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Obstructive Sleep Apnea Education to the Rural Community

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Obstructive Sleep Apnea Education to the Rural Community

by

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Abstract

Many residents of rural communities remain undereducated and unaware of diseases and disorders to which individuals are subjected or have increased risks. Obstructive sleep apnea (OSA) affects approximately 22 billion Americans and of those affected, nearly 80% remain undiagnosed and untreated (Nagappa et al., 2015). Victims of the sleep disorder fail to acknowledge signs and symptoms of obstructive sleep apnea and may be oblivious to the etiology, risk factors, symptoms, and pathophysiology of the disorder. Providing education to residents within a rural community in the north-central part of North Carolina improved community members understanding of OSA, which further leads to community members pursuing examination by a healthcare provider, resulting in expedient diagnosis and treatment.

Keywords: obstructive sleep apnea, obstructive sleep apnea education, obstructive sleep apnea information, obstructive sleep apnea in rural communities, obstructive sleep apnea complications, sleep disorder

Acknowledgements

Wow!! The last 3 years have flown by, time is truly a thief. Attending graduate school was an intimidating, rewarding adventure. I have learned so much in the last 3 years and I will never regret my decision of furthering my education. I thank the Lord above for allowing me the patience and the strength necessary to work full-time, mom full-time, and be a full-time student. There were many tears shed and thoughts that I would not make it, yet here I am graduating. I am a Doctor of Nursing practice, a family nurse practitioner! I have been shown such mercy and support by family and friends that have provided me with wisdom, strength, and sanity throughout this program. I am forever indebted to my professors for providing me with the knowledge and skill required to grow as a person and become an effective, successful nurse practitioner. Three years of trials and tribulations, and you all kept me grounded and focused. A huge thank you to my project chair, Dr. Isaac-Dockery, from the bottom of my heart for all your guidance and patience. Thank you for the many words of encouragement and the often, “do not panic, you will be fine.” If not for you, I would have not finished this project or program. Thank you, mama, for being a call away, listening to my complaints, helping me through my moments of panic, and giving me reassurance that I can do this, I love you. Daddy, my #1 fan, I appreciate the love and encouragement through texts and calls, you never doubted me, I love you. Meredith and Wesley, I would not have made it through without you. Thank you for graciously offering your time to care for the baby and children to allow me to complete assignments and study, ensuring I meet deadlines. You are always so sincere, and I cannot imagine life without my perfect in-laws, I love you guys! My children Kylie, Hudson, and Kallum, mama did it and all for you guys. I am sorry for the

playtimes I missed, the constant adjustments in schedules, missing out on kisses and cuddles, and shutting myself away. Kylie, my sweet baby girl, thank you for always offering to help with your brothers and constantly trying to help, I love you most. Hudson and Kallum, I missed many opportunities to play, but I promise to make it all up. Thank you, boys, so much for all the love, I love you so much! Lastly and certainly not least, John, we did it, we finally made it through. Our lives are forever changed. You have been such an amazing husband! You picked up my slack and did the job of two parents. You endured my crazy, my screams, my cries, and my stress, never walking away. I will forever cherish the hugs, the wiping of my tears, intervening when I need a break, and allowing me to pursue a new career in health care. I love you forever and promise this is it, no more school. I am indebted to so many, and I am so grateful for the love and endless support you all have showered me with during these last three years. I am eager to begin my new journey as a provider and look forward to demonstrating the values, morals, and competencies acquired at Gardner-Webb University!

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Introduction

Many people, both male, and female, throughout the country experience sleep-disordered breathing, such as obstructive sleep apnea, that remain undiagnosed and untreated for the majority of his or her lives. Approximately 22 billion Americans are affected by obstructive sleep apnea (OSA) and of those, 80% remain undiagnosed and untreated (Nagappa et al., 2015). Those enduring obstructive sleep apnea (OSA) have periods of breathing that ceases and restarts during their sleep cycle. Symptoms suffered are daytime fatigue, gasping for air during sleep, snoring, headache, insomnia, and exacerbations of acute or chronic diseases. Most people diagnosed with obstructive sleep apnea have comorbidities that are exacerbated by obstructive sleep apnea. Many victims of obstructive sleep apnea are overweight, obese, sedentary, hypertensive, smoke tobacco products, and suffer from cardiovascular disease (American Academy of Sleep Medicine, 2022). Research has proven early recognition of obstructive sleep apnea prevents exacerbation of chronic diseases, diagnoses of new ailments, and prompt, timely treatment prevents progressiveness of the sleep disorder.

