Personal Safety Survey: A Self-Assessment Tool for Registered Nurses in an Ambulatory Care

Setting Using a Human Factors Approach

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Dedication

This doctoral project is dedicated to my mother, Azucena Grecia who is also a nurse. She has been an inspiration and has always supported me 100% throughout my nursing career. I am also thankful for my husband, Marlowe, who has been my rock and my cheerleader. His unwavering support and love have carried me through this wonderful journey. And lastly, I would like to thank my children, Draven, Kai, and Makena. They are the light of my life and my reason for exploring ways to improve patient safety in healthcare.

Acknowledgements

Abstract

Nurse performance plays a critical role in the quality of patient care. Human factors and limitations such as fatigue, stress, and illness can affect the nurses ability to perform safe care. Performance instruments such as checklists can enable nurses to assess their health and "fitness to work" status. However, there are few tools found in the literature used in the ambulatory care setting. The Personal Safe Survey (PSS) is a self-assessment tool that enables Registered Nurses in an ambulatory care setting to assess their "fitness to work" status. The majority of the RN's in the ambulatory care setting that used the PSS reported they were "fit to work" and practice safe care. It appeared that RN's (ages 45-54) disagreed that they are taking medication that impairs their ability to perform safe care. Education appeared to play a role in the findings. BSN nurses disagreed more strongly that they are taking medications that impairs their ability to perform safe care compared to ADN nurses. Both Diploma and ADN nurses feel "fit" to work but not as uniformly as the BSN group. Diploma nurses agreed more strongly that they would use the PSS and encourage coworkers to use the PSS more than ADN nurses. Nurses identified opportunities for the organization and leadership to improve the health status of their nurses by providing them with a safer environment- mentally, physically, and emotionally. The findings suggest that RN's support the use of the PSS, that educational degree may play a role in the use of the PSS, and that organizations need to provide a safer workplace for RN's in the ambulatory care setting.

Introduction

The optimal performance of nurses in healthcare settings plays a critical role in quality of care and patient safety (Sagherian, Steege, Geiger-Brown, Harrington, 2018). Human factors such as heavy work load, lack of sleep, too many hours worked, impaired nurse due to a substance and lack of critical thinking have been identified as causes of medical errors (Roth, et. al. 2016). In addition, fatigue is a specific example that can threaten safe practice and result in unfavorable patient outcomes (Sagherian, Clinton, Huijer, and Geiger-Brown, 2016). It is expected that nurses remain alert, efficient and maintain high performance levels despite those factors. However, there are few performance instruments, tools or checklists found in the literature that assess personal performance, health status or "fitness to perform" related to human factors and human limitations for Registered Nurses in an ambulatory setting.

Background

In 1999, The Institute of Medicine (IOM) released a report "To Err is Human: Building a Safer Health System" which moved patient safety into the forefront. It estimated that 98,000 people died as a result of medical errors and up to one million were injured in the United States annually. In 2013, a literature review of studies was conducted by John James in which he used a trigger tool to identify preventable adverse events by reviewing medical records. As a result of the review, James estimated that the number was almost four times as previously reported in IOM's 1999 report. The results revealed approximately 400,000 deaths were associated with preventable harm to patients annually. It wasn't until the IOM report that human factors and systems approaches were recognized as critical implications for patient safety across all healthcare domains (Carayon, 2013) and how the relationships between them interact.

According to James Reasons Swiss cheese model (2000), he describes that human errors can be viewed from both the "person" approach and the "system" approach. The person approach focuses on the errors made by individuals. This approach tends to blame them for their human limitations (i.e. memory or distractions) and disciplines them. The system approach focuses on the conditions under which an individual works and tries to redesign the system to mitigate risks and prevent errors. The system approach recognizes that humans are fallible, and errors are to be expected.

Roth & Wieck (2015) also state that human fallibility and system fallibility are both responsible for the errors in health systems today. Human fallibility relates to the limitations that are inherent to being human. Human limitations include fatigue, stress, memory, distractions, communication, interruptions, and multitasking to name a few. These are compounded by "human factors violations" such as work environment (e.g., psychologically unsafe environment), and ambiguity regarding roles and responsibilities (Carayon, 2007). In accepting human fallibility, nursing students, novices and experienced nurses may be more willing to report near miss errors and actual errors (Ebright, 2006).

Healthcare workers, especially nurses, are prone to fast paced environments that may lead to errors. Highly stressful nursing work taxes the physical, mental, and perceptual abilities of the individual. Nurses who are fatigued or sleep deprived have high workloads or encounter frequent interruptions are more likely to experience performance decrements during work hours that affect the timely, professional and safe delivery of patient care (Sagherian, Steege, Brown, Harrington, 2018). Nurses are expected to maintain optimal work performance, yet, fatigue can threaten safe practice and result in unfavorable patient outcomes (Sagherian, Clinton, Huijer, Geiger Brown, 2016).   Nurses were more likely to report medication errors when they worked

more than 4 hours of overtime or more than 40 hours per week (Olds & Clarke, 2010).

Medication errors increased with more delays in nursing tasks per shift. Medication

administration is complex, and delays can be attributed to patient acuity, interruptions, and time

constraints as a few examples. (Lapkin,et .al 2016)

Human errors are common and caused by activities that rely on weak aspects of cognition

(Leape, 1994). Improving understanding of how human factors can be controlled in systems

designs may lead to improved care delivery (Roth & Wieck, 2012)**.**

According to Leape (2002), human failures represent the greatest threat in healthcare and

acknowledging the probability of human error in patient safety may be the first step toward

prevention and adoption of safe practices.

Purpose Statement

The purpose of this project was to explore the use a self-assessment tool, called the

Personal Safety Survey (PSS), using a human factors approach with Registered Nurses in an

ambulatory care setting.

The human factors approach has been shown to improve patient safety and prevent errors.

Human fallibility such as fatigue and distractions have been a contributing factor of preventable

adverse events. Safety tools, such as checklists, designed with a human factors approach, can be

beneficial in a clinical care setting. In addition, nursing performance can be an important

measure of patient safety and changes in their performance can be detrimental to the care of a

patient. A basic understanding of factors affecting human learning provides insight into error

prevention strategies (Pape, et.al 2005).

The results will be analyzed to identify themes related to human factors that can affect

the nurses' ability to practice safe care and determine if they are "fit" to work. This tool might

help to increase awareness of personal safety to colleagues, to prevent harm and change nurses'

performance/behavior.

Clinical Questions

The following clinical questions will be explored.

1. What human factors do Registered Nurses identify when using the PSS?

2. Do the RN's agree that using the PSS will determine that they are fit to practice safe care?

3. How does the PSS impact RadicaloLogic ® (RL) medication error reporting rates/incidents?

4. What strategies are identified by RN's that will support their work performance and work

   environment?

Literature Review

Human Factors, Human Fallibility and Patient Safety

Human factors systems approaches are critical for improving healthcare quality and

patient safety (Carayon, 2013). Human factors engineering examines a specific activity or

process and produces knowledge on how to redesign that process to improve patient safety or

quality of care. Human factors focus on humans and how they interact with each other,

equipment, procedures as well as the environment. It refers to the roles that humans play in the

development of error, specifically the interaction between people and processes, devises or

technology (Wilson, 2010). In other words, how can we design our work processes that

complement our human strengths yet, recognize and account for our human fallibilities?

According to Roth & Wieck (2015) patient safety is one of the keystones of nursing.

Nurses are at the front line and are involved in identification of errors, contributing to errors, and

improving safety. The aim of their study was to identify themes relating to human factors that

affect nursing errors and (b) identify nurse's perceptions of likelihood to cause errors, as well as

the ability to intervene, importance, and commonness relating to human factors causing errors. The researchers conducted a cross-sectional survey to gather data from nurses in a southwestern hospital system. Three hundred and ninety-three out of 1808 (21.7%) of nurses participated in an anonymous online survey. The nurses were asked to respond to four questions that consisted of 24 themes important in relation to human factors related to nurse errors. The four questions were: 1) How likely is this item to contribute to nursing errors (highly likely to not likely at all? 2) How would you rate your ability to intervene in this factor (highly able to intervene to not able to intervene at all? 3) How important is this item as a possible cause of nursing errors (highly important to not important at all)? 4) How common is this factor in hospitals (highly common to not common at all)? The data revealed four themes that explained 55% of the variance in likelihood to cause an error: loss of focus, unhealthy environment, interpersonal deficits, and feeling overwhelmed. Recommendations include that management must provide a way for nurses to feel empowered to intervene on error situations they believe are most likely, common, and important.

