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Provider Education to Increase Knowledge of Sepsis in a Skilled Nursing Facility

Damaris I. Valdeperas
Florida International University, dvall050@fiu.edu

Charles Buscemi
Florida International University

Ivan Merkelj

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**Provider Education to Increase Knowledge of Sepsis in a Skilled Nursing Facility:
A Quality Improvement Project**

A Scholarly Project Presented to the Faculty of the
Nicole Wertheim College of Nursing and Health Sciences

Florida International University

In partial fulfillment of the requirements
For the Degree of Doctor of Nursing Practice

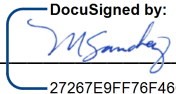
By

Damaris Ivette Valdeperas, MSN, APRN, AGPCNP-BC

Supervised By

Dr. Charles Buscemi, PhD, FNP-BC, APRN

Approval Acknowledged:

 _____, DNP Program Director
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Date: _____

Abstract

Background: Sepsis is a time sensitive, life-threatening syndrome that proceeds through a continuum of devastating events resulting in organ damage and eventual death. Unfortunately, this syndrome impacts millions of individuals worldwide. Interestingly, the population that is most impacted by sepsis are patients admitted to a non-acute care facility such as a skilled nursing facility. Currently, there is no tool or standardized guideline for sepsis identification or prevention within these facilities often resulting in hospital readmission and increased lengths of stay.

Methods: Upon completion of a literary review on data bases such as CINAHL Plus with full text, Cochrane Library, Medline (Pro Quest), PubMed Central (PMC) and Google Scholar, a quasi-experimental research study was conducted. The project was completed through the use of pre- and post-interventional design was conducted to determine nursing staff baseline knowledge of sepsis and the impact of an educational sepsis presentation.

Results: The project documented that 80% of the nurses working within the skilled nursing facility had a limited knowledge of sepsis. Ultimately, the study concluded with the beneficial impact of implementing a sepsis educational presentation tailored for the facility to increase sepsis knowledge.

Keywords: Sepsis, awareness, skilled nursing facility, nursing, educational presentation.

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Sepsis Awareness

Sepsis awareness is a global concern as the diagnosis is associated with varying impacts from physical to financial. Sepsis can be defined as an infectious process on a continuum of devastating symptoms, leading to multiple organ failure. While research has exponentially provided a deeper understanding of this process, mortality from sepsis remains globally high. Sepsis by definition is a “life-threatening organ dysfunction caused by a dysregulated host in response to infection (Fiest et al., 2022, p. 1187).” The pathophysiology related to the dysfunction begins with an infectious pathogen resulting in a localized infection within the susceptible host (Bleakley & Cole, 2020). The invasion of the infectious pathogen triggers an inflammatory response that infiltrates the area in an attempt to destroy the pathogen. A systemic inflammatory response is stimulated as the pathogen is ingested by macrophages and the vulnerable host is unable to fend off the infection (Bleakley & Cole, 2020). Thus, a break in the chain of infection begins the syndrome.

A vulnerable host may become septic through exposure of pathogens via a multitude of sites or sources. Primarily, the source of the infection may begin through a break in the skin such as a pressure ulcer, surgical wound or device-related triggers including Foley catheters, peripheral intravenous lines or central lines (Bleakley & Cole, 2020). Alternatively, the vulnerable host may already have an infection such as a respiratory or urinary tract infection, which may have been undetected or unresponsive to treatment resulting in a systemic inflammatory response. Ultimately, the continuum persists resulting in septic shock if not identified in a timely manner. Septic shock is classified as a life threatening emergency due the host becoming hemodynamically unstable (Bleakley & Cole, 2020). Thus, the inflammatory process has reached the arterial and venous circulation stimulating poor circulatory function,

requiring an increase in oxygen demands. As the dysfunction continues the body attempts to compensate leading to various organ failure and potentially death.

Despite an understanding of the pathophysiology of sepsis, the syndrome has a high mortality rate and poor patient outcome following survival. Sepsis accounts for approximately 49 million cases each year with 11 million deaths worldwide (Fiest et al., 2022). These statistics can be connected to the varying atypical presentation of sepsis that is patient specific. Clinically, sepsis may present as a change in vital signs, altered mentation, lack of fever, sudden or increased lethargy, mild to moderate tachycardia, sudden loss of appetite, dehydration, increased or new onset of falls due to weakness, and increased or sudden onset of incontinence (Thompson et al., 2019). These symptoms may be a result of age-related changes in a patient, masked by other medical treatments or comorbidities, or due to a result of the invading microbe following an invasive procedure. Research documents that approximately 39% of septic patients do not present with abnormal laboratory values and 12% do not meet criteria for systemic inflammatory response (Wallgren et al., 2017). Hence, setting specific sepsis awareness is critical in the identification of potentially at-risk patients.

Interestingly, a focus of identifying sepsis promptly within skilled nursing facilities is lacking, yet the number and utilization of these facilities is expanding. Currently it is documented that there are 691 licensed facilities in Florida alone, with a 71,000-patient capacity, which is roughly at 85% occupancy annually (Florida Health Care Association, 2022). These facilities are used to rehabilitate patients following complex procedures, to assist in transition to long term care residency, or for post-acute care monitoring prior to returning home. Unfortunately, literature reports that patients admitted to skilled nursing facilities are at a seven-time greater chance of being re-admitted to a hospital with a diagnosis of sepsis (Yoshikawa et al., 2019).

Additionally, the rate of admission to an intensive care unit increase, as well as the length of hospital stay (Yoshikawa et al., 2019). Further, qualitative studies have documented nursing staff verbalizing feelings of being ill prepared to properly identify signs of sepsis or how to prevent sepsis (Harley et al., 2021). There is a knowledge gap in sepsis awareness within these high-risk facilities, creating a preventable delay of care along with poor patient outcomes. Thus, the following article will discuss a project seeking to increase sepsis awareness and address the knowledge gap within nurses working in skilled nursing facilities.

Purpose and PICO Question

The purpose of this project is to determine baseline sepsis knowledge of nurses working within a skilled nursing facility, and the impact of incorporating an educational sepsis awareness in-services. Research suggests a lacking of awareness in nursing comprehension and preparedness to sepsis despite schooling and continuing education requirements (Harley et al., 2021). Controversially, there is no standardized approach documented for sepsis awareness within a “non-hospital” setting (Sloane et al., 2018). This includes a lack of screening or assessment guidelines upon admission to skilled nursing facilities, lack of monitoring protocols and most importantly a lack in educational policies. Hence, the project seeks to observe nursing staff baseline knowledge of sepsis presentation and prevention, while creating an awareness in-service to educate the nursing staff. The study will use various resources to determine the optimal means of stimulating an increased awareness that is setting specific.

Ultimately, the project at hand seeks to address the sepsis knowledge gap of nurses working within a skilled nursing facility to answer the following question:

- In nurses working in a skilled nursing facility (P), does the use of a sepsis awareness in-service (I) increase nurse knowledge (O) when compared with baseline knowledge of the topic (C)?

The population focus are nurses working in a skilled nursing facility. This is critical as the project seeks to determine deficits in sepsis education to improve the quality of care provided to the patients entering these facilities. The skilled nursing facility is a susceptible setting to infections due to the nature of the care being provided. This setting houses various external and environmental risks factors including post-operational status, older age populations, decreased mobility, and incontinence concerns. Thus, placing patients at risk for infection, wounds, falls, and other complications that may further make the patient a vulnerable host for microbes. Hence, a generalized understanding of facility's educational department resources for infection control and prevention are fundamental.

The intervention for the project consists of developing an educational sepsis in-service to be presented to the nursing staff in a manner that is easy to understand and apply. The in-service would provide a definition of sepsis, how to identify at risk patients, infection prevention techniques, and various sepsis clinical signs. Ideally, the in-service will be bulleted information that is easily retained. The education will be presented through a verbal presentation and all materials will be provided to the educational team, in addition to a brochure for the nursing staff to take and review further at their leisure.

Theoretically, the expected outcome is an increase in nursing knowledge following the implementation of the educational program. Baseline knowledge of the nursing staff will be assessed prior to the in-service and compared to a post-screening assessment following participation in the in-service. This process in the project is vital to determining if a gap in

nursing knowledge is present and if administration of an educational program will promote improved understanding within the nursing staff.

Problem Statement

Evidence based practice is founded on research that stems from a question to improve the quality of care provided. Thus, a problem statement is the beginning structure in justifying the formulated research question. Moran et al. (2020), defines the problem statement as introducing the purpose of a project through providing background information as evidence for a need in change of practice. The problem statement consists of 4 inter-rated components including a lead-in, declaration of originality, explanation, and indication of central focus (Moran et al., 2020). The lead-in includes the initial introduction to the problem with background information. This includes presenting the population to be studied and the need for change or improvement (Moran et al., 2020). For the presented project, the lead-in includes sepsis knowledge within nursing staff working in a skilled nursing facility.

Once established, the declaration of originality provides literature review content to identify knowledge gaps or lack in research on the given topic (Moran et al., 2020). Thus, the connection between sepsis awareness within the stated setting, per literature is lacking, yet documented statistics reveal an increased risk of developing sepsis within the skilled nursing facility patients. Following this declaration, proceeds the explanation of the reasoning behind the project (Moran et al., 2020). Prospectively, the project is being conducted to determine the impact of an educational program in increasing nursing staff knowledge of sepsis. Lastly, the problem statement is closed with the indication of central focus that clearly details the interventions outcome on the selected population in relation to the projects intended question (Moran et al., 2020). Ultimately, the problem statement purpose is to clearly depict the issue

being studied and the projected impact, while engaging the audience attention. Hence, shedding light on the lack of sepsis awareness resources to nurses working within a skilled nursing facility, where literature documents an increased risk for sepsis development within days of being admitted.

Problem Identification

An understanding of sepsis in nurses working within a skilled nursing facility is lacking when compared to the available resources for acute care settings. Interestingly, hospital readmission following transfer to a skilled nursing facility can occur between 12 to 72 hours (Sloane et al., 2018). Research documents that of the patients who are transferred back to the hospital, 20% do not return to the skilled nursing facility following hospitalization (Sloane et al., 2018). Additionally, case that typically do return to the skilled nursing facility return on antibiotics and decreased physical baseline than the prior admission. Hence, the vital need for nurses within the skilled nursing facility to have an understanding of the sepsis process and risk groups.

The skilled nursing facility has a broad population range which can make sepsis education challenging especially with rapid gain in evidence based knowledge. Unfortunately, no standardize protocol for screening or education is currently implemented within these facilities, leaving the educational department to compose policies at their discretion. Literature suggests that the lack in clear guidelines is associated with the negative patient outcomes (Huang et al., 2019). Additionally, literature reports that due to the vast barriers in properly screening for sepsis, it is imperative for nursing staff to be vigilant for cues in patient status change and act promptly (Bleakley et al., 2020). Further, when observing the connection between nursing understanding of sepsis and patient outcomes, researchers found a lack of proper documentation

reporting admission to skill nursing facility baseline, vital signs, medical history or notification of a health care provider (Sloane et al., 2018). This source of information is fundamental in understanding the need for change. The gap in knowledge is deeper than the general concept of sepsis or infection process, but rather a lack in understanding the severity of the syndrome and the devastating complications that can arise if untreated. Ultimately, the change toward having available nursing resources and policies with clear role capabilities is essential.

Background

Skilled nursing facilities are centers developed to assist in rehabilitating patients, rebuilding strength, assist in adjustment to new functional levels, or to assist in transitioning to new living arrangements such as an assisted living facility. Thus, an understanding of the population demographics is important when providing patient centered care. Skilled nursing facilities cater to individuals who have recently been hospitalized for a variety of medical conditions, have had surgical interventions, or invasive procedures and whom are compromised in a variety of ways. Research reports that patients admitted to a skilled nursing facility have a seven times greater chance of returning to the hospital due to complications of sepsis (Yoshikawa et al., 2019). Literature emphasis this correlation of skilled nursing patients and re-hospitalization rates, with the fact that the patients are compromised either through various medical conditions secondary to age or are already impaired due to current infectious process (Yoshikawa et al., 2019). Additionally, assessment techniques within the skilled nursing facilities differ from other settings. Typical assessments such as vital signs are not measure routinely and screening for sepsis does not occur within the facilities. Further, due to the less acuity levels within the facilities the nursing staff may not be adequately prepared to identify changes in patient status and clinicians may not be readily available to provide a prompt

evaluation (Yoshikawa et al., 2019). Hence, the need for a standardized guideline for these facilities to promote a uniform continual assessment of patients and to increase nursing knowledge.

Respectfully, the Florida Health Care Association (2022), reports diverse non-acute care which incorporates post-acute care, rehabilitation and continuity of care in addition to optional residency if needed. These facilities are becoming more readily available to assist in transition of care, but lack fundamentally appropriate setting specific understanding, as evident by the 57% of all emergency room visits of septic patients being of age 65 and older with 24% of that statistic being patients of a skilled nursing facilities (Mylotte, 2019). Additionally, the damaging effect of sepsis is a lifelong cycle that inevitably leads to death if untreated. While resources are present to combat this condition in the acute care setting, little is available for the skilled nursing facilities to prevent the devastating process. Although, the chances of survival can be increased with prompt identification and treatment, the one-year post survival mortality rate is 52.8% (Ehlenbach et al., 2017). Meaning that while the patient may overcome the obstacles of recovery and damaging organ effects of sepsis, they will succumb to their illness within a year of recovery. This places further challenges for the nursing staff of skilled nursing facilities as they require a clinical understanding of the sepsis process and multi-organ damage, requiring medication adjustment, increased assistance with activities of daily living, and most importantly increased surveillance of infections. The post septic survivor is a compromised host for further infections as their limited mobility may predispose them to skin break down, incontinence issues, dysphagia resulting in aspiration and an inability to combat infections. Hence, the nursing staff of skilled nursing facilities require resources to assist in identify the at-risk patients, how to prevent infections and warning signals of potential infection or septic patients.

Scope of the Problem

Sepsis is often times described as being a continuum of time sensitive processes, which proceeds even after survival. The impact of sepsis is global with devastating effects that begins with any type of infection. Incidentally, the United States manages over a million sepsis cases a year (Sepsis Alliance, 2022). In perspective, the Sepsis Alliance (2022) reported sepsis as the leading cause of death for 30% of the population diagnosed following admission to a skilled nursing facility. There is increased surveillance on the cases of sepsis, yet the devastating consequence of the infectious process greatly impairs the quality of life of thousands of individuals daily. Further, patients admitted to a skilled nursing facility are at a seven times greater chance of developing sepsis, a 63% chance of being admitted to the intensive care unit with increased hospital length of stay, and 37% chance of in hospital mortality (Yoshikawa et al., 2019). These statistics are related to various environmental factors including poor incontinence care, malnutrition, prolong foley catheterization, intravenous infusions, and wound development. These factors place the skilled nursing facility patients at increased risk for sepsis. It is critical to have an understanding of the population demographic of skilled nursing facilities as these patients are vulnerable to infection due to their post-surgical interventions, impaired mobility status and age.

Sepsis is time sensitive and successful prevention requires an understanding of at risk patients. The groups at high risk for sepsis include those elderly frail patients, infant patients, compromised immune systems, presence of comorbidities, pregnant women, patients with in dwelling devices, and current infection (Bleakley & Cole, 2020). Sepsis typically has nonspecific symptoms but when coupled with at risk variables, warning cues will be more event. This understanding is critical for nursing working in a skilled nursing facility as prompt identification

of subtle cues can save a patient's life. Further, the nurses have the greatest contact with patients as they interact frequently throughout the shift. It is vital to be on alert for septic cues to improve patient outcomes. Unfortunately, sepsis is difficult to identify due to the varying clinical presentations and multiple clinical approaches to identifying sepsis. Literature denotes the diagnosis of sepsis challenging due to no standardized guidelines, screening tools, and lack of available resources within the skilled nursing facilities (Mylotte, 2019). Skilled nursing facility nurses are limited in their abilities to perform certain time-saving tasks including insertion of peripheral intravenous access, blood culture sampling, and lack of sepsis policy to describe nursing role and capabilities in the given situation (Mylotte, 2019). Thus, resulting in readmissions to acute care facilities and contributing to poor patient outcomes due to the delay in identification and prevention. This preventable delay can be improved through the incorporation of sepsis policy and resources specific to skilled nursing facilities.

