the number of consecutive shifts limited?</td>
<td>10.3%</td>
</tr>
<tr>
<td>Are you mandated time-off after three consecutive shifts?</td>
<td>0.0%</td>
</tr>
<tr>
<td>Have you received fatigue management training?</td>
<td>6.9%</td>
</tr>
<tr>
<td>Average number of breaks in a shift</td>
<td>1.12 (0.81)</td>
</tr>
</tbody>
</table>
Appendix A. Cover letter

January 19, 2018

Dear SJE RN,

We would like you to voluntarily participate in a research study assessing the presence and magnitude of nurse fatigue. You are being invited to participate in this study because you are a registered nurse working a schedule that includes 12-hour shifts.

The specific aims of this study are to understand:

1. The current organizational climate for fatigue and fatigue related errors.
2. Nurses perceptions of fatigue.
3. The educational needs of nurse managers to minimize worker fatigue.

We propose to collect data about these questions through an online confidential survey. We believe you have insight into the factors that contribute to nurse fatigue and how best to make improvements. Your knowledge will help us to formulate decisions around what to revise, maintain and what we should share with managers and hospital administration.

You do not have to participate in this research and you will not lose any benefits if you decline. There is no cost to you to participate and there are no other options to participate if you do not want to complete the study. You may skip any questions at your discretion. Data will be reported in aggregate form so there will be no confidentiality issues. There are no risks to participating in this study and the potential benefits may include a better understanding of how current scheduling practices impact your personal fatigue levels.

Please be aware, while we make every effort to safeguard your data once received from the online survey/data gathering company, given the nature of online surveys, we can never guarantee the confidentiality of the data while still on the survey/data gathering company’s servers, or while en route to either them or us. It is also possible the raw data collected for research purposes may be used for marketing or reporting purposes by the survey/data by the survey/data gathering company after the research is concluded, depending on the company’s Terms of Service and Privacy Policies. Completing this survey implies consent to participate in the study.

If you have any questions about this study you may call the principal investigator: Miranda H. Adkins 859-312-1515. If you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky at 859-257-9428 or toll free at 1-866-400-9428.

Please click on the link below to complete the survey.

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

Thank you for participating.
Appendix B. Survey tool

SECTION A. DEMOGRAPHIC INFORMATION

A1. Are you?
   □ Male
   □ Female

A2. What is your age?
   □ Under 18 years
   □ 18 to 24 years
   □ 25 to 34 years
   □ 35 to 44 years
   □ 45 to 54 years
   □ 55 to 64 years
   □ Age 65 or older

A3. What shift do you primarily work?
   □ Days
   □ Nights
   □ Other→____________________

A4. How many years have you been employed at Saint Joseph East? _____ years

A5. Other than your primary employment at Saint Joseph East, how many other positions/jobs do you hold? _____

SECTION B. REGISTERED NURSE RESPONSIBILITIES

B1. On average how many hours of sleep do you obtain in a 24-hour period? _____

B2. Is your environment conducive to sleep, i.e. dark/quiet?
   □ Yes
   □ No

B3. Do you routinely rest prior to a shift?
   □ Yes
   □ No

B4. Are you aware of the side effects of all over the counter or prescription medications that are taken prior to a shift?
   □ Yes
   □ No
   □ I do not take medications prior to shift

B5. On average, on how many days per week do you exercise? _____ days

B6. Have you ever used employer services/benefits such as wellness programs, onsite fitness centers, and/or designated staff rest areas?
   □ Yes
B7. Do you routinely take scheduled meal breaks and other breaks while on shift?
   □ Yes
   □ No

B8. Do you routinely take a nap while on shift?
   □ Yes
   □ No

B9. Do you routinely experience drowsiness while driving after a shift?
   □ Yes
   □ No

B10. How many minutes do you commute one-way to work? _____ minutes

SECTION C. EMPLOYER RESPONSIBILITIES

C1. Does your unit currently have mandatory overtime in place?
   □ Yes
   □ No

C2. Do you have the option to accept or reject a work assignment based on personal fatigue?
   □ Yes
   □ No

C3. Does your workplace have an anonymous reporting system for errors and near misses?
   □ Yes
   □ No

C4. Are you involved in creating your own work schedule?
   □ Yes
   □ No

C5. What is the average length of your shift in hours? _____ hours

C6. Does your schedule follow a regular, predictable pattern?
   □ Yes
   □ No

C7. Do you ever rotate your shifts from days to nights or vice versa?
   □ Yes
   □ No

C8. What is the average number of breaks you take in a shift? _____

C9. What is your average amount of hours off between consecutive shifts? _____ hours

C10. Does your manager or hospital administration limit the number of consecutive shifts you are allowed to work?
☐ Yes
☐ No