Wilson, Phelps, Downs, et.al (2010) conducted a study whose purpose was to incorporate human factors engineering into the design, training, implementation, and evaluation of mock codes at a 182-bed hospital. The aim was to determine whether mock codes that used human factors engineering approach were helpful or not helpful. Mock codes were selected for improvement because the group believed that improving staff's response to codes could improve clinical outcomes for patients. The existing mock code process was assessed and redesigned using the following human factors: reduced reliance on memory, reduced reliance on vigilance, simplified tasks and procedures, reduced the need for manual calculations, management of fatigue, and reduced handoffs. A pre-mock code survey was distributed that asked nurses to rate

their comfort level with their current skill levels in responding to a Code Blue. Unannounced

mock codes were conducted between a three-month time span with a five-minute debriefing after

each mock code occurring for participants to identify opportunities for improvement. For

example, participants were asked how long they had been awake before the mock code occurred

to assist them in understanding how fatigue may have affected their response to the code. The

study utilized human factors engineering principles to optimize mock codes and performance of

participants. For example, staff identified how they should obtain assistance by using the Code

Blue button in the room or special button on their badge and re-locating ambu bag and crash cart

for easier logistics. It developed a better understanding of identifying human limitations and how

it impacts patient safety and care-in this case a code situation. It was found that using a human

factors approach is useful and should be considered when designing processes for nurses.

The review of the literature identified that human factors is important to patient safety for

several reasons. It examines the relationship between human beings, the healthcare environment,

the tools and equipment they use and the systems with which they interact. Using the human

factors approach in several studies demonstrated that mistakes, errors, and near misses can be

reduced (Cosby, K. 2003) and can improve teamwork (Weinger, M. & Gaba, D. 2014) and

compliance with existing processes (Caya, T., Yanke, E., Anderson, B., et. al. 2015).

Ideally, human factors can be applied to anywhere humans work. Much of the literature

focused on specialty areas (i.e. OR, Emergency Departments, Intensive Care Units) and how

human factors could improve patient safety or decrease errors. An opportunity exists in applying

human factors in ambulatory settings, pediatric settings, and nursing programs. In addition, the

premise of human factors engineering is to design our work processes to take in account our

human limitations. One example is the use of checklists. The use of checklists, adapted from

processes in the aviation industry, has been gaining popularity within healthcare as a strategy for improvement from a human factors perspective (Sundin, Mazac, Ellis, & Garbo, 2018).

Checklists and Patient Safety

Introduction of checklists has had a positive impact on patient safety (Takala 2011, Nortron & Rangel 2010).   A checklist is an effective means to ensure that everything is conducted correctly, especially in busy environments with many distractions (Billings, Kowalski, Hickerson, 2017). Checklists provide a method to standardize care, improve communication and incorporate evidence-based practice (Arora et al., 2016). The use and development of checklists in healthcare has increased since the implementation of the World Health Organizations (WHO) surgical safe checklist. According to Health Leaders Media Industry survey (2010), 88% of quality leaders use checklists to prevent errors in hospital operating rooms.

There are a vast number of articles that address safety checklists for procedural tasks such as central line insertion, catheter-related blood stream infections, and oxytocin administration to name a few. The use of a safety checklist can also improve situational awareness by ensuring that all relevant data are assessed and comprehended, that problems are anticipated, and that the correct course of action is selected (Russ et al., 2013).

There are several types of checklists and the structure and content starts with identifying its purpose or goal. Table 1 outlines different types of checklists used in healthcare.

Table 1
Types of Checklists

Type of Checklist	Description	Example
Laundry list	Items, tasks or criteria are grouped into related categories with no order.	Medical equipment checklist

Sequential or weekly sequential checklist	The grouping, order and overall flow of the items, tasks or criteria are relevant to obtain a valid outcome.	Procedure checklist (equipment must be gathered before procedure begins)
Iterative checklist	Items, tasks or criteria on the checklist require repeated passes or review to obtain valid results, as early checkpoints may be altered by results entered in later checkpoints.	Continued rechecking of the pulse and blood pressure in checklists for adult cardiopulmonary resuscitation
Diagnostic checklist	Items, tasks or criteria on the checklist are formatted based on a "flowchart" model with the goal of drawing broad conclusions.	Clinical algorithms
Criteria of merit checklist	Commonly used for evaluative purposes, in which the order, categorization and flow of information are paramount for the objectivity and reliability of the conclusions drawn.	Checklist for diagnosis of brain death

Source: Modified from Development of medical checklists for improved quality of patient care,

International Journal for Quality in Health Care, 2008.

(Thomassen, Storesund, Softeland, & Brattebo, 2013). The use of a safety checklist can also improve situational awareness by ensuring that all relevant data are assessed and comprehended, that problems are anticipated, and that the correct course of action is selected (Russ et al., 2013).

However, there are very few studies that explore a checklist to assess the personal safety status of the healthcare provider. As the attention and focus on using checklists to keep patients safe continues to grow, work is still needed in expanding checklist development, design, and implementation in nursing practice environments (Sculli & Paull, 2011).

Personal Safe Checklists

   The aviation industry uses a personal checklist called "IMSAFE" for their pilots to determine if they are safe to work and to assess their ability to fly an aircraft. The pilots ask themselves the questions on the IMSAFE checklist and based on their responses, they determine themselves if they are "fit and ready" to fly an aircraft. There is no standard measurement (i.e. Lichert scale) for the checklist.

  The Agency for Healthcare Research & Quality (AHRQ) utilizes the IMSAFE checklist as a strategy for situational awareness of oneself and monitoring of team members. The IMSAFE checklist has been recommended as a tool for healthcare providers determine their ability to practice safely. According to Oppikofer, & Schwappach "all health professionals should consider their own assessment of their ability to perform correctly a personal responsibility" (2017). The IMSAFE checklist is specifically recommended for individual health care team members to use for self-assessment as part of situation monitoring (Thomas, L., Donohue-Porter, P., & Fishbein, J. 2017). The checklist also includes scanning oneself for anything that would distract them from optimal engagement. The IMSAFE checklist essentially enables the healthcare providers to ask themselves the question "Am I safe to work?", "Am I fit for duty? "The IMSAFE Checklist as adapted from TeamSTEPPS and the U.S. Federal Aviation Administration.

Table 2
IMSAFE Checklist

I	Illness	Do I have symptoms?
M	Medication	Have I been taking prescription or over the counter drugs?

S	Stress	Am I under psychological stress from the world? Worried about financial matters, health problems or family discord?
A	Alcohol?	Have I been drinking within 8 hours? Within 24 hours?
F	Fatigue?	Am I tired and not adequately rested?
E	Eating and Elimination	Am I adequately nourished?
Adapted from TeamSTEPPS and U.S. Federal Aviation Administration		

There are few articles in the literature that have described the purpose and use of the IMSAFE checklist. There is a gap in the literature regarding the actual utilization and scoring of the IMSAFE checklist in the clinical care setting. Human limitations such as stress, fatigue, can increase the likelihood of a lapse in practice or mistakes that can lead to patient harm and near-miss events. It is important for nurses to be aware of the degree which they are "fit and ready" to deliver safe care. According to Gawande, checklists seem to provide protection against such failures and they also instill a kind of discipline of higher performance.

Nursing Performance Tools in the Literature

The literature on nursing work performance tools is found to be organized into the following categories: competencies, nursing sensitive quality indicators and task performance measures that focus on nursing knowledge and skills. Nursing instruments, tools, and checklists play a key role in evaluating nursing performance. There were few self-rated assessment tools that measure performance independently from competencies.

The self-assessment nursing instruments found in the literature include, the Six-Dimensional Scale of Nursing Performance, the Nurse Competence Scale, the Taiwan Nurse Stress Checklist, the General Health Status Checklist, and the Nursing Performance Instrument.

Table 3

Nursing Self Rated Instruments

Instrument	Purpose	Description	Author
Six -Dimensional Scale of Nursing Performance (SDNS)	The purpose of the instrument is to allow measurement of nursing performance by nurses themselves, or others, in a quick and easy way. The instrument includes sex domains: leadership, critical care, planning and evaluation, interpersonal relations, and professional development	52 item inventory Likert-type scale	P.M. Schwirian
Nurse Competence Scale (NCS)	The NCS measures nurses' generic competence - includes their adequacy and capacity to integrate knowledge skills, attitudes and values in specific situations. The scale can be used to measure competence in different phases of their careers.	Two assessment scales are used. NCS Assessment takes about 20-30 minutes to complete	Meretoja et al.2004
Taiwan Nurse Stress Checklist	This checklist contains 47 questions and four subscales: the "personal response" subscale, the "competence" subscale, the "work concerns subscale,	The scale uses a nine-point Likert scale	Tsai & Chen 1996)

	and the "incompleteness of personal arrangement" subscale		
The General Health Status Checklist	The general health status checklist is used to measure self-perceived health and consists of five items.	The scale uses a five-point Likert scale	
Nursing Performance Instrument	The Nursing Performance Instrument is a self-rated measure of work performance and consists of nine items that represent behaviors or actions practiced by nurses when providing care. The domains include physical, mental, and general performance tasks.	The scale uses a 6-point Likert scale.	Sagherian, Steege, Brown, Harrington (2018)

The Performance tools measure the actual performance of the Registered Nurse. The proposed project will measure the RN's assessment of their ability or their "fitness" to perform safe care before going to work.

