

Sepsis in the Elderly

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Abstract

Sepsis has come to affect many populations and age groups, especially in the elderly population. This disease has caused many deaths as its signs and symptoms present so vaguely. The purpose of this project was to improve sepsis education in the elderly community for a way to decrease hospital admissions and even death. Fifteen individuals participated in this project and completed the pre-intervention survey and post-intervention survey after receiving education on sepsis in the elderly population. The population participating in the survey were in the age range of 60-85 years of age. Independent samples t-tests were used to compare pre- and post-intervention survey and an alpha of 0.05 was used to determine the efficiency of the intervention. Questions in form of a Likert scale were used asking about prior knowledge regarding sepsis and post education questions on sepsis. The Likert scale used answers such as Strongly disagree, Disagree, Agree, strongly agree. There was a significant difference in the knowledge between the presurvey ($M=12.8$, $SD=5.63$, $p < .001$) and postsurvey ($M=23.53$, $SD=3.9$, $p < .001$). This project showed that there is a need to increase education to the elderly population due to their age and comorbidities and how education on sepsis can increase the individual's awareness on sepsis and decrease sepsis complications. Providing this education showed significant findings towards achieving the project goals.

Keywords: education, elderly population, sepsis

Sepsis in the Elderly

Sepsis has become a major problem in today's world. Sepsis has come to affect many populations and age groups, especially in the elderly population. This disease has caused many deaths as its signs and symptoms present so vaguely. According to Moran (2003), sepsis is one of the five leading causes of death. It is also one of the top ten reasons for hospitalization in the elderly who are 65 and older. Geriatric crises result in an increase of morbidity and mortality in the elderly population. Moran (2003) also states that infections in geriatric patients are non-classical and unusual. There is also a variation of untypical, unconventional, and unfamiliar manifestations. This includes weight loss, change in mental status, falls, weight loss or failure to thrive; sometimes these are the only indications that a provider can use to determine an infection in an elderly individual.

Overview

Problem Description

According to Schorr et al. (2018) sepsis has affected over 700,000 people every year in the US. It also causes acute organ failure and is one of the leading sources of death in the world. The cost of sepsis has increased, and it exceeds billions of dollars, making it one of the most expensive and dangerous hospital conditions. Schorr et al. (2018) stated that diagnosing sepsis has also become problematic due to the elderly population having uncommon and indeterminate symptoms and clinical presentations.

Schorr et al. (2018) suggested that signs and symptoms include frequent falls, confusion, change in body temperature, shaking, rapid heart rate and breathing, nausea/vomiting, and reduce of urine production. This causes a great challenge for primary care physicians and ER providers

to recognize deterioration in patients early, especially for those at greater risk of declining. According to Anderson (2016) there are many elderly patients who develop illnesses but since they are not seen on a daily basis, the diseases go unknown. The signs and symptoms that these individuals present with are unclear and vague which can then cause significant repercussions when patients are not seen often. Anderson (2016), stated that the elderly population have a weakened immune response and multiple comorbidities, putting them at an increased risk of misdiagnosis of significant illnesses such as infections and sepsis. The problem statement guiding this project will be “In the elderly population, does providing education in a group setting enhance the knowledge of sepsis”.

Available Knowledge

Population

Sepsis is defined as being a life-threatening condition resulting in the body's response to infection that can cause damage to the organ system that can lead to death. The elderly population is at major risk for sepsis due to increase age and body response. According to Boonmee et al. (2020) the elderly population are at an enlarged risk of developing sepsis and its unfavorable effects. Projection and diagnosis of sepsis in the elderly is especially difficult. The prevalence of sepsis increases with age, especially in elderly patients who are over the age of eighty. There is a high incidence of mortality in this population due to many reasons related to sepsis. Boomee et al. (2020) also stated that some of the reasons include pre-existing comorbidities, untypical immune systems and reduced functional reservoir.

Intervention

Sepsis causes many deaths and identifying is key to treating sepsis and preventing mortality (Survey Shows Lack of Sepsis Awareness, 2020). Education plays a major part when

it comes to treating and preventing sepsis. Unfortunately, the elderly population has little knowledge of what sepsis, its signs and symptoms, and treatment (Survey Shows Lack of Sepsis Awareness, 2020). There is much research that states how this population lacks education, leading to increased risk of illness (Czura and Distlerath (2010). Even though sepsis has become such an issue, there is little to no public information movements and patient educational resources. Knowledge about sepsis and sepsis education is important to increase positive medical outcomes. According to Survey Shows Lack of Sepsis Awareness (2020) Americans tend to lack of understanding of sepsis and how to identify symptoms. They significantly misjudge its risks compared with other major conditions. Like many other diseases, sepsis can be dangerous and can lead to death if not recognized on time.

Outcome

Sepsis causes an increase in death in the elderly population. There is existing information, data, and statistics supporting the danger of sepsis in the elderly. Czura and Distlerath (2010), states that by providing education and enhancing knowledge about sepsis to the elderly, we can prevent illness and even death. There are a variety of signs and symptoms that are difficult to recognize. The elderly population can miss these important signs and symptoms causing great harm or even death to the population. According to Czura and Distlerath (2010), there is a lack of sepsis recognition and cognizance to its death rates. There are approximately 18 million cases of sepsis that occur yearly and about 80% of the common population do not know the definition of sepsis. By increasing education to the elderly, many hospital admissions, and deaths due to sepsis may be prevented.