Consequences of the Problem

The devastating effect of sepsis begins from identification of infection and continues through to recovery. The consequences of the continuum of cascading events range from physical to an economic burden. The Center for Disease Control and Prevention reported that in the United States an estimate of approximately 1.5 million individuals have been impacted by sepsis annually, resulting in 250,000 deaths respectively (Hajj et al., 2018). Physically, sepsis results in functional decline of activities of daily living and may result in residual organ dysfunction. Research documents approximately 72.5% of patients who survive sepsis require moderate to total assistance with activities of daily living due to the effects of sepsis (Ehlenbach et al., 2017). The Sepsis Alliance (2022) reported an annual rate of 20,000 new cases of moderately severe cognitive impairment following sepsis survival. Additionally, the patient may

exhibit psychological effects such as, sleep disturbance, anxiety, and depression following sepsis (Huang et al., 2019). An international study termed these changes “post-sepsis syndrome,” to include the physical, psychological, and physiological events that occur during recovery (Huang et al., 2019). During the post-sepsis phase, the patient adjusts to their new baseline, which will require further rehabilitation and medical management prior to discharge. The average hospital stay is increased by 4.5 days to 16.5 depending on the severity of the infection (Paoli et al., 2018). Surviving sepsis is an extensive journey that commonly occurs with setbacks in the form of readmission and an extended recovery period.

Economically, the medical cost of sepsis varies based on the patient, the severity, and the causative factors related to the systemic infection. Despite the varying treatment intervention the medical expense incorporates laboratory testing, diagnostic testing, intravenous medications, and potentially mechanical intubation. Research reported the cost of treating one patient diagnosed with sepsis diagnosis to be an annual estimated of \$20 million, which equates to a daily value of approximately \$55 million (Hajj et al., 2018). Additionally, the expenses following recovery can cost as much as \$13,000 a year depending on comorbidities and functional limitations (Hajj et al., 2018). Further, the economic burden accumulates with emergency room visits and readmissions as complications and medical noncompliance occur. These consequences can be connected to the lack of patient teaching upon discharge. A study found that healthcare providers, including nurses, failed to educate post septic patients about sepsis upon discharge, resulting in an increased re-admission rate (Huang et al., 2018). When surveyed the healthcare staff reports a “baseline understanding of sepsis” to be “not at all” or “a little bit (Huang et al., 2018).” Thus, the gap in knowledge resulting in a cascading events beginning with failure to

identify at risk patients, failure to identify sepsis in a timely manner, and failure to educate the patient on their diagnosis.

Knowledge Gaps

The epidemiology of sepsis has been in review over the last three decades revealing varying data on the potential causes of sepsis and the stimulation of a drastic systemic inflammatory process. Yet, knowledge gaps are noted within the short term rehabilitation facilities and the nursing staff. Studies indicated that despite proper education prior to licensure and continuing education requirements, there are no defined guidelines for sepsis prevention, identification, or awareness reported (Harley et al., 2021). In turn, it has been noted that sepsis awareness comes with expose and internalization (Harley et al., 2021). Meaning, that if a nurse has not had previous exposure with adequate education or follow up, then their baseline sepsis knowledge will be at a lower level than others. Knowledge is gained through various methods including reading materials, educational programs, mentorships and lived experiences. Thus improvement in knowledge can occur if educational in-services are provided tailored to the setting and potential risks.

Controversially, sepsis management and education is tailored to the acute care setting due to the acuity of the population. However, subacute facilities such as skilled nursing facilities have poor awareness of the concept of sepsis and the risk placed on their patient population. A recent study found a gap in available sepsis information. The study reports an inadequate understanding of where to locate information on sepsis and how to access resources within various settings excluding acute care (Fiest et al., 2022). Consequently, nursing knowledge of sepsis and the potential risk factors for sepsis is reportedly low worldwide with approximately 57% of studied nurses being able to correctly describe these characteristics (Fiest et al., 2022).

Additionally, Fiest et al., (2022) found the sepsis resources used by nurses included the internet (72%), knowledge gained through schooling (56%), and through clinical exposure (72%). Hence, depicting a deficit in continuous learning through facility provided resources to re-enforcement the knowledge and to prepare nursing critical thinking.

This is critical as information is constantly changing and being updated by evidence-based research. Further, barriers to improved knowledge remain as varying definitions and atypical presentations making identification of sepsis challenging (Hajj et al., 2018). A setting specific approach is lacking within the literature to discuss these varying barriers to understanding the at-risk populations. While the acute care setting has a higher acuity of patients; the skilled nursing facility presents with various risk factors that require centralized focused. For instance, these facilities often contain a more vulnerable population such as older adults. The older adult, defined as an individual 65 years of age and older, will have a greater chance of developing an infection than their younger counterparts (Ehlenbach et al., 2017). On the contrary, a patient who has recently had a surgical intervention with various invasive management such as a Foley Catheter or central intravenous infusions, may be at an equally high risk for sepsis than the older adult. Thus, this is the demographic of the patients admitted to a skilled nursing facility to regain strength prior to returning home. The skilled facility nursing staff require an understanding of the risk of infection and the sepsis process, when providing care to patients. Currently, the literature is incomplete on the available resources to improve nursing knowledge within the skilled nursing facility.

Proposed Solution

In combating the devastating effects of sepsis, it is proposed that implementation of a sepsis awareness in-service within the skilled nursing facility will provide valuable data on

sepsis prevention and identification. This is completed through surveying nursing working within a skilled nursing facility to determine baseline knowledge. A review of the educational department resources available to the staff will also be conducted to determine gaps in awareness. Once this data is collected, a sepsis awareness in-service will be created and delivered to the staff. The effectiveness of the awareness in-service will be assessed through comparison of the nursing baseline pre-testing results to the post-testing results. The key in bridging the knowledge gap within skilled nursing facilities is have an understanding of the available resources to staff. Research on the topic documented that general sepsis knowledge is lower within skilled nursing facilities correlating to the disproportionately high negative outcome rates (Fiest et al., 2022). Hence, an implementation of educational resources would assist in addressing the discussed concern.

Currently, patients admitted to a skilled nursing facility have higher risks for sepsis due to various factors. These rates can be attributed to a gap of sepsis awareness within the nursing staff and lack of available in-facility resources. Literature proposes that skilled nursing facilities lack educational resources due to the complexities of sepsis risk and the varying clinical presentations (Sloane et al., 2018). Hence, research highlights various challenges to increasing sepsis knowledge including variations in educational deliveries, presentations, clinical background, and overall lack of available setting specific resources. Qualitative studies have identified that nurse often have difficulty recognizing sepsis and techniques to prevent the escalating events that pursue (Harley et al., 2019). Thus, the development of an educational program that address how to determine at risk patients, identify potential septic cues, and how to prevent infection will empower nurse to feel confident in their nursing judgement.

Continually, the project strives to collect awareness data to fuse the knowledge gap. Considerably, it is documented that sepsis education can improve “patient, public, and health care provider knowledge” when delivered in a relatable environment (Mylotte, 2019). Hence, it is beneficial to influence change beginning with an assessment of a facility resources, identifying nursing staff baseline knowledge through pre-testing, and developing a personalized sepsis awareness in-service that is beneficial to the work setting. Additionally, the setting specific data will assist in determining a gap in at risk patients and infection prevention within the facility in to reveal areas of educational needs. The effectiveness will be determined through post-testing and exit survey to assess improvement in knowledge. Ultimately, the function of the study is to promote sepsis awareness tailored to nurses working within skilled nursing facilities. This is completed through decreasing barriers such as identifying high risk patients, risk factors for infection, techniques of prevention, and early identification of the sepsis process.

Once this is collected, the information will be delivered through an educational in-service, which will contain key information presented on a brochure with a visual presentation. The educational program will be easy to understand and time efficient to maximize nursing staff engagement. Additionally, the material will be tailored to the facility. Literature reports nurses feeling empowered when facilities provided guidance on the topic through leadership mentors, huddle meetings, poster updates, and senior staff support (Harley et al, 2019). Ultimately, tailoring an educational program with resources for the staff that is setting specific will provide the nurses with resources to improve their critically thinking, while feeling supported in the care they provide. Overall, the proposed solution reviews baseline knowledge, while engaging staff and providing them setting specific resources to promote sepsis awareness and improve the quality of the care provided.

Summary

Sepsis is a time sensitive, life threatening, systemic infection that begins locally. The local infection can be a result of various exposures, either environmental or physiological. Additionally, the risk of infection rises following surgical interventions, invasive procedures such as a foley catheterization, intravenous line insertion or nasogastric tube placement. The presence of wounds or other local infection may progress to sepsis if presenting atypically or unresponsive to treatment measures. Further, infectious pathogens may also result from the compromised aging organ systems resulting in dysphagia which may lead to pneumonia secondary to aspiration. However the means of entry for the invading pathogen, the infection process rapidly cascades into the circulatory system, leading to damaging effects on multiple organ and possibly death. Thus, it is imperative for nursing staff to be aware of the increased risk of sepsis development, while properly preventing and identifying potential septic patients.

Interestingly, research documents nursing staff feeling uninformed on the matter, unsure of proper presentations and lacking resources within skilled nursing facilities on the topic. These findings correlate with various negative patient outcomes including increased medical cost, new onset or worsening cognitive impairment, decline in physical function, poor quality of life and prematurely shortened life expectancy. Skilled nursing facilities have an increased risk rate of sepsis due to various factors including environmental and physiological factors.

Hence, the project aims to determine the connection between nursing baseline awareness of sepsis and the impact on their knowledge following an educational in-service. The educational program will be tailored to the skilled nursing facility setting with information to improve nursing staff critical thinking skills. Ultimately, the project seeks to answer the question “In

nurses working in a skilled nursing facility (P), does the use of a sepsis awareness in-service (I) increase nurse knowledge (O) when compared with baseline knowledge of the topic (C)”??

Methodology of Literature Review

Sepsis is a time sensitive, life threatening syndrome that progress on a continuum leading to mass organ failure and death. This systemic inflammatory response is triggered by an invasion of pathogens within a vulnerable host (Bleakley & Cole, 2020). The source of the infection is diverse as it can begin from an open area on the skin or due to an invasive procedure. Further, the etiology of sepsis consists of a series of cascading events that continues into recovery. As a result, the individual may have a decreased functional baseline and require assistance with activities of daily living or they may experience a collection of symptoms classified as “post-sepsis syndrome” (Huang et al., 2020). This syndrome includes symptoms such as sleep disturbances, lack of appetite, depression, or anxiety (Huang et al., 2019). Yet, sepsis is not always presented as an infection. In fact, sepsis may present atypically making it difficult to identify in a timely manner. The early identification of sepsis is imperative to the improving patient outcomes. Research documents that approximately 39% of patients whom are diagnoses with sepsis do not have abnormal laboratory values and 12% lack inflammatory response markers (Wallgren et al., 2017). Challenges in identifying sepsis can result in a delayed treatment plan and poor patient outcomes.

Interestingly, sepsis is often overlooked in non-acute settings such as skilled nursing facilities. Research notes that patients admitted to these facilities are at a seven times greater risk for developing sepsis due to the high risk nature of the demographic population (Yoshikawa et al., 2019). The statistics correlates to the the high risk population within skilled nursing facilities. The primary population includes postoperative patients, those with impaired mobility, prolong Foley catheter placement, central and peripheral intravenous catheters, invasive procedures, current infections and skin impairments. Consequently, these risks are present because the

function or purpose of skilled nursing facilities is to rehabilitate patient's following complex or surgical procedures, to manage non-acute conditions or chronic disease management, and to assist in transitioning to long term care residency. Hence, awareness of the high risk nature of the setting is critical to improving the quality of care provided. Yet, qualitative studies document nursing staff of these facilities reporting a knowledge gap in assessing or recognizing sepsis and a lack of resources within the facilities (Harley et al., 2021). This is critical information as it presents an area in need of improvement. Thus, the following literature review shall focus on determining the knowledge gap between nursing working in a skilled nursing facility and measures to improve baseline knowledge. Ideally, the project seeks to determine clearly defined gaps in knowledge through testing the nursing staff prior to an educational in-service. The information will be provided through a verbal presentation with distribution of educational pamphlets to the nursing staff. Additionally, following the delivery of the education in-service a post-test will be conducted to note increased understanding. Ultimately, the project will reveal a knowledge gap that can be bridged with the implementation of an education in-service to increase nursing staff knowledge and confidence in determining sepsis within the skilled nursing facilities.

The following section will present a review of collected literature supporting the need for improvement of sepsis education within the skilled nursing facility. The paper will present the selected PICO question to be studied and a discussion of its core elements. Additionally, a detailed search criteria and exclusion criteria will be documented with a general summary of valuable research conducted to support the stated project. Ultimately, the literature review will discuss the reasoning behind the selected articles, in relation to the value of the findings to the

importance of further studying the topic of sepsis awareness in nurses working in skilled nursing facilities.

PICO Question

The literature review presented seeks to validate the dynamic PICO question of In nurses working in a skilled nursing facility (P), does the use of a sepsis awareness in-service (I), increase nurse knowledge (O) when compared with baseline knowledge of the topic (C)? The elements of a PICO question include the intended population, the intervention to be implemented, and the predicted outcome to be compared. In the presented PICO question, the selected population is nurses working within a skilled nursing facility. The population was selected due to the high susceptibility of sepsis within the skilled nursing facility and lack of clear guidelines for the specific setting. Further, for improvement to occur nurses are fundamentally critical in applying information gathered through experiences and resources available. Thus, determining gaps in knowledge will assist in improving patient outcomes.

An educational in-service on sepsis will be conducted and implemented as the intervention for the project. The material will be easy to understand and tailed to the skilled nursing facilities with information regarding the high risk susceptibility for the patients. Hence, the information will include defining sepsis, the varying symptoms, infection prevention and the importance of being vigilant will be presented through the in-service. Ultimately, the information will be provided in a factual, bulleted manner that is easy to understand and retained. This will be completed with the assistance of the educational depart at the facility to promote continue education on the topic.

Hence, the outcome will determine if implementing a sepsis in-service will increase nursing staff baseline knowledge. The staff will be provided with a pre-test prior to the in-service

to be compared with a post-test following the presentation. Thus, this will present data regarding the effectiveness of the educational in-service in promoting an increased understanding of sepsis within the skilled nursing facility.

Literature Search Process

In solidifying the importance of the stated project, a literature review was conducted using various databases to gather background information on the topic, determine past research on the issue, and to gather evidence related to the lack of available resources regarding sepsis for nurses working in a skilled nursing facility. Scholarly articles were gathered through the use of Florida International University's online library and collection of databases. Search engines including CINAHL Plus with full text, Cochrane Library, Medline (Pro Quest), PubMed Central (PMC) and Google Scholar were utilized to review and gather data. These search engines were used due to their health science focus and abundance of availability of information.

CINAHL Plus is a health science focused data base with thousands of articles. The variety of articles available include editorials, critical pathways, clinical trials and clinical innovations. Thus, the database assisted in obtaining current articles with factual and research-based information. Further, Cochrane library was selected due to its primary focus on evidence-based systemic reviews. This allowed for the collection of previous research on sepsis and skilled nursing facilities on a variety of topics. Additionally, PubMed Central was selected due to its health science-based information. This database presented articles with a pathophysiological viewpoint and connected the etiologies of sepsis with potential complications or outcomes. In continuation, Medline (ProQuest) was utilized to gather scholarly journals and past documented research articles. This assisted in identifying what has already been studied on the topic of sepsis in relation to skilled nursing facilities. Lastly, Google Scholar was used as it allowed for access

to a broad range of articles that may have been limited in the previously stated databases. Google Scholar allows its users access to many articles without a membership or subscription, which facilitated obtaining articles that may have been difficult to access.

Though a multitude of databases was utilized, the searching criteria generally remained the same for each search. For instance, search terms used for each database included “sepsis,” “skilled nursing facilities,” “nursing awareness of sepsis,” “sepsis pathophysiology,” “impact of sepsis,” “risk factors for sepsis,” “sepsis awareness,” “sepsis guidelines,” “sepsis protocol,” and “skilled nursing readmission rate.” Additionally, the search engines were conducted using the Boolean/Phrase modes for each and filtered through limiters including a time frame from the year 2017 to present, and English language. These key words allowed for a multitude of articles ranging from 30,000 to 30 total articles; as they were placed together with “and” in the search filter. The utilization of the discussed databases and search characteristics allowed for the selection of valuable articles for review (see Appendix A for a matrix containing key information on the gathered articles).

Inclusion and Exclusion Criteria

Following the scholarly search, various articles were selected for review based on the data provided. The ten selected articles were chosen due to the level of evidence and how relevant it was to the established PICO question. For instance, articles were chosen if it clearly defined sepsis, correlated statistic to skilled nursing facilities or non-acute care facilities, and presented the impact of sepsis to patients, the community, or nursing knowledge. Additionally, qualitative articles were selected to enhance the voices of nurses working within skilled nursing facilities that felt a lacking in resources or awareness of the risk of sepsis within the skilled nursing facilities. The characteristics of the articles and the data provided from each, facilitated

the selection process in supporting the topic of sepsis awareness in nursing working in a skilled nursing facility.

Although, various studies were excluded from the literature review due to presenting outdated information, not correlating sepsis awareness to skilled nursing facilities or having a focus on solely recognizing sepsis through screening tool implementation. The focus of the project is to correlate an educational in-service within the skilled nursing facility to the increase in baseline nursing knowledge. Articles that did not provided relevant data or information that is no longer up to date was excluded. Of note, articles that were outdated were reviewed for background but not selected due to the timeliness of the information. Thus, the articles selected assist in supporting the intended purpose of the project.