The assessment of fitness for work is defined as "the determination of whether an individual is fit to perform his or her tasks without risk to self or others" (Serra, et.al 2006). The following illustrates a scenario as to how an employee is determined to be fit for work. In an occupational health setting, an assessment is generally conducted by occupational medicine to determine if an employee is fit for work. The employee could be a new employee or current employee. It could be done at the beginning of employment, transfer of employment or after a health problem and the employee is returning to work. The assessment of fitness is generally

determined and regulated by the agency and conducted by a healthcare provider. The provider

may use assessment and diagnostic tools to determine if employee is fit for work, based on their

job tasks and performance requirements. The provider will then deem the employee to be fit, not

fit or fit with conditions/restrictions to begin or return to employment. The process describes an

assessment from the providers perspective who is collecting data and conducting an assessment.

It generally does not take in to account the employees perspective. The proposed project explores

this gap by exploring the use of a self-assessment tool to be used by Registered Nurses. The tool

will evaluate the RN's self-assessment of their fitness to work before they go to work.

Error Reporting

Many healthcare organizations report adverse events, errors, and near misses using

databases or an online reporting system. Henry Ford Health System (HFHS) uses the program

Radicologic® (RL) to report safety events. Employees are encouraged to report safety events

related to patient and employee patient safety and identify contributing factors. This includes

medication errors, environmental issues, equipment safety, employee safety, falls, workplace

violence, etc. For example, a total of 58 medication safety events were filed for the Henry Ford

Medical Group Detroit Campus location during the months of January to October 2019. A total

of 84 contributing factors were reported. These contributing factors included "documentation

error", "wrong dose", and "wrong route". Furthermore, 14 of the contributing factors were

categorized due to possible human factors such as "staff failure", "staff multitasking", and

"human error", "fatigue and "staff distraction" The data collected demonstrate a potential for

further exploration as to how human factors and limitations can affect near misses, errors, patient

safety and staff performance.

Reporting errors, adverse events and near-misses acknowledges that health care providers are human and at risk for making mistakes. The process creates a sense of accountability regarding patient safety, yet still has room for improvement to acknowledge and improve personal performance. According to Ebright (2006), health care performance may be improved through the study and application of vigilance. Vigilance is being mindful of one's own thinking, the environment, and the patient which can lead to safer patient care.

Theoretical Background

The Systems Engineering Initiative for Patient Safety 2.0 model (SEIPS 2.0)

The aim of the Personal Safety Survey is to explore and better understand the factors that contribute to "fitness to work" and identify barriers/ opportunities for RN's in an ambulatory care setting. The SEIPS model was selected as the theoretical framework (Carayon et al., 2006b) to be used for this project. The complexity of the work system and its relationship to the nurse, patient, and organizational outcomes made it an applicable model.

The SEIPS model is a theoretical framework developed from a human factors' perspective for patient safety (Ballangrud, Husebo, Aase, et. al. (2017).   Key characteristics of the SEIPS model include: (1) description of the work system and it's interacting elements, (2) incorporation of the well-known quality of care model developed by Donabedian (1978), (3) identification of care processes being influenced by the work system and contributing to outcomes, (4) integration of patient outcomes and organizational/employee outcomes, and (5) feedback loops between the processes and outcomes, and the work system (Carayon, 2013).

The interacting elements based on the SEIP model is the RN and his/her work environment and his/her self-assessment which can influence patient outcome (i.e. safe care). The PSS was designed to explore which human factors may affect an RN's ability to perform

safe care. The questions asked were "I feel so ill that I cannot perform safe care", "I am taking medication that impairs my ability to perform safe care", "I am experiencing stress that it prevents me from performing safe care", "I have used alcohol or drugs that it prevents me from performing safe care" and "I am so fatigued that I cannot perform safe care".

The element of work environment was included in the PSS as "I work in safe environment that enables me to perform safe care" and "what type of resources would you like your organization to provide for you so you can perform safe care?".

Additional care processes that can contribute to outcomes include the patients and co-workers. The PSS included those elements by asking "I would encourage my co-workers to use the PSS before they came to work" and "If I were a patient, I would want my healthcare provider (RN, MA, Physician, etc.) to use the PSS before they came to work".

The feedback loop included the PSS results as well as the Radicologic™ (RL) report (safety event reporting system). Radicologic™ is a safety event reporting system used by HFMG employees when a safety event occurs (i.e. medication error). Employees have the opportunity to choose from a drop-down menu what may have contributed to that event. The contributing factors includes a list of human factors such as "Staff-Distraction/Interruption", "Staffing/Workload Issue", "Teamwork Failure", "Communication Failure", as well as environmental factors such as "Environment Condition/Design", "Equipment/Supplies-Damaged/Faulty/Worn". The RL reports can be used from a broad perspective- such as "how many safety events occur in the medical group over a specific time period", to more specific reports such as "which human factors are being reported by employees in the K building for a medication error within the last month?".

The SEIPS model provided a framework for the PSS and can be utilized for further studies for patient safety and ambulatory care nursing.

Method

Survey Design

A cross-sectional descriptive design in the form of an electronic survey was used. Institutional review board approval was obtained from Henry Ford Health System and the University of Detroit Mercy before data collection.

Participants

The target population for this project included Registered Nurses that worked at the HFMG ambulatory clinics located on the Detroit Campus. The inclusion criteria for this study was Registered Nurses employed with HFMG for at least 6 months or more at their clinic and who were full time or part time status. Exclusion criteria included RNs that were on a leave of absence.

Instrument (Appendix A)

The Personal Safety Survey was administered as an electronic survey through Survey Monkey which is an online survey platform software program. A Likert scale ranging from Strongly Agree to Strongly Disagree consisting of five data points was used. The survey consisted of three sections which included demographic questions, the personal safety survey and follow-up questions. Section one consisted of seven demographic questions: job title, gender, age, shift, job status, credentialing, and specialty area. Section two consisted of the Personal Safety Survey which consisted of seven questions. Participants were asked to rate their responses on a 5-point Likert scale ranging from strongly agree, agree, neither, disagree, and strongly disagree. Section three consisted of three follow up questions that used the 5-point

Likert scale and two open-ended questions. The participants were instructed to complete the

survey one to two hours before their work shift. They only needed to take the survey once.

To assess the clarity and validity of the Personal Safety Survey, the instrument was

evaluated by ten registered nurses who worked in a clinic setting at local health care

organizations. As a result of their evaluation, the instructions for section one, section two, and

section three were rephrased for clarity. The word "mitigate" was changed to "reduce" to

facilitate better understanding of the question. The consensus from the reviewers was that the

survey questions were easy to understand and easy to use.

Implementation

The Personal Safety Survey project was presented to Henry Ford Medical Group

(HFMG) nursing leadership and registered nurses at the Detroit Ambulatory Nurse Leader

Meeting (DANLM) in October 2019.

- o A Power Point presentation provided an overview of the project and instructions
  for the use of the Personal Safety Survey.

- o The RN's were invited to participate in completing the Personal Safety Survey.

- o They were instructed to complete the Personal Safety Survey prior to going to
  work, at least one to two hours before the start of their shift. They were instructed
  to only take the survey once.

- o The RNs were given the online link complete the Personal Safety Survey.

- o The RNs were instructed that all responses were anonymous, confidential and did
  not collect identifying information such as name or email address. There would be
  no compensation for taking the survey.

o   A follow –up email was sent to the DANLM members within twenty-four hours

after the meeting. The email included the Power Point and survey link.

o   DALNC members were asked to share and forward the project information with

their Nurse Leaders and RNs at each of their respective clinics.

o   The survey was open for 2 weeks.

Data Analysis

A quantitative analysis was conducted for the demographic questions, PSS questions and

follow-up questions numbers one through three. Descriptive statistics were used to examine

variables. A qualitative analysis was conducted for follow-up questions numbers four and five.

The Likert scale for the Personal Safety Survey and Follow-Up Questions (Table 4) were

coded for analysis purposes. The 5-point Likert scale was coded in the following manner: a

number 1 was assigned to "Strongly Agree", a number 2 was assigned "Agree," a number 3 was

assigned to "Neither", a number 4 was assigned to "Disagree", a number 5 was assigned to

"Strongly Disagree". The statistical significance was set at $p<.05$.