Rationale

The model that was utilized to guide the implementation of this project was the IOWA model (Cullen et al., 2018). The model works through different steps, first by identifying triggering issues or opportunities and stating a question or purpose, in this case the PICO questions on how providing education in a group setting enhances the knowledge of sepsis. Then it forms a team to assemble, appraise and synthesize body of evidence, during this step a systematic search would be conducted with comprehensive literature and gather resources on sepsis in the elderly population. It then asks the question if there is sufficient evidence. At this point all research, articles, and case studies were synthesized and considered sufficient or non-sufficient for a pilot testing. Then comes the design and pilot the practice change, in this section an evaluation plan would be created, and collection and report of a post pilot plan would take place. At this point an implementation plan would also be developed in regard to providing education in a group setting to an elderly population. The last steps include implementation and evaluation. Implementation would be giving a presentation to a group about sepsis to increase knowledge and the evaluation would include a pre- and post-survey (Cullen et al., 2018).

The Iowa Model of Research-based Practice is a great model to guide the intervention of providing education in an elderly group setting about sepsis to increase knowledge. There are many different frameworks, models, concepts and theories that can be utilized but this model is appropriate to facilitate implementation of the proposed intervention. Utilizing the IOWA model, the project can be formed, planned, and implemented thoroughly and effectively.

Purpose

The purpose of this project was to determine if providing education in a group setting will enhance the knowledge of sepsis in the elderly population.

Methods

Context

The senior center is located in a Midwestern city with a population of around 289,102 people.

The demographic of this city includes 84.9% Caucasian, 4.4% African American, 0.7%

American Indian/Alaskan Native, 4.6% Asian, 0.1% Native Hawaiian or Pacific Islander, 3.9%

Two or more races, 7.6% Hispanic or Latino. About 13% of the population are 65 years and older, considered elderly (Census.gov, 2019).

The senior center where this project occurred offers many benefits for the elderly population. One of the benefits is carefully planned meals by a registered dietitian, they can eat at the senior center or have other meal options such as meals-to-go or home delivery. The facility also offers computer classes, puzzles, pool games, card and board games, music classes and public computers to promote brain activity. Physical fitness and evidence-based programs such as diabetes self-management, Tai-Chi, and programs to build confidence and reducing falls are also provided. The senior center also offers health clinics and screening as well as mental and emotional health support. This senior center permitted the doctoral student to complete this project and provide education about sepsis in this community setting.

Intervention

The intervention for this project was a power point presentation that was developed to provide information about sepsis in a group setting of elderly population. The presentation had multiple sections including common and vague signs and symptoms of sepsis. The education also contained content on when to report sepsis, treatment for sepsis, and facts on sepsis in the

elderly population obtained through evidence-based literature. The intervention was approximately 30 minutes in length. The time frame was decided to motivate participation in the presentation while still presenting the information in enough detail to promote elderly learning. The presentation took place in a classroom-like setting with a projector available. Print outs of the presentation with important information was handed out to the participants for easier read and feasible following of the presentation. To facilitate participation of the elderly community, the manager was notified, and encouragement was given to the individuals to participate.

Study of the Intervention (s)

To determine the effectiveness of the intervention, a pre-survey and post-survey was administered to the participants to evaluate the effectiveness of the intervention. The outcome of the intervention was evaluated based on the results of the surveys; the student did leave the room as the participants fill out the pre-survey and post-survey to promote privacy and decrease bias. The pre and post-survey was designed to take approximately 10-15 minutes to complete. Each section of the survey was designed so that the information could be presented reasonably and not be overwhelming to participants, such as utilizing large font, and using proper language so this population can easily comprehend. There will be about 20 participants, each participant will be given a numerical alpha identifier to collect data properly, the surveys will be numbered to properly identify participants pre and post survey. Questions 1-2 asked demographics such as age and gender. The second section of questions 3-6 asked questions related to signs and symptoms. The last section, questions 7-10 asked questions related to treatment and prevention of sepsis. Participation were completely voluntary.

Measures

The measure chosen for studying the outcomes of this intervention was a survey that was created by the doctoral student. According to Hammer (2017), surveys are instruments used to quantitatively evaluate subjective data. This measurement tool was created to assess the elderly populations' knowledge on sepsis. The survey contained 10 questions in a survey form to verify knowledge on sepsis before and after the group education. The survey was in form of Likert scale, in ordinal form, with different options for selections including “strongly disagree, disagree, agree and strongly agree”. There is demographic question that were included in the survey such as age and gender.

Analysis

Descriptive statistics were used to analyze the results of this project. Descriptive statistics were performed on the data collection from the pre and post surveys. The scores for each question were totaled from the pre and post survey data and reported as means and standard deviation. Descriptive statistics were utilized to evaluate the demographic data collected. In this project, Excel was utilized for data storage. All data was reported and analyzed as collection from the pre and post surveys. The study utilized a spreadsheet and included a duplicate data set. All data was double-checked for accuracy by creating two separate Excel spreadsheets and comparing the files for errors. Participant names were not collected to maintain confidentiality.