Literature Appraisal and Literature Matrix

Upon completion of the literature search process, the ten articles selected were critically reviewed to determine the strength of the presented evidence and the value placed on the aim of the project. Thus, the hierarchy model used for determining the strength of the selected articles is the *Johns Hopkins Level of Evidence*. This model presents five hierarchy levels that correlate to the type of study conducted (Dang & Dearholt, 2017). Additionally, the model presents three quality guides for evaluation of the articles results (Dang & Dearholt, 2017). This model was effective in assisting in reviewing the literature and selecting high quality articles (see Appendix A for selected article hierarchy levels). The high quality evidence are contained in level I which represents experimental studies such as systematic reviews and meta-analysis that utilize randomized control trials, and level II which represents systematic reviews of articles that do not utilize randomized controlled trails (Dang & Dearholt, 2017). While the mid to lower quality studies can be found in levels III-V which include non-experimental studies, clinical guidelines,

and literature reviews (Dang & Dearholt, 2017). When conducting a literature search it is imperative to strive to obtain sources that are level I and level II. Interestingly, due to the focus of the topic selected, limited research is currently available at a level I and II. Hence, articles selected for review were primarily qualitative studies or cohort studies, cross sectional studies or retrospective observational studies. Thus, deeming the research selected a level III. Being that the project seeks to bridge a gap in nursing knowledge, most findings will be qualitative or observed rather than quantitative.

In review, a matrix table has been provided in the Appendix of the paper. The ten selected articles are discussed in relation to their importance to the project, the level of evidence provided and a brief overview of the articles purpose, study design, sample selection, data measures, results and limitations (see Appendix A for matrix table). Each article provided valuable insight into further need of awareness to the topic of knowledge gaps within the skilled nursing facility and measures previously studied to improve these gaps.

Characteristics of the Included Studies

Quality improvement begins with conducting research to determine prior studies and interventions taken on the projected project. Several databases were utilized in the selection of the following ten articles to be reviewed. Each articles provided supporting evidence for the gap of knowledge regarding infection transmission and sepsis within the skilled nursing facilities. Additionally, each articles recommended further research of issues specific to skilled nursing facilities as it is currently limited. Quality improvement can be accomplished through taking these recommendations seriously and perusing to bridge the setting specific knowledge gap.

Ehlenbach et al. (2017) conducted a retrospective cohort study to determine impairments in sepsis survivors upon admission to skilled nursing facilities. The study aimed to examine the

extent of physical and cognitive impairments following recovery from sepsis. Thus, the researchers chose subjects at random and included patients discharged from a hospital with a diagnosis of severe sepsis. All subjects resided in the United States and had Medicare coverage. Further, the functional status of the patients were assessed upon admission with the Minimum Data Set Activities of Daily Living and the Minimum Data Set-Cognition Scale (Ehlenbach et al., 2017). Collectively, the study found that following hospitalization for severe sepsis, 34% of patients presented with severe cognitive impairment and 72.5% required maximal to total dependence for activities of daily living (Ehlenbach et al., 2017). The study concluded with documentation of patients who are admitted to skilled nursing facilities following sepsis hospitalization resulted in poor quality of living due to the severe physical and cognitive declines and increased need for assistance. Overall, the level of evidence is high quality at a level III on the hierarchy of evidence. Although, only assessing the upon admission and not following the patient's long term following discharge placed limitations on the study, which could lead to discrepancies. Yet, the strengths of the article included focusing on the skilled nursing facilities and beginning the study from the time the patient is admitted, allowed for a clear depiction of the patient and variables that may be contributing factors to their overall decline.

Another study selected focused on the level of awareness within the community, healthcare professionals and patients to determine the source of a knowledge gap. Fiest et. al. (2022), conducted a scoping review using the Arksey and O'Malley's methodological framework to identify areas of low sepsis awareness within the public and healthcare professionals. The subject of the study consisted of articles with a focus on sepsis knowledge and information seeking behaviors in relation to overall awareness. These articles were selected CINAHL, MEDLINE, EMBASE, and Educational Research Complete. The articles were selected without

country limitations to review awareness on a global scale. The review discovered that non-acute care professionals had an overall lower baseline knowledge of sepsis than acute care professionals (Fiest et al., 2022). Further, the study recommends continuation of research because sepsis awareness related to its definition, process and risk factors are consensually low ranging from 4.2% of health care workers having a sepsis understanding to 60% (Fiest et al., 2022). Interestingly, the study noted that sepsis knowledge varies between countries with 2% of healthcare professionals having awareness in Japan to an 88% awareness in German (Fiest et al., 2022). While the study found that 91% of nurses could define sepsis, only 58% could discuss risk factors leading to sepsis. Strengths from the study included the maintenance of rigors protocols and the use of the PRSMA-ScR reporting guidelines to obtain their results, but there were limitations to the study. For instance, no limitations were placed on language which provided for a higher range of articles that could result in over-estimation. Additionally, each study used various different measures, surveys or questions resulting in a variety of understandings presentations (Fiest et al., 2022). Overall, the level of evidence presented is high quality at a Level III on the hierarchy of evidence. Ultimately, the study justified the need for continued research within the healthcare professionals and their understanding of sepsis and its risk factors.

Continuing with the theme of nursing roles and understanding, Harley et al. (2019) published a qualitative study, which aimed to quantify the level of understanding of sepsis recognition and awareness of screening tools within nurses working in emergency departments. The goal of the study was to stimulate improved educational programs within hospitals, and to document the importance of implementing sepsis policies (Harley et al., 2019). The study took place within a 750 bed public tertiary teaching hospital, primarily in the emergency department.

The nurses experience ranged from novice to experienced clinical nurses. Additionally, the data collected for this descriptive quality study was through 30 to 60 minute, digitally recorded, semi-structured interviews with emergency department nurses (Harley et al., 2019). The results discovered that the nursing working within the emergency department had limited awareness to recognizing sepsis and a lack of resources or support to assist in improving sepsis understanding was the consensus from the participants (Harley et al., 2019). Further, the strengths of the study included in a first-hand encounter with nurses working within the field of study and unbiased perception regarding the topic. On the contrary, various limitations occurred within the study such as the nurses feeling fatigued while working their shifts, or participants being busy prior to the interview may result in having had an impact on the quality of data obtained. Based on the presented information the article is provided good quality level III evidence. Lastly, the article concluded with a need to further evaluate the challenges in nurses being able to recognize sepsis and the need for “educational programs and system modifications” to assist in providing care (Harley et al., 2019). Hence, the study promoted the need for continuous educational resources for nurses to improve their sepsis awareness.

Sepsis awareness can be influenced through a variety of means. It can be presented through schooling, lectures, in-services or through exposure. Unfortunately, exposure to a preventable situation can be limited and thus awareness should begin within the nursing programs prior to receiving their licensure and continue throughout the nursing career. Harley et al., (2021) conducted a study to determine the role of preparation of final year nursing students to sepsis awareness. The sample included final year nurses within four Australian Universities. Thus, the setting is Queensland, Australia. A multi-site, cross-sectional study was performed using a survey modified for nursing students that was developed for medical students. Hence, the

survey was delivered via SurveyMonkey that incorporated aspects such as sepsis recognition, pathophysiology, and prevalence (Harley et al., 2021). The study revealed that 86.1% the nursing students could identify early signs of sepsis, 44.7% could determine the importance of early identification and treatment, and 54.8% could determine the cause of sepsis (Harley et al., 2021). The study showed various strengths such as focusing on a specific group of nurses and having a large sample size, but limitations did present throughout the study. Limitations included not all participants responding to the survey, the modification in the survey may have discrepancies and the potential bias developed through the questions and responses delivered (Harley et al., 2021). Thus, the study concluded placing an emphasis on the importance of early exposure to information on sepsis recognition and risk factors within nursing programs. Additionally, the study concluded with a recommendation for preparing nursing students with population specific sepsis criteria. Overall, the level of evidence presented is good quality at a level III on the hierarchy of evidence.

An understanding of the consequences of sepsis is critical to note when discussing the importance of early recognition. A study conducted by Huang et al., 2019, set to determine the effects of post-sepsis syndrome through the “perspective of sepsis survivors.” This qualitative study was conducted through a prospective, observational online international survey (Huang et al., 2019). The online surveys were completed following four meetings with the sepsis survivors within the various countries. Further, the study was a part of the “Sepsis Survivors Engagement Project (Huang et al., 2019). Hence, the sample included participants from 41 countries and 47.8% of the participants expressed having had sepsis within the year (Huang et al., 2019). The results of the study included 32.4% of the sample stated they were still recovering from the effects of sepsis, hospitalization was greater than four weeks, and 27.9 % of survivors reported

not being educated about post sepsis care prior to discharge (Huang et al., 2019). The data indicate that the overall quality of life for the survivors had declined physically and psychologically.

Residual symptoms such as depression, anxiety, sexual dysfunction, and organ damage was reported in 43.6% of the population (Huang et al., 2019). Interestingly, the study concluded through mentioning the lack of gold standard care regarding sepsis and post sepsis care. Additionally, sepsis survivors are presented with a multitude of challenges following hospitalization and reported a lack of available support or resources. Thus, the article recommended further research on the limited awareness of post sepsis recovery and healthcare follow up. The strength of the study derived from gathering data through the lived experiences of sepsis survivors. Yet, limitations include the potential bias in the perspective of the participants as they were recruited through social media and had participation within sepsis organizations such as the Sepsis Alliance. Overall, the level of evidence presented is high quality at a level III on the hierarchy of evidence. This article provided a first-hand perspective of the impact of sepsis on the quality of life following sepsis, and the importance of preventing these complications.

In determining gaps of sepsis knowledge there are several approaches discussed in research. A study presented by Khanh et al., (2019) discussed the potential solution to investigate healthcare associated infections through the use of simulation models. The study aimed to determine the benefit of using simulation models to identify gaps in infection prevention methods and to bring awareness to the effectiveness of these tools. The systematic review presented the use of stimulation models, the different types available, and the ability of these tools to detect the dynamics behind transmissions of various infections (Khanh et al., 2019).

Through the use of the PRISMA flowchart, articles were extracted from databases including, PUBMED, EMBASE, Cochran Library, and ABI/INFORM. These articles documented the impact of the simulation models on decreasing infection transmission.

The results revealed 32% of stimulator usage is generalized and lacking unit structure (Khanh et al., 2019). Consequently, 7% of studies documented unit specific criteria to facility appropriate stimulator usage and respectively only 7% of these studies assessed the stimulator usage within long term or skilled nursing facilities (Khanh et al., 2019). Lastly, 53% of the studies reported simulation models active for use but not implemented. The strengths of the study include an exclusion criteria on the literary search for sensitive of the simulation models prior to the study, as well as verification of stimulator module use throughout the study (Khanh et al., 2019). Although, limitations on the study included a discrepancy in results due to the various types of stimulation models available and the vast defining criteria of infections globally. These limitations place variables to be considered when evaluating the impact of the simulation models. Thus, the level of evidence presented is deemed low quality at a level III on the hierarchy of evidence. The study concluded that while the stimulation models can assist in evaluating facilities infection transmission risk, the setting and type of stimulation should be evaluated prior to implementation. Additionally, these tools are available but underutilized (Khanh et al., 2019). Thus, the article provided evidence that a there is a gap in available resources specific to preventative care that should be further explored.

Continuing with the theme of effectiveness of preventative measures, Lee et al. (2019) completed a systematic review of the importance of infection prevention programs within the long term care facilities. The aim of the study was to analyze the availability of infection prevention programs and their effectiveness within these facilities. The review consisted of

seventeen studies obtained through databases such as CINAHL, PUBMED, EMBASE and Cochrane CENTRAL (Lee et al., 2019). Additionally, the review was completed using the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA). The criteria for the evaluation of the infection prevention program was the World Health Organization core components of infection prevention and control Programmes for older adults (Lee et al., 2019). Thus, the data documented that the use of regularly scheduled educational sessions a resulted to be “highly effective in improving outcomes” through “behavioral change strategies (Lee et al., 2019, p. 392).”

Further, the study noted that facilities lacked educational follow with their staff to determine areas of weakness related to infectious processes (Lee et al., 2019). The strength of the study included a setting specific analysis with recommendations from the World Health Organization (WHO). Alternatively, the limitations included a varying definition of sepsis, varying interpretation of the WHO recommendations, and a meta-analysis was not conducted to evaluate the methods for evaluating outcomes. Overall, the level of evidence presented is good quality at a level III on the hierarchy of evidence. The study conclude with an emphasis on the importance of educational programs within the long term care facilities with feedback from the health care team to inflict an organizational wide behavioral change of continual learning seeking interventions. The article assisted in provided data on the components of an infection prevention educational program and its benefits.

Recently, a study conducted by Lee et al., (2020) set to determine the cause of infection outbreaks within long term care facilities through a review of transmission rates. The systematic review was completed through the use of four electronic databases with a search limitation of only English articles. The articles focused on outbreaks within the long-term care facilities (Lee

et al., 2020). The sample for the review consisted of 37 qualitative studies that were assessed using the “risk of bias assessment tool for non-randomized studies (Lee et al., 2020).”

Interestingly, the study noted that 60% of infections could be traced to poor practices within the nursing staff such as working while sick, poor hand washing techniques and poor contact precautions (Lee et al., 2020). For instance, the study noted a hygiene compliance within the healthcare staff to be at 14-25% with poor personal protective equipment use noted as well (Lee et al., 2020). Thus, the study concluded with the importance long term care facilities assessing their infection control practices regularly and promoting consistent feedback within the staff as well as educational information provided at regular intervals.

Although the study presented limitations such as only assessing English language documents and qualitative reviews, leaving the study to have limited generalizability. The strength of the article included being setting specific and correlating at risk populations with causes of infection transmission. Overall, the level of evidence presented is good quality at a level III on the hierarchy of evidence. This article provided a connection between lack of resources within a non-acute care facility as the source of infection transmissions and the value of regularly providing staff education.

Sepsis continues to impact patients even after hospitalization placing them at risk for re-admission. Thus, Meyer et al. (2018) conducted a retrospective observational cohort study with a purpose of measuring rates and trends of re-hospitalization following a sepsis diagnosis. The study was completed in the University of Pennsylvania Health System which consists of three acute care hospitals (Meyer et al., 2018). The data was collected using the International Classification of Diseases, Ninth Revision, Clinical Modification codes for sepsis to determine patient participation with the study. Additionally, the data was analyzed using the nptrend

package in the Stata statistical software. The study revealed that approximately 42% of sepsis survivors re-admissions could have been prevented with outpatient medical management and that re-admission rates for patients diagnosed with sepsis is approximately 28% (Meyer et al., 2018). Additionally, it was noted that re-hospitalization occurred approximately 14 days following discharge (Meyer et al., 2018). Interestingly, the readmissions are a result or relapse of sepsis or newfound infection in approximately 70% of the patients (Meyer et al., 2018).

Thus, the article concluded with an emphasis on the importance of proper follow-up care to prevent re-hospitalization rates and negative patient outcomes (Meyer et al., 2018). The strengths of the study is augmented by the inclusion of transfers rate and tracking of patient diagnoses. Although, limitations include only observing three hospitals limiting, the sample size, and not taking into consideration any organizational system changes in policies which could account for discrepancies in readmission rates (Meyer et al., 2018). Overall, the level of evidence presented is good quality at a level III on the hierarchy of evidence.

Lastly, the overall impact of sepsis on the economy is important to note when addressing this issue as a whole. Paoli et al., (2018) completed a retrospective observational cohort study, which aimed to document the impact of sepsis diagnosis on patient health and overall economy due to the complexities of the syndrome. The study was conducted on patient 18 and older with an ICD-9 or ICD-10 code of sepsis. Additionally, the Premier Healthcare Database was utilized to obtain statistical financial impact. The two-decade long study revealed an increase in sepsis of 8.7% per year (Paoli et al., 2018). Further, 28% of the population following sepsis were admitted to a skilled nursing facility (Paoli et al., 2018). The average cost of approximately \$52,000 per case, which increases with the severity of sepsis (Paoli et al., 2018). The financial impact not

only affects the economy but the patient as well because of their inability to afford medications following discharge resulting in re-hospitalization.

Ultimately, the study concluded with a need for evaluating sepsis risk factors to facilitate in preventing re-hospitalization and to estimate the potential complications based on severity to predicted treatment plans (Paoli et al., 2018). The strengths of the study include a direct overview of billing records to determine economic impact related to billing codes, while limitations included an inability to determine if coding was completed properly (Paoli et al., 2018). Overall, the level of evidence presented is great quality at a level III on the hierarchy of evidence. The article serves to depict the negative impacts of sepsis as a whole including the economic aspect of the syndrome.