Table 4
Coding of Personal Safety Survey

Personal Safety Survey
Instructions: Before you go to work, take the Personal Safety Survey and answer the items using the following scale. SA=Strongly Agree| A=Agree| D=Disagree| SD=Strongly Disagree
PSS #1: "I feel so ill that I cannot perform safe care"   SA   A   Neither   D   SD Coded "1"   "2"   "3"   "4"   "5"
PSS #2: "I am taking medication that impairs my ability to perform safe care"   SA   A   Neither   D   SD

Coded "1"   "2"   "3"   "4"   "5"

PSS #3: "I am experiencing stress that it prevents me from performing safe care"

    SA   A   Neither   D   SD

Coded "1"   "2"   "3"   "4"   "5"

PSS #4: "I have used alcohol or drugs that it prevents me from performing safe care"

    SA   A   Neither   D   SD

Coded "1"   "2"   "3"   "4"   "5"

PSS #5: "I am so fatigued that I cannot perform safe care"

    SA   A   Neither   D   SD

Coded "1"   "2"   "3"   "4"   "5"

PSS #6: "I work in a safe environment that enables me to perform safe care"

    SA   A   Neither   D   SD

Coded "1"   "2"   "3"   "4"   "5"

PSS #7: "I feel fit, ready and able to go to work and perform safe care" *(If you do not feel fit, ready or able to go to work and perform safe care, contact your Supervisor or Manager)*

    SA   A   Neither   D   SD

Coded "1"   "2"   "3"   "4"   "5"

Coding of Follow Up Questions

Follow Up Questions

"I would use the Personal Safety Survey before each shift to determine if I am fit, ready and able to go to work and perform safe care"

Strongly Disagree   Disagree   Neither Agree nor Disagree   Agree   Strongly Agree

Coded "1"   "2"   "3"   "4"   "5"

"I would encourage my co-workers to use the Personal Safety Survey before they come to work"

Strongly Disagree   Disagree   Neither Agree nor Disagree   Agree   Strongly Agree

Coded "1"   "2"   "3"   "4"   "5"

"If I were a patient, I would want my healthcare provider (RN, MA, Physician, etc.) to use the Personal Safety Survey before they came to work"

Strongly Disagree   Disagree   Neither Agree nor Disagree   Agree   Strongly Agree
Coded "1"   "2"   "3"   "4"   "5"

Demographics

Table 5
Demographics (n=83)

Characteristics	*n*	%	
Age (years)			
18-24	2	2.44%	
25-34	15	18.29%	
35-44	15	18.29%	
45-54	28	34.15%	
55-64	21	25.61%	
65+	1	1.22%	
Gender			
Female	73	89.02%	
Male	9	10.98%	
Job Title			
RN Staff	71	85.54%	
Other	8	9.64%	RN Leader, RN Research Coordinator, RN Supervisor
RN Manager/Director	7	8.43%	
RN Midlevel Provider	2	2.41%	
RN Educator	1	1.20%	
Primary Shift			
Day Shift	79	96.34%	
Afternoon Shift	2	2.44%	
Other	1	1.22%	Days, late shift more than 12 hours
Job Status			

Full time	78	95.12%	
Part time	2	2.44%	
Contingent	1	1.22%	
Other	1	1.22%	Best Choice Float Pool
Nursing Credentials			
Bachelor's Degree in Nursing	45	54.88%	
Associate degree in Nursing	19	23.17%	
Diploma in Nursing	10	12.20%	
Master's Degree in Nursing	8	9.76%	
Specialty Area			
Colon, Rectal, Gastroenterology	18	21.67%	
Transplant	16	19.28%	
Pulmonary	9	10.84%	
Oncology	7	8.43%	
Internal Medicine	5	6.02%	
Cardiology	2	2.41%	
Neurology	4	4.82%	
General Surgery	3	3.61%	
Infectious Disease	3	3.61%	
Orthopedics	3	3.61`%	
Research	3	3.61%	
Vascular Surgery	3	3.61%	
Ambulatory Surgery	2	2.41%	
Ear, Nose, Throat (ENT)	2	2.41%	
Ambulatory Leadership	1	1.20%	
Ophthalmology	1	1.20%	
Quality	1	1.20%	

Response and Sample Size

A total number of 83 responses to the survey was collected. It was determined that the numbers within groups were small, therefore, two of the groups within the variables were combined to create a larger sample size. The categories that were combined included job title and age groups. For example, the "RN Manager/Director" (n=7), "RN Midlevel Provider" (n=2) and "RN Educator" (n=1) groups were combined and changed to "Manager" under the demographics section for job title. The age range category was combined as well. There were 6 categories for age range "18-24" years (n=2), "25-34" years (n=15), "35-44" years (n=15), "45-54" years (n=28), "55-64" years (n=21), 65+ years (n=1). This was decreased to the following 4 categories: "18-34" (n=16), "35-44" (n=15), "45-54" (n=25), "55+" (n=21).

"Fit to work and perform safe care" versus "Not fit to work and perform safe care"

The PSS is essentially assessing if the RN is "fit, ready and able to go to work and perform safe care". PSS Question #7 tests the first six questions on the Personal Safety Survey and the three questions on the Follow Up questions.

Table 6 presents information on the PSS Question #7 which is "I feel fit, ready and able to go to work and perform safe care". The responses were divided into two groups. Group number 1 were the Registered Nurses (n=73) that answered, "strongly agree" or "agree" and were categorized as the "fit to work and perform safe care" (i.e." fit") group. Group number 2 were the Registered nurses (n=8) that answered, "strongly disagree", "disagree" or "neutral" and were categorized as the "not fit to work and perform safe care" group (i.e. "not fit"). A two-sample Wilcoxon test was used for analysis.

The relationship of fit status and demographic variables was examined. A series of Chi-squared/ Fisher's Exact tests was used to examine the relationship of fit status and each demographic variable.

The results indicated that PSS#1(illness), PSS#5 (fatigue), PSS#6 (environment) were statistically significant. The remaining questions PSS #2 (medication), PSS #3 (stress), PSS#4 (alcohol/drugs), Follow Up #1 (use of PSS), Follow Up #2 (co-workers use of PSS), Follow Up #3 (patient perspective of PSS) were not statistically significant. The statistical significance was set at $p<.05$. The analysis will be further discussed in the results section.

Table 6: Analysis of "Fit" group versus "Not Fit"

Is Fit	Not Fit		
Question	(n=73)	(n=5)	p-val
PSS#1	4.8 ± 0.5	4.2 ± 0.8	**0.035**
#2	4.8 ± 0.4	4.8 ± 0.4	0.850
#3	4.5 ± 0.7	3.2 ± 1.6	0.056
#4	4.8 ± 0.4	4.6 ± 0.5	0.160
#5	4.6 ± 0.7	3.8 ± 0.8	**0.017**
#6	1.7 ± 0.9	3.2 ± 1.3	**0.005**
FU #1	3.0 ± 1.1	3.0 ± 2.0	0.966
#2	2.4 ± 1.0	3.0 ± 2.0	0.544
#3	2.6 ± 1.0	3.0 ± 2.0	0.694

In Table 7, a series of Chi-squared or Fisher's Exact Tests was conducted to examine the relationship of those Registered Nurses that were considered "fit" and the demographic variables. The manager, midlevel provider and educator groups were combined due to the small

sample size. The part time, contingent and float groups were combined due to the small sample

size. There were no significant findings noted.

Table 7: Analysis of % Fit Status and Demographic Variables

% Fit		% Fit			p-val
Job Title	Manager	100 (12/12)	RN Staff	92.4 (61/66)	1.000
Gender	Male	77.8 (7/9)	Female	95.6 (65/68)	0.101
Age	18-34	100 (16/16)			0.417
	35-44	86.7 (13/15)			
	45-54	96.0 (24/25)			
	55 +	90.5 (19/21)			
Status	Full Time	94.5 (69/73)	part time	75.0 (3/4)	0.240
Degree	Diploma	90.0 (9/10)			0.827
	Associate	94.1 (16/17)			
	BSN	95.4 (41/43)			
	MSN	100.0 (7/7)			

In Table 8 (job title), Table 9 (Age), Table 10 (Pairwise comparison for age), Table 11

(job status) the demographic variables were then examined to see if there was an association with

responses for the 10 questions of the Personal Safety Survey. An overall Kruskal-Wallis test

followed up with pairwise comparisons (Table 12) using a two-sample Wilcoxon test was used.

Table 8: Analysis of Covariates (Job Title)

Question	Manager Midlevel Educ (n=12)	Staff (n=66)	overall p-val	Male (n=91)	Female (n=68)	overall p-val
PSS#1	4.7 ± 0.9	4.7 ± 0.5	0.664	4.6 ± 0.7	4.7 ± 0.6	0.407
#2	5.0 ± 0	4.8 ± 0.4	0.095	4.8 ± 0.4	4.8 ± 0.4	0.669
#3	4.8 ± 0.5	4.4 ± 0.9	0.229	4.3 ± 1.0	4.5 ± 0.8	0.714
#4	5.0 ± 0	4.8 ± 0.4	0.095	4.8 ± 0.4	4.8 ± 0.4	0.669
#5	4.7 ± 0.9	4.5 ± 0.7	0.191	4.6 ± 0.7	4.5 ± 0.7	0.889
#6	1.5 ± 0.5	1.9 ± 1.0	0.274	2.0 ± 1.3	1.8 ± 0.9	0.849
#7	1.3 ± 0.5	1.7 ± 0.8	0.171	2.1 ± 1.3	1.5 ± 0.6	0.134
FU #1	2.8 ± 0.8	3.0 ± 1.2	0.720	2.5 ± 1.5	3.0 ± 1.1	0.260
#2	2.2 ± 0.6	2.5 ± 1.1	0.476	2.4 ± 1.5	2.4 ± 1.0	0.662
#3	2.3 ± 0.6	2.7 ± 1.1	0.198	2.5 ± 1.5	2.7 ± 1.0	0.625

There were no significant findings noted when examining the relationship of job title and the PSS questions. There were no significant findings noted when examining the relationship of gender and each of the PSS questions.