C11. Are you mandated time-off after 3 consecutive shifts?
☐ Yes
☐ No

C12. Have you ever received any type of fatigue management training?
☐ Yes
☐ No

SECTION D. FATIGUE ASSESSMENT SCALE

D1. I am bothered by fatigue.
☐ Never
☐ Sometimes
☐ Regularly
☐ Often
☐ Always

D2. I get tired very quickly.
☐ Never
☐ Sometimes
☐ Regularly
☐ Often
☐ Always

D3. I don't do much during the day.
☐ Never
☐ Sometimes
☐ Regularly
☐ Often
☐ Always

D4. I have enough energy for everyday life.
☐ Never
☐ Sometimes
☐ Regularly
☐ Often
☐ Always

D5. Physically I feel exhausted.
☐ Never
☐ Sometimes
☐ Regularly
☐ Often
☐ Always

D6. I have problems starting things.
☐ Never
☐ Sometimes
☐ Regularly
☐ Often
☐ Always

D7. I have problems thinking clearly.
☐ Never
☐ Sometimes
☐ Regularly
☐ Often
☐ Always

D8. I feel no desire to do anything.
☐ Never
☐ Sometimes
☐ Regularly
☐ Often
☐ Always

☐ Never
☐ Sometimes
☐ Regularly
☐ Often
☐ Always

D10. When I am doing something, I can concentrate quite well.
☐ Never
☐ Sometimes
☐ Regularly
☐ Often
☐ Always
Appendix C. Nurse manager education program

Scheduling Practices of Acute Care RN’s and Nurse Fatigue: Educational Program for Nurse Managers

Saint Joseph East Hospital
Miranda Hill Adkins BSN, RN

Why Study Fatigue in Nurses?

Nurses are a high risk population due to:
- Shift work requiring constant accountability.
- Scheduling practices: OT, call shifts, etc.
- Culture: fatigue almost expected and accepted.

Why Study Fatigue in Nurses?

<table>
<thead>
<tr>
<th>Culture</th>
<th>Fatigue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extended Shifts</td>
<td>Adverse Events</td>
</tr>
<tr>
<td>Demand</td>
<td>Errors</td>
</tr>
<tr>
<td>Nurse Satisfaction</td>
<td>Illness</td>
</tr>
<tr>
<td></td>
<td>Injury</td>
</tr>
</tbody>
</table>
In December 2011, The Joint Commission released a Sentinel Event Alert, which warned facilities that healthcare worker fatigue could jeopardize patient safety and recommended steps for immediate action (TJC, 2011).

The American Nurses Association suggests that the healthcare organization bears the responsibility to maintain a culture of safety and implement evidence-based strategies for fatigue reduction among its workforce (ANA, 2014).

Regulations limiting flight time and pilot rest have been in place since the 1940s.

Domestic pilots limited to 8 hours of flight time in a 24 hour period.

Pilots are not allowed to accept an assignment if they have not had 8 continuous hours of rest in the previous 24 hours.
What Are Other Professions Doing?

- Maximum work week for long haul truck drivers is 70 hours.
- Truckers can resume work after 34 hours of consecutive rest including at least 2 nights of sleep from 1 am to 5 am.
- Required 30 minute break during the first 8 hours of a shift.

Study Purpose

① To examine the current organizational climate for fatigue and fatigue related miscues utilizing survey responses.
② To assess nurses’ perceptions of fatigue using the Fatigue Assessment Scale (FAS).
③ To develop an educational program for nurse managers that addresses ways in which to minimize worker fatigue.

Data Collection

Sample

An electronic survey was disseminated to 361 full and part time registered nurses at SJE via email.
- 41 total responses received, 31 suitable for analysis.
- 37 total questions including the Fatigue Assessment Scale (FAS).
### Data Collection Variables

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Age, Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse Characteristics</td>
<td>Years of service, shift type, other employment, sleep environment, rest, medications, exercise, services, breaks, naps, drowsy driving, commute, fatigue</td>
</tr>
<tr>
<td>Employer Characteristics</td>
<td>Overtime, work assignment, anonymous reporting, schedule involvement &amp; features, fatigue management</td>
</tr>
</tbody>
</table>

### Fatigue Assessment Scale (FAS)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Never</th>
<th>Sometimes</th>
<th>Regularly</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>All night alone</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feel very guilty</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't do much during the day</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard to enough for someone else</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mournful, Not motivated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have problems sitting still</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have problems having energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard to do anything</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A lot frustrated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When not doing something, I can concentrate quite well</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Results

#### Demographic Characteristics

- **Gender:**
  - M: 1
  - F: 30

- **Age (years):**
  - 18-24: 3
  - 25-34: 6
  - 35-44: 12
  - 45-54: 6
  - 55-64: 4
Running head: SCHEDULING PRACTICES OF ACUTE CARE RN'S AND NURSE FATIGUE