Synthesis of the Literature

The compiled literature review has presented a broad case of the devastating impact of sepsis for the individual and the economy. Although, the process of identifying sepsis and the availability of interventions to improve healthcare professional's awareness of this issue is varying; several themes have been identified. The overall consensus of the literature is that there is a gap in clinical awareness within nursing working in skilled nursing facilities. The two common themes that occur throughout the literature review are lack of facility resources and low nursing knowledge of sepsis. Literature documents that a lack of readily available information is noted within these facilities making it difficult to increase awareness within the staff. Consequently, the nursing knowledge is presumably low due to a lack of exposure either through education, resources, or experiences. These measures require further research to determine a setting specific intervention to improve the quality of care provided and promote positive patient outcomes. Hence, the importance of setting specific research to determine and implement

interventions that can promote nursing knowledge and facility resources. The reoccurring themes of a lack of facility resources and a low nursing awareness require further review.

Availability of Facility Educational Resource

Skilled nursing facilities have various environmental risk factors that increases the chances of a patient developing sepsis. In addition to the risk factors present on admission of the patient including post-surgical procedure, invasive procedure, impaired skin integrity, prolong catheterization or present microbial colonization (Lee et al., 2020). Unfortunately, no standardized policy or protocol are available tailed specifically for the setting to assist in early sepsis recognition. While research leans towards the need of a nationally determined standard for sepsis and infection protocols that are setting specific, none currently are established (Paoli et al., 2018). Thus, the theme of facility involvement is critical. Research noted a low facility involvement in assessing potential improvement interventions or staff awareness assessment. Re-hospitalization rates are noted within 14 days of hospital discharge in approximately 70% of patients, with factors such as poor post-acute care services (Meyer et al. 2018). Thus, programs to evaluate nursing care is critical and can improve patient outcomes. Additionally, it is recommended to maintain a surveillance of nursing awareness and patient infection occurrence to determine an interrelated cause (Meyer et al., 2018). Additionally, studies document that to decrease the rate of infection, facilities should provide educational sessions with staffing feedback to promote current knowledge (Lee et al., 2019). Thus, promoting a behavioral change within the staff to seek update information and maintain current on infection prevention skills.

Unfortunately, studies also depict that while there are resources available they are under utilized. Khanh et al., (2019) noted that simulation models are effective in assisting facilities determine areas of weakness when preventing infection or determining the cause of a health care

associated infection, yet more than half of the facilities do not implement them. This may be due to the lack of specificity or the complexity of the tool, but further exploration is warranted. Hence, a thorough assessment of the facilities needs can assist in determining proper tools to implement. Interestingly, protocols regarding infection and sepsis are lacking within the skilled nursing facilities. Research noted that baseline assessments are critical in preventing complications, yet are missed within these facilities (Ehlenbach et al., 2017). These statistics reveal an area of improvement within the skilled nursing facilities, regarding assessment of their resources and availability for the staff. Regularly scheduled educational sessions can assist in maintaining staff updated on current infection trends, hygiene techniques and can increase awareness to raising issues within the facility or population. The education can be readily provided through required continuing education or brief unit in-services for disbursement of information. Hence, a recommendation for analysis of skilled nursing facilities educational resources to increase awareness within nursing staff.

Low Nursing Awareness

Nurses provide care to varying populations and have a diverse background of information. Yet, healthcare is constantly improving and growing through evidence based research. While nurses are required to maintain a number of continuing education credits, these credits are non-specific to setting or topic. Thus, setting specific educational resources are critical to the delivery of care. The syndrome of sepsis and its dynamic presenting can be challenging to understand and identify. Research documents the importance of early exposure through education, yet a study found that final year nursing students had limited knowledge regarding sepsis in specific populations (Harley et al., 2021). While the nurse were versed in the definition of sepsis there was a noted gap in their ability to identify the risk factors and the

negative consequences of sepsis, especially in various populations. Additionally, qualitative studies have reported nurses expressing a gap in knowledge due to lack of exposure through education and experiences (Harley et al., 2019). This in turn affected their confidence in the care they provided as they felt uninformed on the issue. Furthermore, approximately 58% of nurses when asked about sepsis report not having a sufficient knowledge on the topic (Fiest et al., 2022). This is critical to note that nurses are recognizing an area of weakness and understanding.

The quality of care provided by healthcare providers is directly proportional to their clinical understanding which is often times obtained through clinical experiences. Although, nursing programs provided clinical information through lectures and observational practices, much of the knowledge is typically obtained on the job. The high rate of sepsis and its negative impacts requires further education of the nursing staff to improve these rates. Interestingly, patients notice a gap in understanding as well as one study noted that 27.9% of patients reported receiving no education regarding sepsis during the hospitalization or at discharge (Huang et al., 2019). This can be correlated to the low awareness of the hazards of a sepsis diagnosis and the risk of post sepsis syndrome following hospitalization. The residual effect of sepsis impacts the patient into recovery increasing hospital stay and admissions to skilled nursing facilities. Ultimately, to decrease re-hospitalizations and improve the quality of care provided within skilled nursing facilities an overview of sepsis risk factors and pathophysiology is important for the nursing team to understand. Unfortunately, there is a gap between sepsis knowledge and nurses working within skilled nursing facilities.

Definition of Term

The presented project has several key terms that are fundamental to the development and understanding of the study.

- For instance, the term “skilled nursing facility,” is defined by the Centers for Medicare and Medicaid Services (Centers for Medicare and Medicaid Services, 2022) as a facility that provides care to patients requiring medical, nursing, or rehabilitative services. Additionally, the services provided at a skilled nursing facility are not acute care and the level of care provided encompasses daily care, assistance with activities of daily living, intravenous injections and physical therapy (Centers for Medicare and Medicaid Services, 2022). Within these facilities specific environmental factors in combination with physiological changes within the patients results in an “at risk” population.
- The term “at risk” is defined as an individual that is susceptible to an event through meeting certain criteria (Minnesota Department of Health, 2022). An individual at risk for an infection, for instance, would be a patient that is immunocompromised, had a recent invasive procedure, has open wounds or has a Foley catheter. Further, the term “at risk” can be used interchangeably with “susceptible.” Thus, the “at risk” population criteria can vary based on the event that is being screened or evaluated.
- Furthermore, the terms infection and sepsis should be well understood.
- An infection is the invasion of a microorganisms within a susceptible individual (Centers for Disease Control and Prevention, 2016). The microorganisms enters the individual through a variety of mechanisms such as cough or sneeze droplets on the mucous membranes, improper handling of invasive indwelling medical devices, or through breaks in the skin (Centers for Disease Control and Prevention, 2016).
- When the infectious microorganisms overwhelms the individual’s natural body defenses a dysregulated systemic inflammatory response is triggered. This process is termed

sepsis. Hence, sepsis is defined as a life-threatening continuum of events leading to multi-organ dysfunction and failure that can result in death (Fiest et al., 2022).

Perspectively, the presented project seeks to determine the level of sepsis awareness within nurses working in a skilled nursing facility. Hence, the terms awareness and education are pivotal in determining gaps of knowledge. The Cambridge Dictionary (2022) defines awareness as a noun meaning “knowledge that something exists, or understanding of a situation or subject at the present time based on information or experiences.” While education is defined a “the process of teaching or learning” (Cambridge Dictionary, 2022, Definition 1). While these two terms are often used interchangeably, they refer to two different actions. For the project, awareness reflects the level of a nurse’s understanding of what sepsis is and the population at risk. Secondly, education is the process of increasing awareness and knowledge on the selected topic. Ultimately, recognition of these terms will facilitate a deeper understanding of the variables being reviewed in the presented study.

Summary

Sepsis is a dynamic, continuous syndrome that impacts a person in a physical and cognitive capacity. The cascading effects continue into recovery with a group of residual symptoms collectively termed post-sepsis syndrome. Interestingly, the life-threatening syndrome begins as a localized infection within a vulnerable host that progress to a systemic overstimulated inflammatory response. Unfortunately, sepsis can present atypically or may be masked by other comorbidities within the patient making it challenging to assess. The source of the infection is not always identifiable, but there are several risk factors that can predispose an individual to becoming septic. High risk factors associated with infections include low mobility, incontinence, open skin lesions or wounds, intravenous catheters, central venous catheters, recently undergoing

invasive procedures, or recent surgical procedures. These risk factors are often seen within skilled nursing facilities because of the facilities function in rehabilitating patients prior to returning home. Consequently, a large ratio of patients diagnosed with sepsis are within these facilities. Thus, studies are conducted to determine the reasoning behind the large incidence of sepsis within skilled nursing facilities. Research documented that an explanation to the high rates is a gap in available resources regarding the high-risk elements within the non-acute care facilities and a lack of awareness within the nursing staff regarding the signs of sepsis, the means of preventing infection, and the determining at risk patients. Hence, further research is inquired to determine methods to bridge the gap of setting specific knowledge. Further, research documented that nurses working within the skilled nursing facilities reported feeling as though they did not have the resources or understanding required to properly identify sepsis or at-risk patients. Additionally, studies have documented that being admitted to a skilled nursing facility resulted in an increased risk of readmission with the diagnosis of sepsis. Thus, increased resources to nurses working within these settings are imperative. Sepsis awareness to nurses working within the skilled nursing facilities should be ongoing, setting specific, and readily available to improve the quality of care provided and patient outcomes.

Methodology

In conducting research to determine areas of improvement within the healthcare field various methodologies may be used. The use of quality improvement methodologies facilitates the selection of which measure to implement based on the organizations needs through evaluation of current practices. The methodology seeks to answer the question of “what are we trying to accomplish” in relation to “what changes can we make that will result in improvement” (Adams, 2018, p. 90). The importance of a methodology is to provide structure for the organized research and to assess data variations. Quality improvement models are versatile and shaped by the phenomena being evaluated (Adams, 2018). Hence, a struttred methodology frames the research process by determining what needs to be changed, how the change will be implemented, what is the projected outcome, and how will the outcome be evaluated or measured.

Thus, for the presented project the methodology through which research will be conducted seeks to determine the level of sepsis awareness within nurses working in a skilled nursing facility through assessing current educational resources within the facility and through the administration of a pre-test on the topic of sepsis to the nursing staff. Once the baseline sepsis knowledge is assessed an informative educational in-service will be created and presented to the nursing staff. The increase in sepsis awareness will be measured through the administration of a post-test to the nursing staff. Quality improvement projects strive to enhance current practices to promote positive outcomes. Ultimately, the following section will discuss the primary goals of the DNP project, the SMART objectives, and the theoretical framework selected to guide the study.

Primary DNP Project Goal

The purpose of the quality improvement project is to increase nursing awareness of sepsis within a skilled nursing facility. The project begins with an assessment of the facility's educational resources to determine the level and context of information provided to their nursing staff. Additionally, an assessment of the type of resources available to nurses such as policies and procedures will be conducted to determine ease of access. Following the assessment of educational resources, a pre-test will be distributed to the nurses to evaluate baseline knowledge of sepsis. Throughout the evaluation, a sepsis awareness in-service will be created and presented to the nursing staff followed by a post-test to determine an increase in understanding. Ultimately, the project aims to improve sepsis awareness within nurses working in a skilled nursing facility.

The project will take place within a 160 bed sub-acute, skilled nursing facility in South Florida. Through communication with facility leaders a letter of site approval will be obtained prior to the initiation of the project (See Appendix B). All forms will be submitted to the IRB for formal approval. The selected facility follows the Jewish cultural traditions with a mission of providing the most enlightened and compassionate continuum of care. Additionally, the facility has been awarded the Centers for Medicare and Medicaid Services 5 Star Rating and hosts a variety of patient populations. Further, there is high value on the quality of care provided with approximately 4,500 employees devoted to promoting a positive patient experience. The patient demographics within the facility include surgical postoperative, chronic medical management, respite care, hospice care, and rehabilitation for improved physical functioning. Thus, the site was selected because of its patient demographics and large employee count. This is important to the project because it will provide an adequate sample size of nurses to determine their level of sepsis awareness, while remaining focused on the setting of a skilled nursing facility.

Additionally, the project will assess the facilities current educational resources which will assist in determining knowledge gaps within the facility as the source low sepsis awareness.

Ultimately, the site is important to the project as it will provide setting specific data.

Currently, sepsis awareness within skilled nursing facilities is low. Qualitative studies conducted within these settings have reported nurses feeling uninformed about sepsis identification, lacking organizational support and facility resources on the topic (Fiest et al., 2022). Additionally, 27.9% of patients report not receiving any form of education regarding sepsis and post sepsis care, which can be attributed to nurses not having resources to provided adequate education to their patients (Huang et al., 2019). These core findings of gaps in awareness attribute to the high readmission rate that occur following skilled nursing facility admission. Thus, the addition of a sepsis awareness in-service that presents information about the risk factors leading to infection and the identification of sepsis could facility an improvement in the readmission rate of patients. A lack in awareness of sepsis within the skilled nursing facility attributes to the quality of care provided to the patients. Sepsis is a continuous process that affects the patient on a physical, physiological and functional level resulting in changes in baseline even through recovery. An understanding of these changes and the environmental risk factors presented within the facility is imperative.

Currently, has infection prevention guidelines and policies but lack specifics in risk factor assessment or the consequences of sepsis. Additionally, the educational department does not have educational material on sepsis identification. Hence, an assessment of the nursing baseline knowledge on the topic will assist in determine staffing competency while determining areas of weakness. Literature suggests that skilled nursing facilities should have clearly defined roles and management for the identification of sepsis. In a review completed by Dr. Joseph Mylotte

(2020), he determined that these facilities would benefit from the development of sepsis policies and protocols on how to assess and document atypical infection presentations. Hence, implementation of an in-service to increase nursing knowledge is warranted to bridge the gap in awareness and the negative patient outcomes.

The project will be sponsored by Dr. Ivan Merkelj, a medical director that oversees the patients within the skilled nursing facility as well as a PACE Program for the elderly. Dr. Merkelj will assist in providing his knowledge on the topic, facilitate conducting the assessment of the facility and the retrieval of data throughout the project. The enthusiasm presented on the topic is evident as he believes sepsis within the facility is a true concern. In addition to the assistance of Dr. Merkelj, other stakeholders will partake in the project including the Infectious Disease Clinical Coordinator and Educational Department for the facility. The Infectious Disease Clinical Coordinate will assist in providing federal rules and regulations regarding the topic and demonstrate how the facility remains compliant. She also assists in providing trends noted within the facility regarding infection rates. Further, the Educational Department is fundamental in the project, as they will provide current education information provided to staff, the frequency the material is provided or assessed and the means of information delivery. This will assist in determining areas of improvement required within the education program provided and facilitate in determining nursing staff baseline knowledge.

Thus, the participants of the project will include 25 nurses working within the skilled nursing facility selected at random. The participants will include both registered nurses and licensed practical nurses, as the facility hires both categories. The selection of the nurses as participants for the project is pivotal as the aim is to determine a gap in sepsis awareness within the nurses providing care within a skilled nursing facility. The nurses interact with the patients at

greater lengthens than the stakeholders of the project. Thus, it is the nurses' role in identifying risk factors and sepsis presentations. Hence, the project will assess the nurses baseline knowledge on the topic followed by implementation of an awareness in-service to determine improved understanding.

SMART Objectives

For the purpose of this quality improvement project, the following SMART objectives were identified:

- Identify a knowledge gap within nurses in a skilled nursing facility on risk factors for sepsis development, sepsis identification and preventative measures within two weeks of starting the quality improvement project.
- Educate nurses working within the skilled nursing facility about risk factors for sepsis development, sepsis identification and preventative measures within three weeks of starting the quality improvement project.
- Provide resources for the nursing education department regarding risk factors for sepsis development, sepsis identification and preventative measures within seven weeks of starting the quality improvement project.

Theoretical Framework/Conceptual Underpinning

When conducting research to improve evidence based practice, the use of theoretical frameworks help guide reasoning and questioning of clinical problems. Through this inquisitive questions of clinical scenarios, research is stimulated and leads to the gathering of evidence that support the need for a change in practice. This could be due to new clinical resources, new methods of providing care or the development of new clinical guidelines. Nevertheless, these changes are translated through evidence based data and stimulated by a theoretical framework. In

relation to the project at hand, the 1982 theoretical framework of Dr. Patricia Benner, *Novice to Expert Model*, will be utilized. The model discusses how nursing practices change with experience and how exposure improves nursing knowledge.

Theory Overview

Dr. Benner's conceptual framework of Novice to Expert Model was developed in 1982 to explain how individuals attain new skills sets through knowledge and expose (Ozdemir, 2019). The model discuss key stages in professional growth of a new nurse as they complete clinical trainings, on the job experiences and through exposure of knowledge. Thus, the model discuss the following stages; novice nurse, advanced beginner, competent stage, proficient stage, and expert nurse (Ozdemir, 2019). Further, the nurse may progress through theses stages are varying rates based on the length of time working, the type of exposure and through learning seeking behavior. Meaning, that a nurse can obtain the expert stage in their profession as quickly or slowly, based on their willingness and eagerness to learn.