Table 9 Analysis of Covariates (Age)

Question	Age 18-34 (n=16)	Age 35-44 (n=15)	Age 45-54 (n=25)	Age 55+ (n=21)	overall p-val
PSS#1	4.9 ± 0.3	4.7 ± 0.6	4.8 ± 0.5	4.5 ± 0.7	0.292
#2	4.9 ± 0.3	4.9 ± 0.4	4.9 ± 0.3	4.6 ± 0.6	0.113
#3	4.6 ± 0.5	4.5 ± 0.8	4.4 ± 0.9	4.3 ± 1.0	0.927
#4	4.9 ± 0.3	4.9 ± 0.9	4.8 ± 0.5	4.8 ± 0.4	0.795
#5	4.6 ± 0.6	4.6 ± 0.7	4.5 ± 0.8	4.5 ± 0.6	0.788

#6	1.6 ± 0.5	1.9 ± 1.1	1.6 ± 0.8	2.2 ± 1.2	0.279
#7	1.5 ± 0.5	1.7 ± 0.7	1.4 ± 0.6	1.8 ± 1.0	0.592
FU #1	3.3 ± 1.1	3.1 ± 1.3	2.8 ± 1.3	2.8 ± 1.1	0.546
#2	2.5 ± 0.9	2.6 ± 1.2	2.4 ± 1.2	2.2 ± 1.1	0.665
#3	2.8 ± 0.9	2.9 ± 1.3	2.6 ± 1.1	2.5 ± 1.0	0.743

There were no significant findings noted when examining the relationship between age and the PSS questions.

Table 10: Pairwise comparison p-valve for age

	18 − 34 vs 35 − 44	18 − 34 vs 45 − 54	18 − 34 vs 55 +	35 -44 vs 45 − 54	35 − 44 vs 55 +	45 − 54 vs 55+
PSS#1	0.536	0.513	0.081	0.968	0.292	0.192
#2	0.946	0.640	0.139	0.591	0.166	**0.031**
#3	0.676	0.963	0.754	0.766	0.517	0.686
#4	0.946	0.727	0.391	0.787	0.440	0.565
#5	0.666	0.861	0.599	0.755	0.352	0.451
#6	0.548	0.929	0.105	0.500	0.377	0.087
#7	0.595	0.622	0.490	0.327	0.888	0.214
FU #1	0.966	0.189	0.349	0.368	0.430	0.724
#2	0.828	0.766	0.300	0.616	0.265	0.496
#3	0.931	0.510	0.321	0.538	0.422	0.790

A significant finding was noted with the 45-54 year old age group. This group strongly disagreed that they are taking medication that impairs their ability to perform safe care. The standard deviation scale was 4.9 ± 0.3 (Table 6) which indicates that this group selected "strongly disagree" which was a coded as "5" on the Likert scale for analysis (Table 1).

Table 11: Analysis of Covariates (Job Status)

Question	Full Time (n = 73)	Part Time, Contingent, Float (n = 4)	Overall p-val
PSS#1	4.7 ± 0.6	4.5 ± 0.6	0.237
#2	4.8 ± 0.4	4.8 ± 0.5	0.672
#3	4.5 ± 0.8	4.3 ± 1.5	0.822
#4	4.8 ± 0.4	4.8 ± 0.5	0.672
#5	4.5 ± 0.7	4.8 ± 0.5	0.570
#6	1.8 ± 0.9	2.5 ± 1.0	0.097
#7	1.6 ± 0.7	2.3 ± 1.3	0.193
FU #1	3.0 ± 1.2	3.0 ± 0	0.828
#2	2.4 ± 1.1	2.0 ± 1.0	0.510
#3	2.6 ± 1.1	3.0 ± 0	0.375

It was noted that there were no statistical findings when examining the relationship of job status and the PSS questions.

In Table 12 pairwise comparisons using a Wilcoxon two-sample test was used to compare the PSS questions with the credentialing question. The mean plus or minus standard deviation is presented.

Table 12: Pairwise Comparison (Credentialing)

Question	1)Diploma (n=10)	2) Assoc. (n=17)	3) BSN (n=43)	4) MSN (n=7)	Overall p-val	1=2	1=3	1=4	2=3	2=4	3=4
PSS#1	4.9 ± 0.3	4.6 ± 0.6	4.7 ± 0.6	5.0 ± 0	0.211	0.148	0.342	0.403	0.366	0.077	0.160
#2	4.9 ± 0.3	4.6 ± 0.6	4.9 ± 0.3	5.0 ± 0	0.065	0.148	0.885	0.403	**0.030**	0.077	0.347
#3	4.7 ± 0.7	4.3 ± 0.8	4.5 ± 0.8	4.9 ± 0.4	0.225	0.136	0.302	0.713	0.373	0.082	0.186
#4	4.9 ± 0.3	4.8 ± 0.4	4.8 ± 0.5	5.0 ± 0	0.516	0.391	0.608	0.403	0.549	0.169	0.255
#5	4.7 ± 0.5	4.4 ± 0.7	4.5 ± 0.8	4.9 ± 0.4	0.447	0.312	0.624	0.466	0.465	0.129	0.254
#6	2.3 ± 1.3	1.8 ± 0.7	1.7 ± 1.0	1.6 ± 0.5	0.364	0.313	0.101	0.183	0.449	0.543	0.975
#7	2.1 ± 1.1	1.7 ± 0.6	1.4 ± 0.6	1.6 ± 0.5	**0.037**	0.377	**0.011**	0.245	**0.047**	0.634	0.332
FU # 1	2.3 ± 1.3	3.4 ± 1.2	3.1 ± 1.1	2.4 ± 1.3	0.075	**0.040**	**0.046**	0.800	0.291	0.118	0.215
#2	2.0 ± 1.2	2.8 ± 1.0	2.5 ± 1.0	1.9 ± 1.1	0.066	**0.035**	0.121	0.834	0.271	**0.037**	0.127
#3	2.2 ± 1.2	2.9 ± 0.9	2.7 ± 1.0	2.1 ± 1.1	0.099	**0.038**	0.119	1.000	0.306	0.068	0.179

It is noted that there was statistical significance for PSS #2 (medication) with the ADN and BSN group (p-value 0.030), PSS #7 (fit) with the Diploma and BSN group (p-value 0.011), PSS#7 (fit) with the ADN and BSN group (p-value 0.047) , Follow Up Question #1(use of PSS) with Diploma and ADN group (p-value 0.040) ,FU #1 (use of PSS) with Diploma and BSN group (p-value 0.046), FU #2 (co-workers use of PSS) Diploma and ADN group (p-value 0.035), and FU#3 (patient perspective of PSS) with Diploma and ADN group (p-value 0.038) .The findings will be discussed further in the Results section.

Follow Up Questions #4 and #5

The Follow Up section of the survey consisted of 5 questions. Questions #1, #2, & #3 used a Likert scale and were included in the previous analysis. Questions #4 and #5 were open-ended questions. These questions were analyzed to identify key themes. Participants were able to free text and enter their responses.

Chart 1 depicts the results for Follow Up Question #4 "have you done anything to mitigate any of the items mentioned in the Personal Safety Survey?". 25 participants submitted a response. The top three activities were exercise, yoga and meditation.
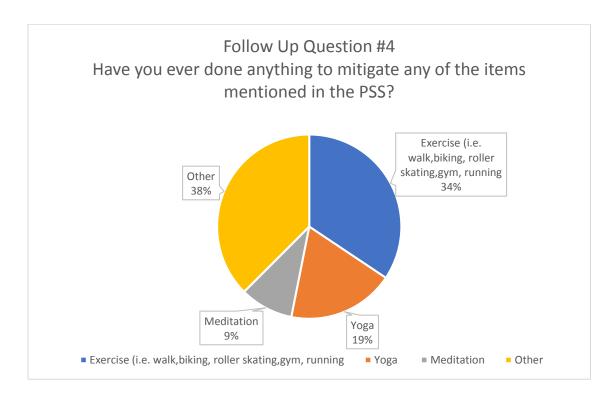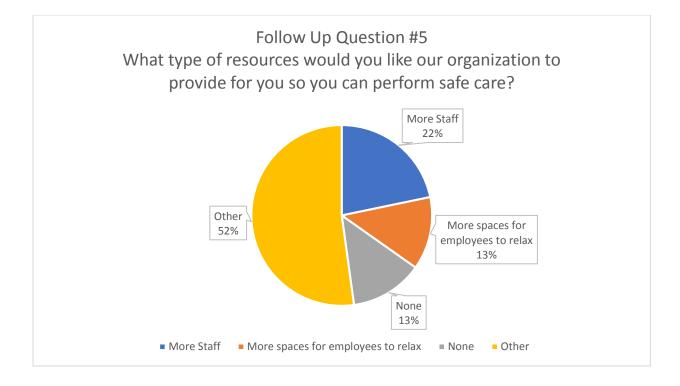
Chart 1: Follow Up Question #4

Chart 2 shows the results for Follow Up Question #5. This question was also open-ended and participants were able to free text their responses. There were 23 responses that were submitted. Staff reported more staff and more spaces for employees to relax. The findings will be discussed in the Results section.