Ethical Considerations

Ethical considerations were practiced during the completion of this project. There was also protection of data and integrity of data collection and implementation during the project. Data was stored on a password protected computer. When conducting the survey, privacy and confidentiality was given. To mitigate this issue, the doctoral student gave all participants

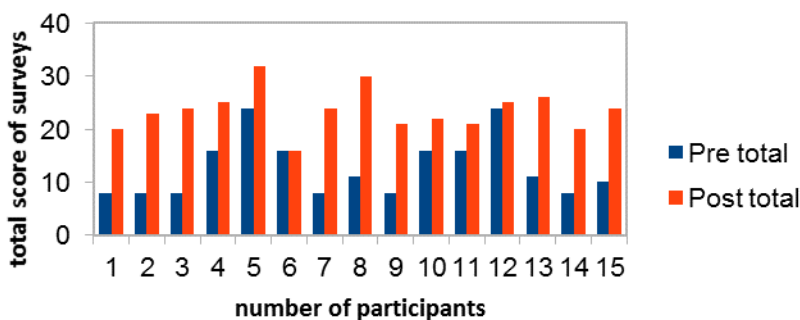
privacy by leaving the room while completing the survey. Each participant was provided a consent to participate prior to the intervention beginning. The student and faculty mentor completed CITI training.

Results

Fifteen individuals participated in this project and completed the pre-intervention survey and post-intervention survey after receiving education on sepsis in the elderly population. 100% of the population participating in the survey were in the age range of 60-85 years of age. Independent samples t-tests was used to compare pre- and post-intervention survey and an alpha of 0.05 was used to determine the efficiency of the intervention. Questions in form of a Likert scale were used asking about prior knowledge regarding sepsis and post education questions on sepsis. The Likert scale used answers such as Strongly disagree, Disagree, Agree, strongly agree. There was a significant difference in the knowledge between the pre survey ($M=12.8$, $SD=5.63$, $p<.001$) and postsurvey ($M=23.53$, $SD=3.9$, $p<.001$). This indicates that participates were able to answer more questions correctly following the intervention. Table 1 demonstrates the comparison of the pre survey responses to post survey responses.

Table 1

Sepsis in the Elderly



Discussion

Summary

The findings from this project suggest that education on sepsis to the elderly improves sepsis knowledge. The pre intervention survey demonstrated a lack of knowledge of sepsis when compared to the post survey. Participants were asked to use a Likert scale to identify their knowledge on sepsis in a pre and post survey. There were 15 individuals who participated in this project and the results demonstrated an increase in knowledge on sepsis after education was provided to this community. The current available research showed that education to the elderly population on sepsis increases knowledge. The elderly population are most at risk for developing sepsis and education is needed to improve elderly knowledge on sepsis. There was an increase in the amount of available research that focused on sepsis in the elderly population and how lack of knowledge was a problem in this community. This study showed that education to the elderly population helped to improve knowledge regarding sepsis which can ultimately decrease hospital stays and even death.

Interpretation

The association between the intervention and outcomes is that the presurvey and postsurvey was intended to determine an increase in knowledge education on sepsis and the outcome demonstrated that education to the elderly population on sepsis can increase knowledge. When comparing findings from previous literature, it correlates with the findings of this project. Survey Shows Lack of Sepsis Awareness (2020) stated that Education plays a major part when it comes to treating and preventing sepsis. Unfortunately, the elderly population has little knowledge of what sepsis, its signs and symptoms, and treatment. Czura and Distlerath (2010), also stated that there is much research that states how this population lacks education, leading to

increased risk of illness (Czura and Distlerath (2010). These sources demonstrate that there is a major relationship between the lack of knowledge in the elderly due to education.

The impact of this project affects the elderly population in a positive way. By this population gaining knowledge on sepsis, infections can be prevented and can decrease hospitalizations and deaths. By providing this type of education, we can assist this population on living a longer and healthier life. Health care providers have resources such as technology to teach this population and make a huge impact in the elderly community.

Limitations

As many other projects, there are limitations to this study. One limitation could derive from the sample size of participants. There were only 15 participants so the small size could affect the results versus a larger sample size. Another limitation was the disability of the individuals participating in the study. Some individuals had auditory or visual disabilities making it difficult to answer the surveys with ease. Some individuals needed assistance to fill out the surveys appropriately. In attempt to minimize limitations, large font was utilized. A microphone and simple medical terminology was also used in the presentation.

Conclusions

The revised standards for quality improvement reporting excellence (SQUIRE 2.0) was used as a framework for reporting this project. Sepsis causes an increase in death in the elderly population. According to research and literature, there are a variety of signs and symptoms not easily recognizable. Individuals such as the elderly population can miss these important signs and symptoms, causing great harm or even death to the population. By increasing education to the elderly, many hospital admissions, and deaths due to sepsis can be prevented.

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