The model details the importance of guidance throughout the stages in the form of educators and leaders within their job sites. Specifically, the model discusses the impact of clinical educators on the improvement and attainment of skills. Novice nurses depend on practice and frequent guidance to develop confidence and refine skills. This is often completed through nurse educators, whom instruct and support the novice nurse (Ozdemir, 2019). The guidance provided by the clinical team will model how the nurse will practice.

Secondly, in the retainment of complex ideas or skills repeat expose is important. Benner's Novice to Expert Model documented the impact of routine and meaningful occurrences to assist in influencing how a nurse practices (Ozdemir, 2019). Thus, through each patient exposure, clinical educator guidance, and hand on experience the nurse shifts their practice based

to their understanding of concepts and worked experience. The process can take months to years to achieve expert levels, but with each encounter and information exposure the nurse gains further knowledge. Professional growth is also obtained through guiding other nurses at various stages in the model. Benner noted in her model that teaching was a form of learning and comprehension (Ozdemir, 2019). Through sharing their gained knowledge they refine their practice skill sets and maintain current with the information they have obtained. Ultimately, the theoretical framework of Dr. Patricia Benner, *Novice to Expert*, discuss the importance of continual exposure to information and practice to grow professionally and impact the way one practices.

Theory/Clinical Fit

In relation to the DNP project of determining the impact of a sepsis awareness in-service within a skilled nursing facility, Dr. Benner's model assists in validating the reasoning behind educational gaps within the facilities. For instance, the organizational assessment revealed that there were limited resources for staff on the topic of sepsis regarding the facility patient demographics. When reviewing the model, the importance of clinical educators and exposure is emphasized with the improvement of practice and knowledge within the nurses. Thus, a lack of availability in resources or support, will result in a lower competency of the nursing staff. Theoretically, if educational in-services are provided on a regular basis or the nurses are exposed to the information regularly, an increase in understanding should be viewed.

Further, Dr. Brenner's Model of Novice to Expert, discussed the need to practice skill sets in order to improve nursing understanding. Through the organizational assessment, it was found that currently there are no policies or regulations specific to sepsis identification or determination of risk factors for patients. Thus, if no resources were available on the topic

currently, then it can be assumed that the skills are not being practiced. For instance, sepsis presents differently in various patients, an understanding of this concept is attained through assessment skills and techniques that are taught throughout schooling and continue into clinical experience over time. Thus, nurses should be reminded regularly of the potentially subtle abnormal normal finding presenting in a septic patient. Ultimately, the model relates to the DNP project to be completed as it discussed the various factors that impact how skills and knowledge are obtained and retained. Through an understanding of the role of each team member, a better understanding of how to improve overall nursing staff knowledge of sepsis within the skilled nursing facility can be achieved.

Theory Evaluation

Dr. Patricia Brenner's model of Novice to Expert provides fundamental stages in professional growth and knowledge attainment that influence how nurse practice based on their clinical background, exposure and drive to learn. Thus, when assessing for gaps in sepsis awareness knowledge within nurses that work in a skilled nursing facility, the model will be utilized to determine key factors to improve nursing understanding. The model was developed to determine acquirement of skill in relation to factors such as guidance and clinical exposure to improve the manner in which care is provided.

The theory is readily operationalized as it clearly assesses factors that influence the attainment of knowledge and skills. Thus, for the DNP project at hand, the theory assisted in determining nursing baseline knowledge through pre-testing on sepsis identification and risk factors associated to its development. Thus, further assisted in determining the level of understanding and areas of information needed to facilitate improved knowledge regarding sepsis. Additionally, the theory facilitated in determining factors such as a lack of guidance or

exposure regarding sepsis within the skilled nursing facility. Overall, the model provided an understanding of baseline knowledge and factors that can facilitate its improvement.

Prior to the DNP project, Dr. Benner's model was applied to assess new graduate baseline knowledge and the factors influencing their transition to practice (Ozdemir, 2019). The model was also used to determine the relationship between educating others skill refinement (Ozdemir, 2019). The importance of the theoretical framework lays in the dynamic of learning behavior. If a nurse seeking information and exposure, their level of understanding and progression to expert will occur more frequently than the nurse who does not seek educational opportunities. Additionally, the importance of guidance and leadership in the role of developing skills is evident through the model. Nurse supported by expert leaders and clinical educators will have a better understanding of the topic than other nurses. The performance of the theory is noted through its abilities to characterize a nurse based on their level of understanding and mannerism of practice. The model assisted in determining a novice nurse based on the need for additional assistance or reliance on reference materials. While an expert nurse is determined based on their proficiency in clinical skill and leadership role in educating others at various stages throughout the model. Hence, the model assisted in identifying areas of weakness within the skilled nursing facility and nursing staff relationships.

Thus, the relationship of Dr. Benner's model to the topic of sepsis awareness in nurses working in a skilled nursing facility is evident by the need to attain a baseline understanding. Once a baseline understanding was obtained and a gap in knowledge is determined the evaluation of factors such as clinical educator involvement and facility resources can be addressed to determine how to improve practice through education of the nursing staff.

Unfortunately, there was no tool available to determine the effectiveness of the model or its reliability. Yet, through application of the model, an evaluation of its stages could be assessed. Through gather nursing perspectives of new graduate nurses versus the perspective of an experienced sessional nurse, a distinguished manner of the care provided can be noted. This in turn can be assessed through clinical competency evaluation or surveys.

Setting and Participants

The selected setting for the DNP project was a 160-bed skilled nursing facility in West Palm Beach, Florida. A site letter of approval to conduct the project is provided in Appendix B. The facility provides rehabilitative services for a wide variety of population. The demographic of the patients admitted to the facility include postoperative individuals, post-acute care services, physical therapy or occupational therapy, wound care, respite care and hospice services. The selected setting is significant as it is population specific to the clinical question for the study. The purpose of the project is to identify a gap in sepsis knowledge within nurses working in a skilled nursing facility. Thus, conducting the project within a skilled nursing facility allows for population specific data collection. Additionally, the setting was selected due the current limited availability of research regarding sepsis and skilled nursing facilities. Ultimately, the project seeks to shed light to the importance of sepsis awareness within these sub-acute facilities.

The participants of the project primarily consist of the educational department and 25 nurses working within the skilled nursing facility selected. The educational department is a critical point for the project as a review of the availability of resources for the nursing staff is fundamental in determining areas of improvement, particularly regarding sepsis knowledge. Once a review of the available resources was conducted and the educational information was evaluated, the nursing was assessed for baseline knowledge of sepsis as it relates to the patient

demographic within the facility. An appropriate sample size was imperative when determining effectiveness of the change being implemented. Thus, by surveying 25 nurses, sufficient data would be collected to represent the facility's staff knowledge and effectively translate collected data for practice improvement.

Procedures

The DNP project was a quasi-experimental research study that was completed using a pre- and post-intervention design. This intervention design allowed for evaluation of a specific topics and results in a representation of a population of interest (Stratton, 2019). Thus, the pre- and post-intervention design allows for the assessment of a specific intervention while providing a representation of a sample of the intended population. Additionally, the study design facilitated immediate assessment of the intervention being implemented and results in the identification of measures to redefine or improve the applied intervention (Stratton, 2019). Hence, the design guided the study through providing an organized approach of evaluating the population of interest response to the change.

The pre- and post-intervention design was conducted in a quasi-experimental manner. This is due to the fact that the participants were not randomly selected. Yet the study resembled an experimental study as testing of dependent variables are conducted before implementation of the independent variables (Stratton, 2019). For the selected project the dependent variable consisted of the nursing staff knowledge, while the independent variable included the educational sepsis in-service. Ultimately, statistical data was obtained through the pre-testing in relation to the post-testing results. Thus, the DNP project acquired setting specific data through testing within the targeted population.

Participant Recruitment

Participants were recruited within the skilled nursing facility with the assistance of the educational department. A flyer requesting volunteers was distributed to the staff and placed in the break rooms and nursing office (see Appendix C for flyer sample). Additionally, the nursing office sent an alert to nursing staff via the scheduling system notifying staff of the opportunity to partake in the project (see Appendix D for notification sample). These forms of recruitment assisted in involving the facility throughout the project process in gathering data and implementing change. Further, this assisted in recruiting nursing staff throughout the organization and to varying work shifts increasing the potential sample size.

Data Collection

Data was collected through a variety of methods. Initially, participant demographics was collected following signature of the informed consent. The demographics document requested information such as the type of licensure of the participant, any certifications, and number of years of experience (See Appendix E). Further, data was collected through the administration of a pre-test prior to the educational sepsis in-services. The pre-test will consist of 20 questions both multiple choose or true and false questions (See Appendix F). The pre-test was evaluated for the number of correct answers and compared to the results of the post-test administered after the educational program was provided to the nursing staff. The effectiveness of the in-service was assessed based on an improvement in test scores following the sepsis in-service presentation.

Data Analysis

Once data was collected and reviewed, a statistical method was selected to assist in analyzing the gathered information. The statistical method was specific to the study and facilities the interpretation of the presented data (Mishra et al., 2019). All data collected from the study

was compiled into a report based on pre-/post-testing scoring. Thus, descriptive statistics can be used to determine the average of nurses with prior sepsis baseline knowledge and improved understanding in the post-testing. Additionally, inferential statistics was completed through the use of *t tests*. A *t test* was selected due to the sample size of 25 participants. This information allowed a conclusion to be drawn from the data collected prior to the in-service verses the data following the in-service. Ultimately was important to select the right statistical method to ensure that the collected data is properly interpreted to represent significance (Mishra et al., 2029). The selection of the statistical method was determined by the studies purpose and intended data to be collected. The following DNP project evaluated data through computing all gathered information into excel and running *t test* reports. Hence, all gathered data was compiled into a statistical report depicting the impact of the implementation of an educational sepsis in-service within the skilled nursing facility.

Protection of Human Subjects

The participants privacy and confidentiality were protected through a various method throughout the entirety of the project. Initially, the participants were informed of the project, its purpose, what is required with their voluntary participation and the approximated length of time for each activity. Thus, an informed consent document has been complied stating these objectives and the voluntary participation of the interested individual (See Appendix G). Additionally, the informed consent states that a copy of the consent will be provided to the participant, and they have complete freedom to withdraw or decline to participate at any point throughout the project. These forms included the participant code identification to protect their privacy. Further, all forms signed and completed by each participant remained in a locked filing cabinet and password protected laptop. Should access to the filing cabinet or laptop be delayed

all documents were within a closed-covered clipboard at all times. The documents were not left unattended or discussed with anyone other than the participants. Ultimately, all measures were taken to ensure the protection of each participants privacy and confidentiality.

The Institutional Review Boards (IRB) is a professional group designed to monitor and regulate research incorporating human subjects. The IRB purpose is to review all potential research projects, assess the proposed topic and study, review the study periodically, and has the authority to require modifications to secure or disapprove the project. Thus, the primary function of the IRB is to ensure the safety human rights during the study and to protect their welfare throughout the project. Thus, DNP projects sought to successfully gain approval for the evaluation of sepsis baseline knowledge within nurses working in a skilled nursing facility. This was completed through the recruitment of nurses within the facility and obtaining informed consent to participate. All information obtained from the participants remained confidential through assignment of a code identifier. Additionally, the participants were asked to fill out a demographic form to obtain representation of the facility's nurses. The participants used their code identifier throughout the study to remain as anonymous as possible. Ultimately, all information was confidential and secured at all times.

Data Management

All data collected were stored within a locked filing cabinet and all computed results were stored on a password protected laptop. Should access to the filing cabinet not occur immediately, confidential materials were stored within a closed, folder clipboard and not left unattended at any time. Participant information remained confidential at all times. Hence, participants were provided an identification number to ensure that no personal identification is used when performing pre- or post-testing. The identification number was stored within a locked

filing cabinet and only shared with the participant. Following completion of the project, all protected information was disposed of through a private shredding company not within the selected setting to ensure no breach in confidentiality.

Results

The implementation of the Sepsis Educational In-Service within the skilled nursing facility utilized valuable data for evaluation of the project's impact. The data collected served as evidence-based research to stimulate further studies, while increasing sepsis awareness within the population. The following section seeks to discuss the obtained data regarding the available participant demographics and the pre- versus post-intervention findings. These results indicated an overall lack of sepsis awareness outside of the acute care setting and the value of incorporating setting specific information for nurse to utilize as resource when working within the skilled nursing facilities. Hence, the data collected has promoted improved care provided and assisted in decreasing the damaging effects of sepsis within the population.

Demographic Data

Demographic data provided vital information to the project through depiction of the selected participants. The gathered data of the project is presented below and includes the project findings. Data analysis for the project was tabulated through the use of an SPSS tool. Thus, Table 1 includes the demographic data collect for the project. As noted, when reviewing the methodology, a total of 25 nurses working with the skilled nursing facility were recruited for participation. All 25 nurses completed the sepsis educational presentation and pre-/post-intervention testing. Hence, the data presented documents the results of all 25 participants.

Ages reported by nurses ranged from 26 to 66 years old ($M = 45.48$, $SD = 12.73$). A majority of the sample was female ($n = 21$, 84%), African American ($n = 17$, 68%), and currently hold an RN degree ($n = 17$, 68%). The data reports the average length of employment in the skilled nursing facility to ranged from 1 year to 25 years ($M = 8.32$, $SD = 6.19$). Further, the

number of nursing experience of the participants ranged from no nursing experience to 30 years of experience ($M = 14.4$, $SD = 8.34$).

Table 1

Demographic Data of Participants (n = 25)

Characteristics	Results
Age (M , SD)	45.48, 12.73
Gender	
Male	4 (16%)
Female	21 (84%)
Race	
White	1 (0.04%)
African American	17 (68%)
Latino/Hispanic	0 (0%)
Other	7 (28%)
Current Position	
RN	17 (68%)
LPN	8 (32%)
Certification	
Certification	8 (32%)
ASN	7 (28%)
BSN	8 (32%)
MSN	2 (0.04%)

Average Length of Employment in Skilled	
Nursing Facility (<i>M, SD</i>)	8.32, 6.19
Number of Nursing Experience (<i>M, SD</i>)	14.4, 8.34
Involvement in the Nursing Community	
Yes	2 (8%)
No	23 (92%)

Pre-/Post-Intervention Data

In review of the data, a paired samples *t*-test was selected to evaluate the effect of the sepsis educational presentation on the change in the pre- and post- testing results. Thus, descriptive statistics such as mean and standard deviation are reported in Table 2. Further, the determination of the data normality was evaluated through the use of Kolmogorov-Smirnov and Shapiro-Will *p*-values. Upon evaluation through these tools, no significant departure from normality was indicted for the pre-testing scores, but significant for the post-test scoring. Thus, indicating a statically significant change in results indicating improved understanding of sepsis.

Table 2

Pre- and Post-Intervention Scores

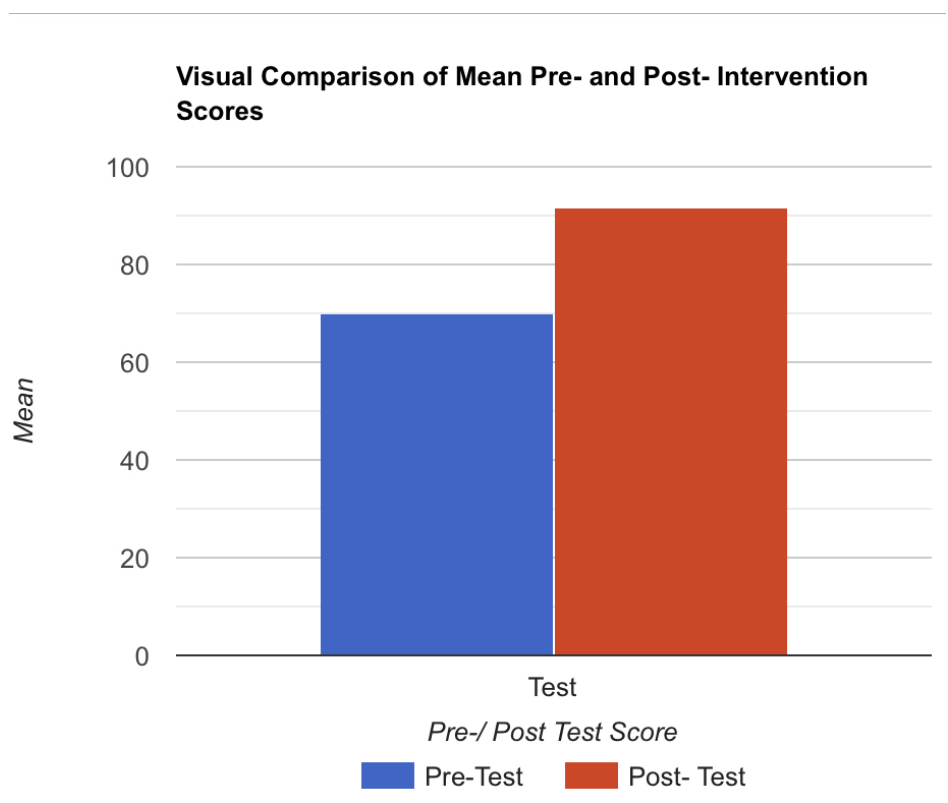
	Mean	Standard Deviation
Pre-test Score	70.2	14.66
Post-test Score	91.6	9.45

In review of Table 2, the mean pre-test score prior to the sepsis educational presentation was 70.2%, which increased to 91.6% in the post-testing following the presentation. Figure 1

provides a visual representation of the described data presenting the increased scores from the pre- and post- testing. The increased scoring was expected as the nurses gained a greater understanding of sepsis following the educational presentation. Thus, the scores revealed that the use of a sepsis educational presentation can improve nursing understanding of sepsis within the skilled nursing facility.