Chart 2: Follow Up Question #5

Results

Demographics

From a potential sample of approximately 285 of nurses in the Detroit Campus location, 83 completed the survey for a response rate of approximately 29%. The sample represented 17 departments within the Detroit campus clinic building. The nurses in the total sample were mostly female (n =73 , 89.02%), worked as staff RN's (n=71, 85.54%), worked day shift (n=79, 96.34%), and worked full time (n=78, 95.12%). More than half had a Bachelor's degree in

Nursing (n=45, 54.88%) followed by Associate's degree in Nursing (n=19, 23.17%), Diploma in

Nursing (n=10, 12.20%) and Master's degree in Nursing (n=8, 9.76%). Nearly two-thirds were

45-54 years old (n=28, 34.15%), and slightly fewer were 55-64 years old (n=21, 25.61%).

"Fit to perform safe care" versus "Not fit to perform safe care"

Table 2 presented information on the Personal Safety Survey Question (PSS) #7 "I feel

fit, ready and able to go to work and perform safe care". The RN's were categorized into two

groups based on their responses "fit to perform safe care" and "not fit to perform safe care".

There were significant results for the following questions: PSS #1 "I feel so ill that I

cannot perform safe care" (p-value 0.035), PSS #5 "I am so fatigued that I cannot perform safe

care" (p-value 0.017), and PSS #6 "I work in a safe environment that enables me to perform safe

care" (p-value 0.005).

The "fit to work and perform safe care" group feels more strongly that they do not feel so

ill that they cannot perform safe care, that they are less fatigued to perform safe care and that the

environment is safe and enables them to perform safe care. There were no other significant

results found.

"Fit to perform safe care" and variables

Table 3 examined the relationship of those Registered Nurses that were considered "fit to

perform safe care" and the demographic variables There were no significant results found related

to "fit" status and job title, gender, age, degree, work status and credentials.

Variables and Personal Safety Survey

Table 4 examined the demographic variables to see if there was an association with responses for the 10 Likert-scale questions of the Personal Safety Survey.

Pairwise comparison *p*-value for age

The results were significant for Personal Safety Survey Question #2 (PSS#2) "I am taking medication that impairs my ability to perform safe care" and the RN's in the 45-54 age group. This group strongly disagreed that they are taking medication that impairs their ability to perform safe care (*p*-value 0.031).

Pairwise comparison *p*-value for credentialing

The results were also significant for PSS#2 that the Bachelor of Science in Nursing (BSN) group disagreed more strongly that they are taking medication that impairs their ability to perform safe care compared to the Associate Degree Nurses (ADN) group (*p*-value 0.030).

The results for PSS#7 "I feel fit, ready and able to go to work and perform safe care" showed that BSN nurses feels more fit and more strongly agree to this question compared to Diploma (*p*-value 0.011) and ADN nurses (*p*-value 0.047). The Diploma and ADN feel fit as well but not as uniformly as the BSN group.

The results for Follow Up Question #1 "I would use the Personal Safety Survey before each shift to determine if I am fit, ready and able to go to work and perform safe care" were significant. The Diploma nurses agreed more strongly that they would use the PSS more than the ADN nurses (*p*-value 0.040 and BSN group (*p*-value 0.046).

The results for Follow Up #2 "I would encourage my co-workers to use the Personal Safety Survey before they come to work" were significant. The Diploma nurses agreed more

strongly that they would encourage coworkers to use the PSS than the ADN nurses (*p*-value 0.035).

The results for Follow Up #2 "I would encourage my co-workers to use the Personal Safety Survey before they come to work "were significant. The Master of Science in Nursing (MSN) group agreed more strongly that they would encourage coworkers to use PSS than the ADN nurses (*p*-value 0.037).

The results for Follow Up #3 "If I were a patient, I would want my healthcare provider (RN, A, Physician, etc.) to use the Personal Safety Survey before they came to work". The Diploma nurses agreed more strongly that they would want their healthcare provider to use the PSS than the ADN nurses (*p*-value 0.038).

Results for "Have you done anything to relieve or reduce any of the items in the Personal Safe Survey?"

The intent of the Personal Safety Survey was for the participants to conduct a self-assessment and take the survey 1- 2 hours prior to going to work to determine if they were safe and fit to practice care. Overall, the results showed that the majority of the RN's reported that they were fit to practice safe care. Participants were given the opportunity to describe if they have done anything to relieve or reduce the factors of stress, illness, medication, use of alcohol or drugs, or fatigue which may prevent them from performing safe care. Many of the comments described activities conducted before going to work, activities performed while at work and activities that were conducted for health maintenance.

Many nurses described types of activities they do prior to going to work. One participant reported "I walk a half mile to a mile before I start work and walk a mile to two miles on my lunch". Another participant stated "I practice hatha yoga everyday to keep my body fit for the

job at work". Nurses felt that physical activity as well as mental activity was important. One nurse stated, "I practice hatha yoga to keep my body fit and my mind calm to perform any duty assigned to me at work". Another nurse recognized the importance of what to do when they are not fit to work and stated, "I call off when I am not fit, ready, or able to work".

A few nurses commented on a variety of activities that they do while at work "I have the luxury of walking away and sitting and relaxing somewhere for 15-20 minutes to take a breather and relax, but many people cannot". One noted that reducing hours was something that he/she would be doing "Prayer, talking with friends and family. Reducing my work hours: I will be going part-time in January 2020".

Several nurses reported on activities they do to maintain their physical/mental/emotional fitness, reduce stress and manage fatigue. They did not specify if these activities were done before, during or after work. One nurse stated "Meditating, exercise, massage general self-care-that is important to anyone in maintaining a healthy lifestyle". Many described physical activities to reduce stress such as "I work out to reduce stress daily", "I find physical activity such as running and yoga reduce my stress", I take short walks while listening to music to reduce my stress". "I usually go to the gym or do some sort of exercise to relieve stress as well as maintain good health". One nurse identified sleep issues and state "I try to sleep more when able but still have trouble sleeping on some nights".

It's interesting that the majority of RN's reported that they fit to practice safe care. Yet, the themes of managing stress, managing fatigue, and managing physical and emotional health were keys to maintain and contribute to being fit to practice safe care emerged.

Results for "What type of resources would you like your organization to provide for you, so you can perform safe care?"

Although the majority of RN's reported that they were fit to practice safe care, many

nurses reported the need for additional resources needed in the work environment to perform safe

care.

The nurses identified the following areas in need of resources: staffing, technology,

manager involvement, education, basic supplies, space for relaxation, and team support services.

Staffing was identified as an issue by several nurses. One stated "More support staff so

employees are not trying to do too many things at once, which decreases attention and increases

errors.". Another stated that "hire more RN Coordinators to offset our workload". One nurse

provided a solution to create a resource team "to assist staffing when an RN needs to call off, as

to not affect patient care and RN's working short".

Technology is a daily part of a nurses workflow. One nurse had a unique suggestion "it

would be great if there was software on our computers that helped drive physical activity, i.e.

standing up to stretch, neck movement, deep breathing, etc.".

Several nurses described manager support as a needed resource. One stated "manager

presence and involvement". Another reported "manager support, check-ins, interest in work,

guidance, work on collegial atmosphere. Smooth transition when hiring on. The turnover is

crazy. Why is that?".

Education was another theme that emerged. One nurse reported that "provide the

education (initial & ongoing) so that staff have the knowledge to provide safe care". Another

stated to "provide PPE and safety information".

There were several suggestions for a space to relax and/or meditate. It suggests that

nurses are feeling stressors in the workplace and looking for a way to destress. One suggestion

was "how about a rejuvenation or tranquility room-massage chairs, soft music, massage therapist

etc. Somewhere to get away for a few minutes during break or lunch". "a break room within the department, "more places to go to relax, no spaces for just workers".

Lastly, an interesting comment noted about "intra work area stress". One nurse reported " Have seen team members in crisis due to home issues / sig other / team members and it would be great if they could step away for 30 mins and have a professional listen and then talk to them and discuss options that HFHS has such as the work life balance team, then they could return to work and potentially not feel the need to leave work and not get any resolve and show up frustrated again the next day or miss work. If there are issues with a co-worker, I think that HR should intervene a lot sooner along with leadership so clear expectations are set between the team members. Would hopefully decrease intra work area stress. "

The results indicate that further exploration is needed to obtain a better understanding in the areas of stress management and health maintenance and how organizations can provide these types of resources. Conducting a focus group could be informative as it would provide more context around the responses. Leadership involvement is key in providing change, resources and support for the RN's in an ambulatory care setting.

Discussion

The purpose of this project was to explore the use a self-assessment tool, called the Personal Safety Survey (PSS), using a human factors approach with Registered Nurses in an ambulatory care setting. The following clinical questions were posed with discussion to follow.

Clinical Question #1: What human factors do Registered Nurses identify when using the PSS?