Results
Nurse Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Percent yes</th>
<th>Median (IQR)</th>
<th>Mean (SD), %</th>
</tr>
</thead>
<tbody>
<tr>
<td>To your environment conducive for sleeping?</td>
<td>65.3%</td>
<td>11.3%</td>
<td></td>
</tr>
<tr>
<td>Do you routinely get prior to shift?</td>
<td>98.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you aware of the effects of shift work on health?</td>
<td>85.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How frequently does your employer offer wellness resources?</td>
<td>48.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does your employer have a scheduled mealtime provision?</td>
<td>78.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you routinely experience drowsiness while driving?</td>
<td>22.7% (1.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekly overtime hours</td>
<td>33.4% (1.22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of shift (hours)</td>
<td>12.56 (1.24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time between shifts (hours)</td>
<td>11.15 (0.92)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatigue sub-scale score (4/9)</td>
<td>23.46 (4.78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatigue category</td>
<td>Low (77.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mid (22.6%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results
Employer Characteristics

| Variable | Percent yes | Mean (SD) | |
|----------|-------------|----------||
| Does your unit have mandatory overtime in place? | 62.1% | 3.4% | |
| Can you accept or reject a work assignment based on personal fatigue? | 96.6% | 56.0% | |
| Do you have an anonymous reporting system for errors? | 96.6% | 56.0% | |
| Are you involved in creating your own work schedule? | 96.6% | 56.0% | |
| Does your schedule follow a regular, predictable pattern? | 96.6% | 56.0% | |
| Do you ever rotate your shifts from day-to-night or vice versa? | 96.6% | 56.0% | |
| Is the number of consecutive shifts limited? | 10.3% | | |
| Are you mandated time-off after three consecutive shifts? | 3.4% | | |
| Have you received fatigue management training? | 2.6% | | |
| Average number of breaks in a shift | 1.12 (0.85) | | |

Results
Fatigue

Mean Fatigue Score was 25.6 (SD=4.8; potential range 10-50).
All but 7 respondents (77.4%) scored within the substantial fatigue range & 1 person scored extreme fatigue.
Best Practices

- Sleeping Environment
- Rest Prior to Shift
- Shift Length
- Anonymous Reporting System
- Minimal Rotating Shifts

Opportunities

- Scheduled Meal/Rest Breaks
- Naps
- Drowsy Driving
- Commute Time
- Sleep
- Fatigue

Nurse Managers

"The nurse manager is the accountable person – 24/7 on the front lines of care with patients and families, with staff and administration"
**Recommendations**

**Mandatory Overtime**

- The ANA recommends eliminating mandatory overtime as a staffing solution.
- Mandatory overtime has been linked to:
  - Musculoskeletal disorders
  - Illness
  - Injuries
  - Absenteeism

**Napping**

Relatively new phenomenon in healthcare.

- **sleepiness**
- **sleep-related performance deficits**

**Breaks**

- Promote frequent, uninterrupted rest breaks during work shifts.
- Frequent brief rest breaks (i.e., every 2 hours) during demanding work are more effective against fatigue than a few longer breaks.
- Allow longer breaks for meals.
Recommendations
Drowsy Driving

- Consider the length of a commute prior to hiring new employees.
- Staff education on the warning signs of drowsy driving.
- Organization/unit based policies that support employees who may be too drowsy to drive.

Recommendations
Scheduling

- Limit work weeks to 40 hours or fewer per week.
- Limit shifts to 12 hours or fewer.
- Involve nurses in the design of work schedules in order to accommodate competing personal responsibilities, capabilities, and resources.
- Use a regular and predictable schedule so the nurse can plan for work and personal responsibilities.
- Examine work demands with respect to shift length. Shifts longer than 8 hours may be unsafe when work is physically and cognitively demanding.

Recommendations
Scheduling

- Establish at least 10 consecutive hours per day of protected time off duty in order for nurses to obtain 7–9 hours of sleep.
- Plan one or two full days off of rest to follow five consecutive 8-hour shifts or four 10-hour shifts.
- Consider two rest days after three consecutive 12-hour shifts.
- Consider limiting the number of consecutive 12-hour shifts to three shifts.
Conclusion

Culture
Nurse

Organization
Education

Nurse Fatigue
Appendix D. Institution approval letter

Saint Joseph Hospital
KentuckyOne Health™

1 Saint Joseph Drive
Lexington, KY 40504

June 23, 2017

RE: “Scheduling Practices of Acute Care RN’s and Nurse Fatigue: Assessment and Educational Program for Nurse Managers”

Dear Institutional Review Board:

As an authorized representative of KentuckyOne Health, I grant approval for Miranda Adkins to conduct research involving the assessment of nurse fatigue at my organization. Additionally, I authorize the Catholic Health Initiatives Institutional Review Board a waiver in their review since the University of Kentucky Institutional Review Board has agreed to serve as the IRB of record. I understand the purpose of this research is to conduct an assessment and educational program for nurse managers who oversee scheduling of acute care RN’s.

I grant permission for this project to involve acute care RN’s and advertising for recruitment purposes at Saint Joseph East Hospital/KentuckyOne Health, and I have determined this population to be appropriate subjects for this research. Additionally, individual(s) involved in the research have the appropriate qualifications and training to conduct this study.

Sincerely,

Rebecca S. Thomas, DNP, RN
Division Research Manager
KentuckyOne Health
Appendix E. Institutional review board approval