Figure 1

Visual Comparison of Mean Pre- and Post- Intervention Scores



Discussion

Through the implementation of the project valuable data was collected for evaluation. This information is critical for the stimulation of further research to continue to improve the quality of care delivered to patients within the skilled nursing facilities. Thus, the following section will discuss the derived results of the study, a discussion of implementation process, influencing factors, project maintenance, areas for further research, recommendations, plan for dissemination and implications for advanced nursing practice. Overall, the data gathered through the study provided pivotal information regarding the sepsis baseline knowledge of nursing working within a skilled nursing facility, while providing enriching potential recommendations for further studies to increase population and setting specific awareness.

Discussion of the Results

The purpose of the DNP project was to determine a gap in sepsis knowledge within nurses working in a skilled nursing facility. Hence, the project intended to improve the sepsis knowledge within the nursing staff of the facility. Interestingly, the results of the project coincided with previous literature that documented a knowledge gap within non-acute care facilities. In a qualitative study conducted by Harley et al., (2021) it was found that the nursing staff felt there was a lack of resources and support from the educational department. In relation to the presented project, it was found that there was a limited availability of sepsis information and resources available to the staff. Additionally, literature documented that nurses struggle defining and identifying sepsis within the clinical setting (Fiest et al., 2022). This was assessed within the DNP project through the pre-/post-testing, which reflected a gap in knowledge prior to the implementation of the educational sepsis. While current literature regarding sepsis within the

skilled nursing facility is limited, the development of the DNP project allowed for increased connections to explain the limited sepsis literacy within the setting.

Although the DNP project focused on increasing awareness on how to identify and preventing sepsis within the skilled nursing facility, there have been other studies that have focused on infection prevention and nursing awareness. Lee et al. (2019) conducted a study to determine the benefits of an educational information session provided to nurses to improve the facility infection rates. The study found that following the implementation of these sessions, there was an improvement in the care provided to patients. Additionally, a sub-study was conducted to determine the rates of infection with the source of transmission, which revealed that nurses had poor infection prevention practices and benefited from quick refresher trainings (Lee et. al, 2020). Hence, the DNP project supported these findings, while focusing the topic on the skilled nursing facility. Ultimately, the DNP project enhanced the available literature on the topic of sepsis awareness within the nursing community.

The DNP project focused on a specific population with a specific setting. Thus, the data collected and analyzed assisted in promoting improved care to the non-acute care patients and to decrease hospital readmission rates. Literature and research are abundant in sepsis resources within the acute care setting, acute interventions and management, yet limited research is present for non-acute care. For instance, the literature findings report a knowledge gap of sepsis within emergency departments in comparison to other units (Wallgren et al., 2017). The limited awareness further extends into the non-acute care settings resulting in readmission to the hospital shortly after discharge (Wallgren et al., 2017). Thus, the DNP project sought to develop an educational in-service to increase provider knowledge of sepsis within the skilled nursing facility.

Implementation Discussion

While the project proved to be beneficial to the nursing staff, various challenges were encountered during the implementation. Initially, the IRB process had minimal challenges. All documentation for submission of the project proposal was completed and gathered within an agreeable time frame. The site approval was simple to obtain as the medical staff for the site was enamored with the idea of promoting sepsis awareness. While awaiting IRB approval the challenge of selecting start dates to set up the project within the facility arose. This was vital as the facility needed to know what dates the educational classroom, was going to be needed to secure the location. During the presented waiting period, tentative dates were provided to the site.

Additionally, challenges arose within the recruitment phase. Participants were reluctant to volunteer their time due to concerns that it “would take too long.” In hopes of combating this challenge, several question and answer recruitment visits were made with the assistance of the educational department. During the recruitment visits the participants were informed about the project, the pre- and post-testing dates and the 30 minute educational presentation. Through communicating clearly the projects tasks and dates, participants felt better informed and willing to participate.

Following the recruitment of participants, and clearly set project dates, a consistent location for the project to be held was selected. Thus, leading to the implementation phase. The implementation of the sepsis educational presentation consisted of three sections. First, the participants will complete a pre-test to determine baseline sepsis understanding. During the pre-testing portion of the project there were no challenges. All 25 participants completed the pre-testing. The second portion of the project is the sepsis educational presentation. During this

portion, challenges included a technical difficulties such as malfunctioning presentation screen and being unable to display the presentation for participants to see. These challenges were combated by having a printed paper version of the presentation for the participants to view. Following the presentation the participants completed the post-testing to evaluate for improved understanding. Ultimately, minor challenges were encountered without much impact to the projects implementation.

Influencing Factors

While minor challenges were encounter during the project there was minimal impact on the overall data collection. Although, had there not been a delay in IRB approval, there would have been more time to recruit participants and select a meeting location for the educational presentation. Additionally, the delay in IRB approval resulted in challenges with selecting on-site meeting dates for tasks such as recruitment, delivery of the pre-/post- test and for the educational presentation. Thus, resulting in challenges with having a constant location that was easily accessible for participants. This occurred due to the timing of the project. The education department director was in the process of new hire orientations and trainings which limited the availability of the locations for the project to be conducted.

However, the recruitment phase challenges negatively impacted the project as it was prolonged and difficulty to obtain participants. The staff was concerned that they were already very busy during there shifts and were unsure if they could commit to participating on their days off. Extensive question and answer sessions were provided and reassurance given. Additionally, participants were reminded that the project was completely voluntary and they could drop the project at any time should they feel overwhelmed or unable to continue. This unforeseen challenge prolonged the projects intended start time and participants availability.

In addition, the technical difficulties presented during the implementation of the educational inservice was challenging as it was upsetting for the participants and a distracting variable for the project. The educational classroom is set up with various tools such as a SMART board, overhead projector, and speakers. Thus, when the overhead projector failed to display the presentation, the information was printed and provided to the participants. Hence, in future preparations additional educational presentation materials will be readily available.

Monitoring

In preparation for the project implementation there were various meeting dates held with the educational department to enhance project development. This progress was monitored through meeting with the site preceptor two to four times a week with updated progress reports. These meeting were at times quick with simple facts of the objectives for the day, or long with detailed discussion of issues that arouse, presented challenges, and potential solutions to improve the progress with each session provided. Further, the educational department director was hands on and readily available to assist with material needs and support to and from the participants. Through the continual communication the progress was broken down into phases with projected timelines that were documented following meeting of project goals.

Additionally, data was collected on a locked computer that was password protected. During the implementation phase, the pre- and post-testing data was recorded daily. Upon receiving the pre- and post-test, they were graded and reviewed to compare the data. Following the review, the results gathered were inputted into an excel spreadsheet to run *t*-test for comparison. The information was updated with each participant completion of the tests and reviewed by the site preceptor and primary investigator. Ultimately, the project process was

monitored through ensuring that all events were completed through daily review of objectives and discussion of data gathered.

Project Maintenance

The results obtained from the project were pivotal to improve the quality-of-care standards. Thus, to ensure that the project was maintained at the facility various educational materials were provided to the educational department. These materials included in the educational presentation created for the project, the pre- and post-test with the answer key, and a list of national sepsis resources for further educational needs. Further, upon completion of the educational presentation all participants received a copy of the presentation for review on their own time. Additionally, the educational department received a one-on-one in-service that answered any questions they may have and provided them with the knowledge they need to assist in the retention of the information with their staff. Ultimately, the facility was equipped with the information they need to replicate the in-service to staff throughout the year to train new providers that may be hired at a later date.

The maintenance of the project is important to the continual improvement of provider knowledge through education. These vital finds assisted in improving patient care, decrease adverse events, and decrease hospital readmission rates. Further, staff felt confident in their abilities to care for their patients, while having facility available support and resources. The educational presentation was intended to improve provider understanding of sepsis within the skilled nursing facility. Thus, continual incorporation into the facility's educational department requirements would stimulate improvement within staff understanding of sepsis that is specific to the population within the skilled nursing facilities.

Project Limitations

The project presented several limitations. In retrospect, the project was conducted within a skilled nursing facility and thus data can not be compared to other sites as only one site was utilized. Hence, the project is limited to the resources and materials provided to the nursing staff working within the selected skilled facility. Additionally, the project was limited to only nursing staff, meaning only licensed practical nurses and registered nurses were selected for the project. These limitations may impact the generalizability of the information obtained in other facilities.

While the data gathered during the project revealed there is a sepsis knowledge gap within nurses working in a skilled nursing facility, the fact can only be assessed in review of the selected site. Variables such as facility policies and protocols vary from site to site, thus making the information difficult to translate for other skilled nursing facilities. Although, the information gathered presents limited generalizability, it is setting specific, and population based. The project can be replicated and implemented within other skilled nursing facilities to educate providers about sepsis within the skilled nursing facility. Further, a limitation of the project is that the selected methodology does not include the ability to show causality between the educational presentation and improved provider knowledge. Other skilled nursing facilities may already have a sepsis course mandated for their campus or may have screen tools already in use which increases nursing staff awareness of sepsis within the skilled nursing facility population. Ultimately, these limitations of the project may lay within weakness of the selected methodology of the project.

Areas for Future Research

The detailed project can be utilized to further study the topic of sepsis within the skilled nursing facility as it provides insights on potential reasons for the low literacy in this particular

setting. In correlation to the limited published research articles on the topic there are no standardized guidelines for sepsis within the population either. Unanswered questions derived from the project include “would skilled nursing facilities benefit from mandated sepsis competency assessment and trainings,” “what is the impact on readmission rates on facility sepsis screening protocols,” and “is there a sepsis knowledge gap within the educational department of a skilled nursing facility?” These questions can trigger further studies to improve readmission rate and sepsis survival rates. Hence, further research could be conducted within several skilled nursing facilities to evaluate each facility’s sepsis related policies and protocols, while assessing nursing staff baseline knowledge. These findings could be compared to the presented study to determine the benefits of facility established sepsis protocols in relation to the nursing staff baseline knowledge.

Continually, the question regarding sepsis screening protocols could be investigated through conducting literary reviews of available sepsis screening tools in collaboration with the facility physicians to develop a tool tailored to the population within the facility. Thus, the need for the development of screening tools could stimulate further study trails and the eventual development of an evidence based standardized screen tool and guidelines specific to skilled nursing facility. Lastly, the question regarding the availability of sepsis information through the facility’s educational department could be assessed through replicating the presented project. The pre- and post- testing could be completed with the educational department to determine a need for improvement within the educational team. The hypothetical study could assist in determining yet another answer as to why the sepsis awareness is low within the nursing staff of a skilled nursing facility. These suggestions for further research have the potential to stimulate the development of standardized guidelines within the skilled nursing facilities.

Recommendations Based on the Findings

Upon completion of the project and review of the gathered data several recommendations for the facilities are presented. Based on the project findings there was a significant increase in provider understanding of sepsis following the implementation of the education presentation. The improved post-test scores in comparison to the pre-test scores correlates with the effectiveness of the educational presentation. Thus, the facility would benefit from a review of their current policies and protocol to incorporate routine sepsis in-services and assessment. These can be completed through routine presentation of information through huddle reminders at staff meetings or at the beginning of the shift. This can also be completed incorporating sepsis material as part of the annual competency screenings that can be completed in the form of facility-based computer learning module or delivered as information handouts throughout the year. Additionally, the organization is recommended to begin the trainings upon hire of nursing staff to maintain staff awareness. This measure can assist in nursing staff knowledge improvement while creating a positive change within the facility.

Further, based on the project findings the facility is recommended to evaluate the ease of resource access to staff. Upon initial review of the facility, one of the primary concerns voiced by the staff was that they were unaware of where to locate resources within the facility. The facility has readily accessible files on all the computers to assist with reference while the nursing are on their units. Thus, it is recommended to educate staff on how to utilize these resources, to create computer shortcuts to allow ease of access and to provide rounding education while on the units. Furthermore, the educational department is recommended to round on the units to speak with the nursing staff and determine if they need any assistance and to take that time to provide a

reminder on various topics. These moments can assist in staff feeling comfortable to ask questions while promoting increased awareness and resource availability.

Interpretation of the Results

The data gathered and analyzed during the project allowed for the development of evidence-based research to facilitate a change within the healthcare field and improve the quality of care provided. The presented project is setting specific to skilled nursing facilities and provided a deeper insight to improving provider sepsis knowledge through education. Thus, the data gathered throughout the project can stimulate other skilled nursing facilities to internally review their current educational needs. The following section will discuss the impact of the project on the need for changes in patient care within the skilled nursing facility, the value of the projects transferability, the cost effectiveness of duplicating the project and various recommendations based on the results obtained from the project. Ultimately, improvements in the health care setting are shaped through evidence-based research.

Changes in Patient Care/Healthcare Setting

Based on the results, changes within the delivery of patient care within the skilled nursing facility require review. Recommendations steer towards the development of a population and setting specific sepsis screening tool and standardized guidelines for sepsis education within the non-acute care settings. These recommendations encouraged a change to prevent infection development, identifying sepsis early, and providing early interventions. Thus, through proactive measures readmission rates can be decreased, sepsis survival rates can increase and improve patient outcomes through the post-sepsis syndrome.

Hence, it was recommended that skilled nursing facilities provided sepsis educational in-services tailored to their facility in a regularly scheduled manner throughout the year. This can be

included in the annual competency assessments mandated throughout the facility and should begin upon hire. Further, the educational department of skilled nursing facilities are recommended to do intentional rounding, where they can interact with staff, ask them questions, assist in building their skill sets, and refer them to the available resources within the facility. These measures will promote staff interaction, retention of information, and assist with making the staff feel supported. Ultimately, the changes that should be made in patient care within these facilities revolve around having readily available resources and support at hand.

As a team effort, the nursing staff can improve the delivery of care. Thus, the final recommendation is that the selected facility encourage a leader champion within the units. These leader champions will be staff that receive increased teaching through the educational department and provided increased assistance on their units. The leader champions can be the assistant nurse managers, a motivated nurse or an additional nursing staff member. Their role will include answering questions, being available and providing feedback to the educational team to improve the delivery of education messages and information. Thus, these efforts will promote increased team work, leadership within the facility, while disseminating the availability of resources.

Transferability of the Results

The methodology used throughout the project and the results yielded provides transferability to other facilities through allowing facility stakeholders to apply the data obtained from the completion of the project to their facilities based off of their situation. The delivery of the presented project consists of gathering nursing staff of non-acute care settings, such as a skilled nursing facility, and assessing their baseline knowledge, followed by the implementation of an educational in-service to promote increased awareness. The main focus of the project is to

increase provider knowledge of sepsis within non-acute care settings as there is currently limited research on this specific population. Thus, the project can be replicated within these settings to promote increased understanding of the potential correlations between the low sepsis awareness of nursing staff and various variables.

The replication of the project provides benefits to the organization as it will allow for an internal review of their current practice, policies, and protocols. Additionally, the facility will be able to assess their nursing staff baseline knowledge and determine what this means for their campus and how they would like to address this issue. Ultimately, this will promote an engaging environment for the facility, while improving their patient's care and satisfaction.

Continually, in efforts to improve the quality of care within non-acute care facilities, the presented project should be replicated within other organizations for comparison. Prior to replicating the project within another facility, minor changes should be made. For instance, should the facility treat and manage acute care conditions in a long term setting, an evaluation should be made to determine if the sepsis educational inservice is the appropriate because the facility may already have an established sepsis educational in-service in place. Thus, the project's educational presentation focuses on sepsis prevention in facilities that do not manage acute conditions for an extended period. This project is limited to non-acute care facilities including skilled nursing centers, rehabilitation centers, assisted living, and memory care units.

Cost Effectiveness

Research projects aim to provide greater understanding and insight into clinical problems within facilities or communities. Unfortunately, a financial concern is always evident as sufficient funds are required to adequately conduct a study. Fortunately, the project can be replicated at low cost depending on the size of the project and the materials the facility wishes to

provide. Should a facility wish to replicate the project, all that is required is access to internet and computer, awareness of powerpoint functions, and copy paper for printing of pre-/post-test. Upon collecting these materials, the cost stems from the cost of copy paper and whether or not the facility wish to offer refreshments during the educational presentation. Although, a cost could be the result of having to pay staff on their time off to come in for the presentation or having to pay an additional staff member to give the educational presentation. Ultimately, these costs could be discussed within the facility and staff member to determine how the project would be conducted.