The PSS asked questions related to fatigue, stress, illness, medications, alcohol/drugs as potential human factors that would impair/prevent one from performing safe care.

Most of the RNs in the ambulatory care setting reported themselves as "fit to work and perform safe care". The significant results showed that the "fit" nurses did not feel ill, were less fatigued, and felt their environment was safe to perform care. The findings support the notion that nurses are equipped with professional knowledge in health promotion and are better at managing their own health (Lin, Liao, Chen, Fan (2012). Health status contributes to work performance. A study by Cho and Han (2018) collected data from 432 nurses at five hospitals in South Korea and looked at nursing performance quality, nursing work environment, and health promoting behaviors. This study showed that nurses with higher levels of personal health responsibility were more likely to perceive their nursing performance quality as higher, and the study concluded that healthcare systems should help nurses maintain healthy lifestyles to improve quality of nursing.

The "fit group" and "not fit" group were then analyzed to determine if any variables were significant. Interestingly, there were no significant findings. Fit to work status was not affected by age group, gender, job status or credentials. Study findings may be related due to small sample size within the groups (Table 4). For example, the "manager", "gender", "age", Diploma, ADN, BSN, MSN & part time groups all had less than 25 responses. A higher sample size can increase the significance level of the findings. Future considerations include conducting the PSS with RN's across all the ambulatory sites for Henry Ford Medical Group.

However, despite the sample sizes, a significant finding was found when examining the relationship between age group, credentialing and the PSS questions. The RNs ages 45-55 and the BSN groups disagreed more strongly that medications they may be taking impact their ability to perform safe care. The RNs had an opportunity to list down medications they are taking while taking the online survey, but no responses were received. It would be interesting to note if the

RNs were taking prescriptive or over the counter medications and if they assessed that it would impact their ability to perform safe care. Perhaps the RNs were reluctant or hesitant to disclose the medications they are taking. This type of question may be better explored as a focus group to encourage transparency and discussion. It would also offer the RNs an opportunity to share stories and information that may provide more insight.

Clinical Question #2 Do the RN's feel that using the PSS will determine if they are fit to practice safe care?

 Approximately 12% of the RN's indicated that they would support the use of the PSS. The Diploma degree nurses (n=10) showed that they agreed in using the PSS for themselves, would encourage co-workers to use the PSS and if they were patients' would want their healthcare providers to use the PSS. The issue of utilizing a PSS to determine fitness for work deserves further attention and exploration.

The optimal performance of nurses in healthcare settings plays a critical role in care quality and patient safety (Sagherian, Steege, Geiger-Brown, Harrington, 2018). Despite the importance, there are few self-assessment tools that measure fitness to perform prior to going to work -specifically in an ambulatory care setting. The Personal Safety Survey is an attempt to capture data and information on the usability of a tool of this nature in the ambulatory care setting.

There are many instruments that evaluate nursing performance in terms of competencies, nursing sensitive quality indicators and task specific performance measures (DeLucia, Ott, & Palmieri, 2009). Some examples include King's Nurse Performance Scale, Six-Dimensional Scale of Nursing Performance, Nurse Competence Scale, Nursing Performance Instrument. However, all these tools measure performance and behaviors while providing care or

competency. The IMSAFE checklist is a self- assessment with no scoring mechanism. The

"General Health Status Checklist" is used to measure self-perceived health and is a subscale of

the Taiwanese version of the SF-36 using a 5-point Likert scale. The Common Risky Behavior

Checklist is a tool used to assess and monitor nurses with a substance abuse disorder who are

returning to work.

       The results indicate that RN's are in support of the use of the PSS in an ambulatory care

setting. The literature identifies gaps in self-assessment tools with measurements or scales to

determine fit to practice of RN's. The RN's ability to perform and practice safe care is crucial to

patient safety and patient outcomes. The PSS can be a useful tool to identify human factors that

may affect performance and can also lead to open discussions and open communication with

leaders around safety and nurse performance.

Clinical Question #3. How does the PSS impact Radicologic ™ (RL) medication error

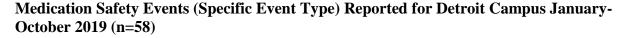**reporting rates/incidents?**

       The Personal Safety Survey is a tool that an RN can utilize to assess if they are safe to

practice safe care. One of the areas that nurses need to provide safe care is medication

administration. Medication errors happens frequently in healthcare. According to the World

Health Organization (WHO), adverse outcomes associated with medication errors remains

unacceptably high. WHO estimates that more than 50% of all medicines are prescribed,

dispensed, administered or used inappropriately? Research has shown that human factors such

as fatigue and stress can contribute to errors. Incorrect or incomplete documentation might flow

from stress caused by increased workloads (Blignaut, et.al. 2017). According to Rogerson &

Tremethick (2004), medical errors can be reduced, not by focusing on human failures, but by

focusing on human factors premise that errors are primarily caused by system failures. There is
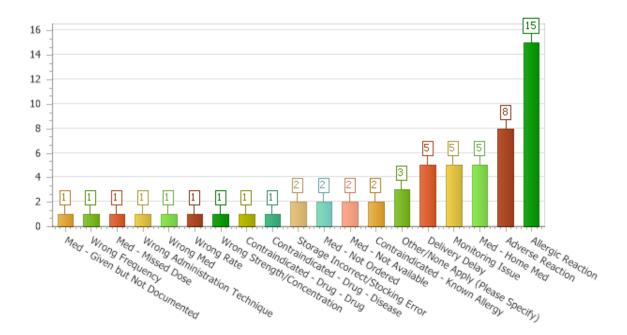
an opportunity to explore how the Personal Safety Survey can impact medication error incidents reported through Radicologic™ in the ambulatory care setting.

Radicologic ™ is a safety event reporting system used by HFHS. RL can be used to generate reports about safety events that are being reported including type of event, location of event, involved personnel, investigation status of event, and details of an event- such as what factors have contributed to the event. RL users can select from a drop-down menu specific contributing factors or free text factors that may have contributed to a safety event.

In order to demonstrate how RL can be used, two reports were generated (Chart 3 and Chart 4). Chart 3 displays the number of medication safety events that occurred on the Detroit Campus from January 2019 to October 2019. There were 58 events reported. The top medication safety event reported was an allergic reaction to the administered medication.

Chart 3

Medication Safety Events (Specific Event Type) Reported for Detroit Campus January-October 2019 (n=58)

The medication safety events were then drilled down to report out the contributing factors. Chart 4 displays the contributing factors that were reported by users for medication safety events that occurred on the Detroit Campus from January 2019-October 2019. There were 84 contributing factors reported. Many of the contributing factors that users can report through RL have a human factors component such as fatigue, stress, multi-tasking, communication failure and distraction.   The factors that contribute to safety events are multi-faceted. Medication safety has been identified as a top priority patient safety issue. Medication errors are occurring and contributing factors are being reported. The report suggests a potential opportunity to explore how the use of the PSS can impact medication safety events and improve patient safety in the ambulatory care setting.

Chart 4

What are the most common contributing factors for medication safety events reported? January-October 2019 (n=84)

In addressing the clinical question of "How does the PSS impact Radicologic (RL) medication error reporting rates/incidents?", the report generated interesting information and prompted further inquiry. The report can be used as a springboard to open dialogue about identifying and preventing medication errors and other types of safety events with RNs. Nurse leaders, risk, quality and the front- line RN's can initiate discussions and work towards solutions to prevent errors and improve patient safety.

In order to determine if the PSS impacts medication error reporting rates/incidents, a few things would need to be considered. Perhaps, conducting a baseline report for RL events for a specific time period, then having the RN's take the PSS daily for one month and monitoring the RL events for a specific time period. Conduct an analysis of the RL reports to examine if there are any differences/changes in number of events reported, types of events reported, location of events reported and contributing factors. Conduct an analysis of the PSS to determine if there are any significant findings and correlation with the RL reports. According to Lapkin, et. al (2016) medication-related incidents must be captured in a way that facilitates meaningful categorization including contributing factors, potential and actual/risk of harm and contextual information on the incident. The use of Radicologic ™ can be an instrumental tool combined with the use of the PSS to identify, capture, report, and provide solutions and strategies to improve patient care and nursing performance.

Clinical Question #4. What strategies are identified by RN's that will support their work performance and work environment?

The Registered Nurses identified strategies and activities that supported their health, physical wellness and mental wellness. They described health activities such as exercise and yoga to stay physically fit. They described meditation, deep breathing, and imagery as methods

for mental wellness. In addition, they described work related needs such as basic supplies, work flow processes (i.e. staffing), leadership/manager involvement, and support for team members who are dealing with health/medical issues. The nurses also stated that more staff and more spaces for them to relax would enable them to perform safe care. One nurse described the use of technology "use software to drive physical activity" to support RNs to actively move, walk, take a break while at work. Conducting a focus group to explore and gain context and understanding behind each individual response would be suggested.

When healthcare workers are exposed to stressful working environments with high job demands and low resources, these may endanger their health and well-being, causing medical errors and suboptimal patient care (Chou et al. 2014). The RNs in the survey identified personal and environmental stressors. Further exploration is needed to address these issues. Efforts by leadership and the organization are needed to improve practice environment and personal health status of registered nurses.