The cost of replicating this project can be reduced through utilization of the educational department. For instance, the facility's educational department can organize to provide the sepsis educational presentation during new hire orientation and regularly scheduled throughout the year. Upon establishing a set schedule for the delivery of the presentation, the educational team can incorporate their daily tasks thus reducing the need to hire additional staff. Thus, the cost of the project can remain within the need for printed materials. Ultimately, the project is cost effective to allow ease of replication and improved provider knowledge on sepsis within the skilled nursing facility.

Recommendations Based on Interpretation of Results

Following dissemination of the project within the selected facility, further research is warranted. The recommendations for the future of the project is to replicated it in other skilled nursing facilities, and to incorporate other non-acute care facilities. The data gathered would be further disseminated through publication and conference meeting to increase awareness of the impact of sepsis literacy. Additionally, the goal of the project is to improve provider knowledge of sepsis within the skilled nursing facility through the implementation of a setting specific

educational presentation. The project is only feasible within non-acute care facilities that do not manage or treat acute conditions long term. Further, it is feasible to expand the project to analyze potential variable to the knowledge gap and to analyze facility policies in relation to staff awareness. Ultimately, the future of the project is to grow awareness of population specific sepsis criteria and improve survival outcomes.

Plans for Dissemination

Upon detailed review of the data collected, it is beneficial to disseminate the findings throughout the nursing community. Initially, the presented project will be disseminated throughout the selected skilled nursing facility, through providing the site with various resources and tools to continue the sepsis educational in-services throughout the year and to oncoming staff. These resources will include a copy of the sepsis presentation, informational brochures, and the pre-/post-tests with the answer key for further staff testing. The educational department of the site will receive a one-on-one in-service on the in-service and resources to assist in their understanding. Further, it would be recommended to incorporate these tools in their annual nursing competency review throughout the year to assist in increasing sepsis awareness. Ultimately, the site will be equipped with the fundamental resources to promote nursing knowledge of sepsis within the skilled nursing facility setting.

Additionally, the information will be disseminated through publications. Ideally, publication will be sought through *The American Journal of Nursing* and *the Journal of Post-Acute and Long-Term Care Medicine*. These journals are setting and population specific, which would benefit from the findings of the project. *The American Journal of Nursing* (2023) was selected due to the abundance of nursing leadership spotlights, while providing transparency into real situations occurring in clinical practice. Additionally, the journal strives to deliver evidence-

based research through the nursing perspective, which is imperative as a change within the nursing community is needed to increase their knowledge of sepsis within the skilled nursing facility setting. Continually, the *Journal of Post-Acute and Long-Term Care Medicine* (2023), was selected because it strives to improve the quality of care to the geriatric population through organized evidence-based articles that are practical for wide implementation. While this journal tailors to physicians, pharmacists, psychiatrists, social workers, and nurse practitioners, the information can be disseminated to stimulate a change in practice and to lead through communication within the interdisciplinary. Thus, dissemination of the information would be largely benefited through these journals as they will reach a larger audience including nurses and providers.

Furthermore, the information will be disseminated through presentation at a national nursing conference. Currently, this year's Florida Health Care Association (2023) is hosting its annual conference in July. The conference offers a total of 23 contact hours and is open to nurses, nursing administrators, and providers. During the conference, which is set over several days, a variety of topics will be discussed including "risk-based arrangements in post-acute care," "the role of technology in fall prevention," health care associated infection prevention, and many other topics (Florida Health Care Association, 2023, para. 2). Thus, incorporating the findings of the presented project would allow for dissipation of the data to a wide audience working within the skilled nursing facility and non-acute care settings. Thus, the information could promote increased sepsis awareness within this population and stimulate changes in policies within the facility's administration. Additionally, brochures of the presented information would be distributed as well to facilitate retention of information and for administrators to bring to their facilities for implementation. Ultimately, the conference would allow for dissemination

of information through networking with the nursing staff working within the non-acute care setting.

Implications for Advanced Nursing Practice

Advanced nursing practice involves taking clinical information and applying it while providing quality care. Yet, the advanced practice nurse goes beyond the care provided and seeks to improve patient environment, clinical settings, and patient outcomes through conducting research yielding evidence-based practice changes. Thus, the following areas of nursing education, clinical practice, nursing administration, and leadership are constantly evolving due to the availability of evidence-based studies. Ultimately, research is stimulated by a need for change as noted in the presented study revealing a knowledge gap within nurses working in a skilled nursing facility requiring improvement.

Nursing Education

The knowledge gap noted in the project can be connected to a variety of variables. One of the potential reasons for the low awareness could be the overall nursing education. The study evaluated registered nurses and licensed practical nurses. While both practices similarly, the education received by a registered nurse may vary to the licensed practical nurse. Additionally, literature is limited on the topic of sepsis within the non-acute care setting such as skilled nursing facilities which hinders the available information for nurses within these clinical sites. Thus, a need for change within the nursing educational programs is warranted. Further, the change can occur within the facility as the educational department assess and monitors nursing staff competencies. Incorporating sepsis materials within the annual nursing competency assessment stimulates a change toward improvement. Overall, nursing education can vary based on program, credentials or the facility resources but incorporation of population specific criteria is warranted.

Clinical Practice

The findings of the project reveal a need for change within the clinical practice as there is a gap in knowledge resulting in delayed patient care with poor patient outcomes. Clinical practice is molded through experiences and changed through evidence-based data from multiple studies. Thus, a shift should be tailored towards population and setting specific studies to enhance the sepsis awareness within skilled nursing facilities. These studies result in evidence-based practice changes such as increased sepsis education prior to board certifications, sepsis awareness within facility with protocol development and continuing education credits to motivate staff to further seek resources within their fields. Although, implementing changes within clinical practice is a lengthy process, through continuous measures the changes will become routine.

Nursing Administration

The nursing administration can utilize the information derived from the project to assist in evaluating current facility protocols and developing sepsis-based resources for their nursing staff. The study found a gap of sepsis knowledge within the facility; thus administration can strive to improve this gap through educating the nurses on sepsis and the risk presented within the facility. These can be completed through the yearly mandated competency for the facility and be incorporated within the continuing education education credits mandated by the state. Thus, the staff will receive the knowledge while getting credits for their license renewals. Ultimately, this practice change will assist in improved patient outcome and nursing licensure compliance.

Leadership

The findings from the project suggest an increased need for advanced practice nurse's leadership in relation to sepsis awareness. As advanced practice providers, it is fundamental to

advocate for patients and to be a resource to nurses and the interdisciplinary team. Hence, a beneficial leadership opportunity within the skilled nursing facility would include reminding staff of potential risk factors for patients and to be vigilant for atypical presentations. Further, leadership can be taken upon admission of the patient and identifying an at-risk individual from day one. This will assist the staff to be alert to potential sepsis characteristics. Additionally, as leaders, an initiative is made through involvement within the community and voicing the need for a standardized sepsis screening tailored to the non-acute settings as a major of sepsis case begin outside of the hospital setting. These involvements can include reaching out to the Sepsis Alliance or other local organizations to come to the facilities and provide in-services for the staff, or through active partnerships with the facilities educational department to improve overall staff knowledge of critical issues within the population. As advanced practice nurses, leadership can take many forms with one ultimate goal of improving patient outcomes.

Conclusion

Sepsis is a global concern that negatively impacts the population on a physical, psychological, and social level. This time sensitive syndrome results from a local infection that is untreated or improperly treated. The microorganisms trigger a continuum of systemic inflammatory reactions resulting in multiple organ failure and potentially death. Further, the inflammatory response continues into recovery with a collection of symptoms referred to a Post-Sepsis Syndrome. The dynamics and pathophysiology of this condition is broadly studied yet limited to acute care facilities and management. Unfortunately, the rates for the syndrome are typically higher in the non-acute care setting such as skilled nursing facilities. Additionally, sepsis is reported to present differently based on the patient's age and risk factors. Thus, resulting in symptoms going undetected resulting in a high re-hospitalization rate. Consequently,

this connection has been associated with a knowledge gap within nurses working in these facilities. Thus, the presented project seeks to investigate the baseline sepsis knowledge of nurses working in a skilled nursing facility, while improving awareness through implementation of an educational sepsis in-service.

Interestingly, literature is abundant on the topic of sepsis and the devastating effects on patients. Literature trends reveal that most studies are completed within an acute care setting, typically the emergency room. Yet, patients admitted to a skilled nursing facility are reported at a higher risk for becoming septic requiring extended re-hospitalization stays, prolonged rehabilitation needs and poor patient outcomes. Further, through literary searches it was noted that a large percent of nursing staff had limited sepsis awareness. For instance, multiple studies documented that nurses were unable to define or identify sepsis within their patients. Additionally, various qualitative studies document nurse's concern within feeling unsure of facility resources or educational support. Continuing, other studies sought to improve infection rates through implementation of simulations or educational sessions to increase exposure on the topic. Lastly, literature records the potential consequences of knowledge gaps through comparison of infection rates, re-admission rates, and nursing awareness. These reports found a connection between poor nursing understanding to increased infection transmission that was improved through the use of educational presentations. Ultimately, the DNP project seeks to enhance the available literary that is setting specific to increase sepsis awareness within these facilities.

The DNP project will use quality improvement methodologies to stimulate change within the selected organization. The project will involve recruitment of approximately 25 nurses, assessment of baseline knowledge through pretesting and implementation of educational in-

services. Hence, the project will take place in a single skilled nursing facility. The data will be collected through voluntary participation of nursing staff through pretesting and educational in-services. Following the presentation, nurses will be asked to complete a post-test to determine improvement in knowledge. Lastly, IRB approval shall be sought out prior to beginning the quality improvement and all participant's information will be kept confidential. Ultimately, the project objective is to identify a substance awareness knowledge gap with a goal of increasing nursing knowledge.

Thus, the results of the study will reflect valuable details to the potential reasons behind the low sepsis awareness within the skilled nursing facilities. The project gathered data from a range of nurses both novice and experienced, as well as through various licensures such as registered nurse versus licensed practical nurse. Upon completion of the study, it was found that the implementation of a sepsis educational presentation assisted in improving nursing understanding. Additionally, recommendations to replicate the study within other facilities to evaluate the effectiveness of an educational presentation in relation to increased sepsis awareness.

Overall, the presented DNP project simulates a change towards population specific literature to gain deeper insight on a global issue. The project promotes leadership and opportunities for improved public health through proactive measures and prevention of complications. Ultimately, the project is a foundation for future studies within skilled nursing facilities, leading to the eventual development of evidence based standardized guidelines.

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Appendix A: Literature Matrix

First Author/Year	Purpose/ Problem/ Objective/ Aims	Study Design	Sample (Setting)	Data Collection Measures	Results	Strengths/ Limitations	Relationship to Project	Level of Evidence/ Quality Ranking
Ehlenbach et al. (2017)	To determine the severity of the cognitive and physical impairments of a patient following sepsis survival and being admitted to a skilled nursing facility (SNF).	Retrospective Cohort Study	Medicare patients discharged following a diagnosis of severe sepsis requiring hospitalization. Setting: United States with Skilled Nursing Facilities.	Minimum Data Set: Cognition Scale to assess cognitive status. Minimum Data Set: activities of daily living to assess functional dependence.	Patients admitted to skilled nursing facilities following a sepsis hospitalization resulted in decreased survival rates, increased readmission rates, and decline in physical and cognitive functioning.	Strengths: 1. Focus on skilled nursing facility and sepsis diagnosis 2. Studied patients directly on admission to the SNF. Limitations: 1. The study assessed cognitive and functional status only at the time of admission to the SNF. 2. Can only observe the status of the patient while in the SNF. Unable to follow the patient's recovery at home once discharged.	This article presented information on the negative patient outcomes following a sepsis diagnosis and the impact of the patient when admitted to a skilled nursing facility.	Level III/ High Quality
Fiest et al. (2022)	To determine a knowledge deficit regarding sepsis and to evaluate information seeking behavior. The goal of the article is to inform further researchers and knowledge translation campaigns about the awareness gap.	Scoping Review	Articles relating to sepsis knowledge and information seeking behaviors of healthcare professionals.	Arksey and O'Malley's methodological framework. Preferred Reporting Items for Systematic Reviews (PRISMA-ScR) Checklist.	Nearly half of all studies included were cross sectional designed. Sepsis awareness is generally low and could be improved through "tailored campaigns" and educational materials.	Strengths: 1. The researchers maintained a strict conduct. They followed a pre-register protocol and the PRISMA- ScR checklist rigorously. 2. No limitations placed on language which allowed for access of literature on a global scale. Limitations: 1. The design is a scope review which may mean studies	This article provided insight on the extent of the lack of available research for the topic. Additionally, it provided evidence that sepsis awareness, knowledge and educational information is low and in need of improvement.	Level V/ High Quality

						could have been missed. 2. Not all studies used the same questionnaires which could result in discrepancies. 3. Research did not look at studies over a time period.		
Harley et al. (2019)	To determine emergency room nurses understanding of their role in recognizing and responding to septic patients. Additionally, to determine nursing knowledge on sepsis screening and treatment protocols.	Qualitative Design	750 bed public tertiary teaching facility. Registered Nurses working in the Emergency room.	30 to 60 minute, digitally recorded interview with guided questions. “Qualitative content analysis by Graneheim and Ludman (2004).”	Various barriers identified contributing to a knowledge gap of sepsis awareness within the organization. Generally, the nurses studied verbalized understanding of their critical role in sepsis identification but felt a lack of support from the facility leaders.	Strengths: 1. First hand exploration of experiences and perspective of the nursing staff. 2. Digitally recorded data for review and documentation. Limitations: 1. Participants were interviewed in a retrospective manner which may result in discrepancy of their account with handling a septic patient. 2. Sample size was small and focused within the emergency department which resulted in participants being tired or busy.	This study depicted nursing staff lived experience and their perspective of sepsis through their experiences and voiced concern about their organizational resources. The study also mentioned a lack of current research on the topic of nursing staff awareness to sepsis.	Level III/ Good Quality
Harley et al. (2021)	To evaluate final year nursing student’s sepsis awareness and exposure/ experience.	Multi-site Cross-Sectional Study	Final year nursing students from five universities in Australia.	SurveyMonkey Tool transferred from excel into Statistical Package for Stata. Comparison test completed with two sample t-test or Krystal-Wallis test.	Sepsis recognition, process and management awareness is low within final year graduate entry and undergraduate level nurses.	Strengths: 1. The survey questions used were broad and primarily nursing focused. 2. Survey was sepsis focused to determine gaps in knowledge. Limitations: 1. Use of a newly developed survey tool.	The article provided nursing perspective to sepsis awareness. The study revealed that nursing students feel as though they are not taught sepsis education as sufficiently as other studies.	Level III/ Good Quality

						2. Small size was low at <25%. 3. Survey did not address educational exposure to sepsis awareness.		
Huang et al. (2018)	To present post-sepsis syndrome through a sepsis survivor perspective.	Prospective, observational online international survey.	International online. Sepsis survivors.	Survey was completed using Qualtrics Survey Software. Statistical analysis completed with MedCalc for Windows version 17.04.	Greater than 50% of sepsis survivors required blood transfusions and insertion of central venous catheters and upon discharge required further rehabilitation at a skilled nursing facility. Post-hospitalization quality of life was diminished by the significant decrease in physical function. 16.6% of surveyors reported not receiving any information regarding their sepsis diagnosis.	Strengths: 1. First hand experience. Lived experiences. 2. All participants had a diagnosis of sepsis at varying severities. Limitations: 1. Online based survey may result in bias or miscommunication of intended response. 2. Survey was completed in retrospective which could alter the feedback or the individual may be forgetting information. 3. Surveyors selected through sepsis campaign organizations and may result in bias.	This article depicted the perspective sepsis survivors and the quality of care they received while diagnosed and being treated for sepsis. This provided insight on the gap of knowledge as sufficient amount of participants expressed not being informed or educated on their diagnosis. Additionally, the study documents that patients did not receive discharge teaching regarding sepsis either.	Level III/ Great Quality
Khanh et al. (2019)	To present awareness to the benefits of simulation models in the prevention of health care associated infections. Additionally, to encourage facilities to adapt simulation use and decrease knowledge gaps.	Systemic Review	Articles discussing healthcare associated infection rates and causative microorganisms. Articles discussing simulation models and the impact on decreasing infection transmissions.	PRISMA flowchart. Data categorized and placed in tabular format.	53% of studies noted that simulation models were available for active use but are failed to be implement. Additionally, the studies documents that the complexities of the units and the simulation models could be a potential barrier to its benefits.	Strengths: 1. Simulation models were assessed to determine sensitivity prior to the study. 2. Verification of the simulation models were completed prior to reality correspondence. Limitations: 1. Simulation models are unit specific and can alter findings	The article presented a correlation with lack of resources to improving quality of care. In this instance the stand point is that the simulation models would assist in decreasing the risk of infection transmission. On the other hand, the project in sue seeks to note a connection with implementing a sepsis educational in-service to improve nursing knowledge.	Level III/ Low Quality

						depending on selected units. 2. Literature search was broad. The study did not take into consideration patient transferred between units or facilities.		
Lee et al. (2019)	To determine the effectiveness of infection prevention programs within long term care facilities.	Systematic Review	English language articles studying the impact of infection prevention programs within long term care facilities. The World Health Organization manual for implementing infection prevention program guided the study.	Cochrane risk-of-bias instrument for randomized trials and the risk-of-bias assessment tool for non-randomized studies.	Implementation of educational programs assist in improving knowledge, monitoring and providing feedback that stimulate behavioral changes within nursing staff of non acute care facilities. Limited resources in long term care facilities, lack of health policies and low staffing.	Strengths: 1. The study was setting focused and correlated with the world Health organization core measures for programs of infection prevention. 2. Large sample size. Limitations: 1. The study was not intervention specific. The educational program sought to be implemented was broad and did not have a specific focus. 2. No meta-analysis was completed due to inconsistencies in the studies.	This article discuss the limited evidence available for non acute care setting and the need for standardized programs to improve understanding of core issues.	Level III/ Good Quality
Lee et al. (2020)	To determine the source of infection transmission within long term care facilities. Additionally, to evaluate barriers leading to infection transmission rates.	Systemic Review	PubMed, Excerpta Medica Database (EMBASE), Cochrane CENTRAL, CINAHL articles focusing on infection transmission within the long term care facilities and nursing staff.	Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA). Risk-of-bias assessment tool for non-randomized studies.	60% of infectious cases are contributed to poor nursing staff practices, and identification.	Strengths: 1. Study was setting focused and specific. 2. Large population size. Limitation: 1. Only English language studies were reviewed. 2. Only qualitative review were completed. 3. Results are limited generalizability due to publication bias.	This study focused on the setting specific risk factors that place vulnerable patients at risk for infection, while correlating the cause of infection transmission.	Level III/ Good Quality
Meyer et al. (2018)	To measure trends in emergency room visits with sepsis	Retrospective Observational Cohort Study	An University of Pennsylvania Health System.	Sepsis was identified using the International	There was a rise in sepsis survivor resulting in a parallel	Strengths: 1. Study included three hospitals and	This article provided insights on the negative physiological effects of	Level III/ Good Quality

	diagnosis and hospitalization. Additionally, to monitor and trend re-admission rates and diagnosis in relation to the impacts on mortality and skilled nursing facility admission.		The system contains 3 acute care hospitals.	Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes. Statistical data was compiled using the nptrend packing in the State statistical software.	increase of readmission rates within 7 days of diagnosis to 30 day readmission. A decrease was noted following the implementation of new sepsis policies within the emergency departments.	expanded their search to document readmission rates of patients and their diagnosis. 2. Data sets were confirmed with multiple validation methods to identify sepsis hospitalizations. Limitations: 1. Only three hospitals were studied which may result in a data being understatement 2. Unaware of systemic changes that may have occurred throughout the time of the study. .	sepsis following discharge from acute care and admission to skilled nursing facilities. Additionally, it provided statistical date on readmission rates following admission to a skilled nursing facility.	
Paoli et al. (2018)	To document the impact of a sepsis diagnosis on the patients health, the economy and overall cost of hospitalization.	Retrospective Observational Cohort Study	Patients 18 and older. Patients admitted through the emergency and discharged with an ICD-9 or ICD-10 code of sepsis.	Premier Healthcare Database to obtain statistical financial impact. Billing records for 207 patients	The economic burden of sepsis is highest with readmission rates and based on the severity of the syndrome.	Strengths: 1. Access to patient charts for review of documentation and timeline of infections. 2. Access to billing records to determine economic impact of sepsis to the community. Limitations: 1. The researchers depending on codes from the International Classification of Disease and DRG which may result in different diagnosis triggers. 2. Proper codes may not be in place for critically ill patients resulting in a discrepancy in actual septic patients.	This study depicted the negative impact of sepsis as a whole. When sepsis occurs, it does not just affect the patient. It affects the family, the hospital and the economy. This adds credibility to the project.	Level III/ Great Quality

Appendix B: Site Letter of Approval



February 14, 2023

Palm Beach PACE at MorseLife Health System

4847 David S Mack Dr.

West Palm Beach FL, 33417

To whom it may concern,

I, Dr. Ivan Merkelj, have reviewed your request regarding your study and am pleased to support your research regarding sepsis within the skilled nursing facility setting. I approve of Damaris I. Valldeperas, to conduct her Doctoral Project entitled "Sepsis Awareness Through Education in a Skilled Nursing Facility: A Quality Improvement Project."

Your request to use MorseLife Health System as a site of research and recruitment is granted. The research will include use of the educational classroom, interviews with participants, administration of pre/post testing, and delivery of an educational in-service. This authorization covers the time period of February 14, 2023 through February 14, 2024. This site approval is contingent on receiving IRB approval from the committees at Florida International University.

Contact for the project will be supervised by Dr. Ivan Merkelj and can be reached at 561-471-5111.

Thank you and I look forward to assisting with the project.

Sincerely,

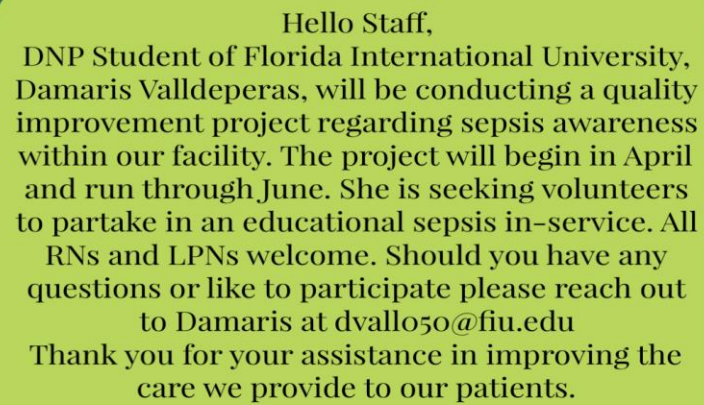
Ivan Merkelj, MD

West Palm Beach Center
 Marilyn and Stanely M. Katz Seniors Campus
 4847 David S. Mack Drive • West Palm Beach, FL 33417
 T. 561.868.2999 • morselifePACE.org
 For the hearing impaired (TTY/TDD) please call 1.800.955.8771

Assisted Living • Home Health Care • Hospice • Independent Living • Long Term Care • Memory Care • PACE • Short Term Rehab

Appendix C: Recruitment Flyer

PARTICIPANTS NEEDED***WHEN******MAY-
JUNE 2023******WHERE******MORSELIFE******WHY******TO GAIN INSIGHT ON SEPSIS AND TO FIND OUT
WHAT YOU CAN DO TO IMPROVE PATIENT OUTCOMES******“COULD
IT BE
SEPSIS?”******IT'S A SIMPLE QUESTION,
BUT IT COULD SAVE LIVES.******DAMARIS, APRN WILL BE COMING TO MORSELIFE
TO EDUCATE REGARDING SEPSIS AND HOW
YOU CAN MAKE A DIFFERENCE.
CALL OR TEXT 561-602-9626 FOR MORE******INFORMATION.***



Appendix D: Notification Sample

Hello Staff,
DNP Student of Florida International University, Damaris Valdeperas, will be conducting a quality improvement project regarding sepsis awareness within our facility. The project will begin in April and run through June. She is seeking volunteers to partake in an educational sepsis in-service. All RNs and LPNs welcome. Should you have any questions or like to participate please reach out to Damaris at dvallo50@fiu.edu
Thank you for your assistance in improving the care we provide to our patients.

Appendix E: Participant Demographics

Participant
 Identification: _____ Title: _____ Date: _____
 Race: _____ Gender: _____ Age: _____

PARTICIPANT DEMOGRAPHICS

	?
 Licensure	
 Certifications	
 Number of years of Experience	
 Number of years working in a Skilled Nursing Facility	

NURSING BACKGROUND

INVOLVEMENT IN THE NURSING COMMUNITY

Appendix F: Sepsis Awareness Pre-/Post-Test

1. What is sepsis?
 - a. A local infection such as a urinary tract infection, cellulitis, or pneumonia.
 - b. A systemic inflammatory response triggered by an infection.
 - c. A contagious disease.
 - d. An autoimmune disorder.
2. Which of the following are NOT signs of sepsis:
 - a. Increased motor function and strength.
 - b. Confusion or change in mental status.
 - c. Lethargy/fatigue.
 - d. Hyperactive movements.
3. Adults older than 65 are ____ times more likely to be hospitalized with sepsis than younger adults.
 - a. 20
 - b. 27
 - c. 5
 - d. 13
4. Patients admitted to skilled nursing facilities are at a ____ times more likely to be re-hospitalized.
 - a. 7
 - b. 3
 - c. 2
 - d. 6

5. Which of the following is NOT likely to be a complication after sepsis?
 - a. Amputations
 - b. Improved memory
 - c. Insomnia
 - d. Post-traumatic stress disorder (PTSD)
6. True or False: All septic patients present with the same symptoms?
7. True or False: Hand-washing and standard precautions are effective ways of decreasing infection transmission?
8. For every untreated _____ that pass; the survival rate of a severely septic patient drops by almost 8%.
 - a. Second.
 - b. Day.
 - c. Minute.
 - d. Hour.
9. True or False: Routine assessments of patients to identify risk factors and change in status are fundamental in the early identification of sepsis?
10. True or False: Prolong Foley Catheter and intravenous lines can be an entry site for infection?
11. True or False: Pressure injuries cannot cause sepsis?
12. True or False: Sepsis can occur without infection?
13. True or False: Physicians do not need to be notified for a change in the patient's mentation.

14. What are risk factors for infection development?
- a. Wounds.
 - b. Recent surgical or invasive procedure.
 - c. Prolonged indwelling medical devices.
 - d. Patient's with decreased mobility and functional ability.
 - e. Current infection.
 - f. All of the above
15. Sepsis survivors over the age of 50 have a ____% chance of having residual cognitive and physical function impairment.
- a. 20
 - b. 60
 - c. 15
 - d. 7
16. True or False: The older adult presents atypically when infection is present?
17. Sepsis can be caused by which of the following?
- a. A break in the skin.
 - b. An insect bite.
 - c. Following a surgical or invasive procedure.
 - d. A urinary tract infection.
 - e. All of the above.
18. True or False: Sepsis does not cause organ failure.

19. Who is at highest risk for developing sepsis?
- a. Individuals over 65 years of age.
 - b. Postoperative patients.
 - c. Patients with indwelling medical devices.
 - d. People with cancer or who are immunocompromised.
 - e. All of the above.
20. True or False: Sepsis is preventable.

Appendix G: Informed Consent



ADULT CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Provider Education to Increase Knowledge of Sepsis in a Skilled Nursing Facility: A Quality Improvement Project

SUMMARY INFORMATION:

Things you should know about this study:

- **Purpose**: The purpose of the study is to determine baseline sepsis knowledge of nurses working within a skilled nursing facility.
- **Procedures**: If you choose to participate, you will be asked to complete a demographic questionnaire, take a pre-test prior to attending an educational in-service, and take a post-test.
- **Duration**: This will take about three, thirty minute sessions over the course of February to April.
- **Risks**: There are no risk involved in the participation of the project.
- **Benefits**: The main benefit to you from this research is increased awareness and knowledge regarding sepsis within the skilled nursing facility.
- **Alternatives**: There are no known alternatives available to you other than not taking part in this study.
- **Participation**: Taking part in this research project is voluntary.

Please carefully read the entire document before agreeing to participate.

PURPOSE OF THE STUDY

The purpose of this study is to determine baseline sepsis knowledge of nurses working within a skilled nursing facility, and the impact of incorporating an educational sepsis awareness in-services.

NUMBER OF STUDY PARTICIPANTS

If you decide to be in this study, you will be one of 25 people in this research study.

DURATION OF THE STUDY

Your participation will involve three in-person meetings of approximately 25 minutes. The days will be within the months of April and June. Thus, meetings will be approximately once a month.

PROCEDURES

If you agree to be in the study, we will ask you to do the following things:

1. All participants will sign informed consent and complete a demographic questionnaire.
2. On a April 10, 2023, participants will complete a pre-test that is untimed. The test is estimated to take 10 minutes or less.
3. On a April 21, 2023, participants will attend an educational in-service. Following the in-service, participants will complete a post-test.
4. Optionally, participants will be asked to complete a survey regarding their experience throughout the project.

RISKS AND/OR DISCOMFORTS

The study has the following possible risks to you: First, no possible physical, societal, or economical risks. Second, there is a possible risk of anxiety related to test taking. Of note, the exams are not time.

BENEFITS

The study has the following possible benefits to you include an increased understanding of sepsis and its impact on patients within skilled nursing facilities.

ALTERNATIVES

There are no known alternatives available to you other than not taking part in this study. Any significant new findings developed during the course of the research which may relate to your willingness to continue participation will be provided to you.

CONFIDENTIALITY

The records of this study will be kept private and will be protected to the fullest extent provided by law. In any sort of report we might publish, we will not include any information that will make it possible to identify you. Research records will be stored securely, and only the researcher team will have access to the records. However, your records may be inspected by authorized University or other agents who will also keep the information confidential.

Additionally, upon completing the demographic questionnaire, you will receive an identifier to use throughout the remainder of the study to protect confidentiality.

USE OF YOUR INFORMATION

- Identifiers about you might be removed from the identifiable private information and that, after such removal, the information could be used for future research studies or distributed to another investigator for future research studies without additional informed consent from you or your legally authorized representative; or
- Your information collected as part of the research will not be used or distributed for future research studies even if identifiers are removed.

COMPENSATION & COSTS

There are no costs to you for participating in this study.

MEDICAL TREATMENT

Routinely, FIU, its agents, or its employees do not compensate for or provide free care for human subjects in the event that any injury results from participation in a research project. If you become ill or injured as a direct result of participating in this study, contact your regular medical provider. If you have insurance, your insurance company may or may not pay for these costs. If you do not have insurance, or if your insurance company refuses to pay, you will be billed. Funds to compensate for pain, expenses, lost wages and other damages caused by injury are not routinely available.

RIGHT TO DECLINE OR WITHDRAW

Your participation in this study is voluntary. You are free to participate in the study or withdraw your consent at any time during the study. You will not lose any benefits if you decide not to participate or if you quit the study early. The investigator reserves the right to remove you without your consent at such time that he/she feels it is in the best interest.

RESEARCHER CONTACT INFORMATION

If you have any questions about the purpose, procedures, or any other issues relating to this research study you may contact Damaris Valldeperas, AGPCNP-BC at Palm Beach PACE at MorseLife, 561-602-9626, dvall050@fiu.edu.

IRB CONTACT INFORMATION

If you would like to talk with someone about your rights of being a subject in this research study or about ethical issues with this research study, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu.

PARTICIPANT AGREEMENT

I have read the information in this consent form and agree to participate in this study. I have had a chance to ask any questions I have about this study, and they have been answered for me. I understand that I will be given a copy of this form for my records.

Signature of Participant

Date

Printed Name of Participant

Signature of Person Obtaining Consent

Date

Appendix H: IRB Approval Letter and Addendum Letter**MEMORANDUM**

To: Dr. Arturo Gonzalez
CC: Damaris Valdeperas
From: Carrie Bassols, BA, IRB Coordinator *ceb*
Date: April 7, 2023
Proposal Title: "Provider Education to Increase Knowledge of Sepsis in a Skilled Nursing Facility: A Quality Improvement Project"

The Florida International University Office of Research Integrity has reviewed your research study for the use of human subjects and deemed it Exempt via the **Exempt Review** process.

IRB Protocol Exemption #: IRB-23-0157 **IRB Exemption Date:** 04/07/23
TOPAZ Reference #: 112815

As a requirement of IRB Exemption you are required to:

- 1) Submit an IRB Exempt Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved prior to implementation.
- 2) Promptly submit an IRB Exempt Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
- 1) Submit an IRB Exempt Project Completion Report Form when the study is finished or discontinued.

Special Conditions: N/A


For further information, you may visit the IRB website at <http://research.fiu.edu/irb>.



Office of Research Integrity
Research Compliance, MARC 414

MEMORANDUM

To: Dr. Charles Buscemi
CC: Damaris Valdeperas
From: Maria Melendez-Vargas, MIBA, Coordinator
Date: April 26, 2023
Proposal Title: "Provider Education to Increase Knowledge of Sepsis in a Skilled Nursing Facility: A Quality Improvement Project"
Approval # IRB-23-0157-AM01
Reference # 112815

A handwritten signature in black ink, appearing to be "W", is located to the right of the "From:" line.

The Florida International University Office of Research Integrity has approved the following modification(s):

- Dr. Buscemi will replace Dr. Gonzalez as principal investigator.

Special Conditions:

For further information, you may visit the FIU IRB website at <http://research.fiu.edu/irb>.

MMV/em