Limitations

The researcher acknowledges several study limitations, First, the study was limited to RNs that worked in the Detroit campus location and worked mostly on day shift. These factors may have contributed to the small sample size.   Second, the RNs may be experiencing "survey fatigue" as HFMG has issued many surveys in the past few months for employees, including an Employee Engagement Survey. Third, as with any kind of survey, an element of self-selection bias. It is more likely that nurses that consider themselves "safe" chose to participate in the survey than non safe nurses which could have affected the results.

Clinical implications

The Personal Safety Survey is a potential performance measure for ambulatory nurses which can be used as a self-monitoring tool to assess nurses' perceptions of fit to work status. The tool can be utilized by the RN or by management. Nursing management can improve health care workplaces by monitoring fitness to perform-using this tool to gage employees status and to provide them with support and resources.

The PSS has a rating scale which provides a measurement and a method to report results and to our knowledge is the first used in an ambulatory care setting. Many of the tools reviewed in the literature were conducted in the acute care setting.

The PSS provides an opportunity to increase self-awareness of human factors and limitations such as stress, fatigue, medication usage, illness, etc. It encourages employees to pause and reflect on their personal health status prior to going to work in a complex healthcare environment.

The PSS project contributes to the literature for ambulatory nursing and the use of personal checklists for self-monitoring and situational awareness.

The PSS identified potential opportunities for organizations and management to improve the health status of their employees by providing them with a safer environment – mentally, physically, and emotionally.

Future Implications

This project introduced the use of the Personal Safety Survey with RN's in an ambulatory care setting. It is an opportunity for RNs to assess their fitness status to practice and provide safe care before going to work. The project resulted in some significant findings as well as future implications that require further exploration.

1. The results have implications for RNs and technology. Can the survey be combined with technology to assess the physiological status of RN's such as blood pressure, pulse and respirations? Would there be any findings or correlation between the readings and the survey? Would RNs be able to determine based on increased heart rate or blood pressure that they would be safe to practice safe care?

2. The results have implications for nurse educators. Nurse educators should be aware that ADN, and BSN graduates may conceptualize safety differently due to their educational programs/curriculums. Perhaps future education can include how nursing education influences the work environment to keep patients safe.

3. The results have implications for nursing leaders. Nurse leaders need to be aware how communication about personal safety can influence/ affect work environment which can affect patient outcome/patient safety. Nurses cite the need for support and resources. Some of the items cited contribute to risk of errors and an unhealthy work environment. Nurse leaders should approach education about patient safety in different ways knowing that differently educated nurses may potentially perceive patient safety in different ways.

4. Implications for organizational leaders. Most of the nurses indicated that they are fit to work, yet, cite reasons that their work place environment is need of resources and additional support. What changes from the time they leave to go to work to when they arrive at work? What are the barriers from the organizations perspective to provide a safer work environment?

5. The following questions could be advanced with well-designed qualitative and quantitative studies: How do various levels of nursing education affect patient safety? How do various levels of nursing education affect the use of the Personal Safety Survey?

6. What ethical implications have been identified with the PSS? Several ethical implications

     include the right to be protected against discrimination when disclosing personal

     information, medical history/information. How transparent are the users of the PSS?

7. What are the economic implications? Could the PSS be used to predict health related

     absences due to RNs not fit to practice safe care? How would this affect staffing which

     then can affect patient outcomes?

8. How does the organizational culture play a role in Patient Safety? Can the PSS be

     supported by a robust safety culture that includes transparency, speaking up, and

     reporting of errors?

Summary

Optimal performance of nurses in healthcare settings plays a critical role in care quality

and patient safety (Sagherian, Steege, Geiger-Bornw, Harrington, 2018). All health care

professionals should consider their own assessment of their ability to perform correctly a

personal responsibility (Oppikover & Schwappach, 2017). Few studies have addressed nurses'

own perceptions of their performance while providing patient care (Barker & Nussbaum, 2011).

Examining the use of the PSS was an important step in contributing towards the literature. The

Personal Safety Survey uses a Likert scale to self-assess how fit and ready a nurse is to go to

work. The findings suggest there is an interest and value in using the PSS in the ambulatory care

setting.

According to Serra et al. (2007) the fitness-for-work literature generally lacks an

evidence-based, valid and effective decision-making process for assessing fitness for work.

Although the literature is limited, Further studies are needed to determine what is the best

method to calculate or score the survey.

In addition, the findings suggest that hospital administrators need to pay greater attention to understanding the fundamental needs of the physical and psychological health status of nurses and their ability to perform safe care.

A more detailed understanding of the impact of human factors, such as medication use, stress, and fatigue, may guide the direction of leadership and increase awareness of how nurses conducting self-assessments can and improve patient safety outcomes in the ambulatory care setting.

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Appendix A: Personal Safety Survey

Demographics

What is your job title?

☐ RN Manager/Director   ☐ RN Staff

☐ RN Midlevel Provider   ☐ Other_____

☐ RN Educator

What is your gender?

☐ Female   ☐ Male

What is your age range?

☐ 18-24   ☐ 25-34   ☐ 35-44   ☐ 45-54

☐ 55-64 ☐ 65+

What is your primary shift?

☐ Day shift ☐ Afternoon shift ☐ Midnight shift

☐ Other

What is your job status?

☐ Full time   ☐Part time   ☐ Contingent ☐ Other

What is your highest credentialing in Nursing?

☐ Diploma   ☐ Master's degree

☐ Associate's degree   ☐ Doctorate (DNP)

☐ Bachelor's degree   ☐ Doctorate (PhD)

What specialty area do you work in?

☐ Ambulatory Surgery   ☐ Ophthalmology

☐ Cardiology   ☐ Orthopedics

☐ Cardiac Cath Lab   ☐ Pain Clinic

☐ Colon, Rectal,   ☐ Pediatrics

   Gastroenterology   ☐ Plastic Surgery

☐ Dermatology   ☐ Pulmonary

☐ Emergency Department ☐ Radiation Oncology

☐ ENT   ☐ Urology

☐ General Surgery   ☐ Vascular Surgery

☐ Internal Medicine   ☐ Walk in Clinic

☐ Neurology   ☐ Women's Health

☐ Neurosurgery   ☐ Other_____

Personal Safety Survey

Instructions: Before you go to work, take the Personal Safety Survey and answer the items using the following scale.

SA=Strongly Agree | A=Agree | D=Disagree | SD=Strongly Disagree

"I feel so ill that I cannot perform safe care"

SA	A	Neither	D	SD
☐	☐	☐	☐	☐

"I am taking medication that impairs my ability to perform safe care"

SA	A	Neither	D	SD
☐	☐	☐	☐	☐

"I am experiencing stress that it prevents me from performing safe care"

SA	A	Neither	D	SD
☐	☐	☐	☐	☐

"I have used alcohol or drugs that it prevents me from performing safe care"

SA	A	Neither	D	SD
☐	☐	☐	☐	☐

"I am so fatigued that I cannot perform safe care"

SA	A	Neither	D	SD
☐	☐	☐	☐	☐

"I work in a safe environment that enables me to perform safe care"

SA	A	Neither	D	SD
☐	☐	☐	☐	☐

"I feel fit, ready and able to go to work and perform safe care" *(If you do not feel fit, ready or able to go to work and perform safe care, contact your Supervisor or Manager)*

SA	A	Neither	D	SD
☐	☐	☐	☐	☐

Follow Up Questions

"I would use the Personal Safety Survey before each shift to determine if I am fit, ready and able to go to work and perform safe care"

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
☐	☐	☐	☐	☐

"I would encourage my co-workers to use the Personal Safety Survey before they come to work"

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
☐	☐	☐	☐	☐

"If I were a patient, I would want my healthcare provider (RN, MA, Physician, etc.) to use the Personal Safety Survey before they came to work"

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
☐	☐	☐	☐	☐

Have you done anything to mitigate any of the items mentioned in the Personal Safety Survey? If yes, please describe. For example, "I have tried meditating to reduce my stress".

What type of resources would you like your organization to provide for you so you can perform safe care?

The Personal Safety Survey is available on the following link:

www.surveymonkey.com/r/PersonalSafeSurvey

Appendix B: Personal Safety Survey Postcard to be distributed at information meeting

PERSONAL SAFETY SURVEY: A SELF ASSESSMENT TOOL FOR REGISTERED NURSES IN AN AMBULATORY CARE SETTING USING A HUMAN FACTORS APPROACH

Personal Safety Survey

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TAKE THE PERSONAL SAFETY SURVEY TODAY

www.surveymonkey.com/r/ PersonalSafeSurvey

"I feel so ill that I cannot perform safe care"

"I am taking medication that impairs my ability to perform safe care"

"I am experiencing stress that it prevents me from performing safe care"

"I have used alcohol or drugs that it prevents me from performing safe care"

"I am so fatigued that I cannot perform safe care"

"I work in a safe environment that enables me to perform safe care"

"I feel fit, ready and able to go to work and perform safe care"

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