Problem Recognition

Upon interviewing local health care providers of a rural community within the north-central part of North Carolina, most reported providing education sessions to the underserved community they serve and caring for will be significantly beneficial to the rural community. Nearly 20% of the population within the rural community have a high school degree, General Educational Development (GED), or no high school education or diploma at all (Rockingham County Health Rankings, 2021). Educational sessions were

stated to be effective at providing education on diseases and disorders, such as obstructive sleep apnea.

Problem Statement

Conducting an obstructive sleep apnea education session for the underserved population of the rural community promoted early recognition, screening, diagnosis, and treatment of the sleep disorder. Seixas et al. (2018) noted undiagnosed and untreated OSA patients that were properly educated and participated in education sessions or seminars gained knowledge of the sleep disorder, becoming more aware of symptoms and complications. Through education and self-empowerment provided by the educational session(s), participants act on their health, adhere to treatment and intervention care plans established, and improve overall health (Seixas et al., 2018), obstructive sleep apnea, and correlate symptoms of the sleep disorder (Nagappa et al., 2015). Will providing education on obstructive sleep apnea recognition increase awareness in the rural community within north-central, North Carolina?

Literature Review

A literature review was performed to assess and compare data and research pertaining to obstructive sleep apnea. Obstructive sleep apnea remains misunderstood, and many who are affected are unable to identify symptoms and complications. The literature review resulted in an improved understanding of the sleep disorder and identified the need for rural community education for men and women.

Obstructive sleep apnea affects approximately 22 billion Americans (Nagappa et al., 2015). Risk factors associated with obstructive sleep apnea include but are not limited to being male, being diagnosed with hypertension, smokers being 3 times more likely to

have OSA, and being overweight or obese (Kline, 2021). Victims of obstructive sleep apnea typically remain undiagnosed and untreated, suffering from complications and exacerbations of the disorder. Obstructive sleep apnea drastically increases one's chance of stroke, myocardial infarction, major depression disorder, uncontrolled anxiety, heart dysrhythmias, and dementia (Pepin, 2021). Men and women that are affected by sleep disorders have shown an increased prevalence of depression, hypertension, diabetes, respiratory disease, and cardiovascular ailments (Broström et al., 2013).

Obstructive sleep apnea is associated with several symptoms, yet those affected cannot identify the symptoms he or she suffers from because many are experienced while one sleeps. Symptoms remain underreported and unrecognizable, preventing prompt diagnosis and treatment. Prominent symptoms associated with obstructive sleep apnea are somnolence, daytime fatigue, frequent headaches, choking or gasping for air during sleep, restlessness during sleep, loud snoring, and periods of halted breathing during the night (Kline, 2021). Men and women enduring this prevalent sleep disorder are unable to associate and identify symptoms, limiting accurate reporting to providers, therefore reducing diagnosis.

Misdiagnosing often occurs in those with obstructive sleep apnea due to the inability to correlate symptoms to the sleep disorder. Health care providers frequently misdiagnose those affected by the sleep disorder and typically treat similar differential diagnoses, such as gastroesophageal reflux (GERD), asthma, insomnia, restless leg syndrome, hypothyroidism, and chronic obstructive pulmonary disease (COPD) (Kline, 2021). It is imperative that symptoms of obstructive sleep apnea are conveyed and adequately expressed to accurately diagnose one who may be affected.

Limited or misdiagnosis of obstructive sleep apnea results in many being undiagnosed and untreated. Men and women often remain oblivious to symptoms he or she are experiencing due to decreased health literacy. Decreased health literacy impacts health as the ill are unable to fully understand diseases, correlate symptoms, receive a diagnosis, and undergo effective treatment. Low health literacy is prevalent in the low socioeconomic classes and the undereducated populations, such as rural communities. Health education has a profound influence on one's health. Health promotion is directly linked to increased health literacy, education, and effective acquirement of information required to make an informed health decision (Nutbeam, 2018).

Clear and concise health education allows one to actively take part in his or her health. Diseases, treatments, symptoms, and diagnostics must be thoroughly explained for one to acknowledge the risk and possibility of diagnosis, as well as its effects on personal health. Health literacy is lowest for those that are uneducated or have limited education, such as a high school diploma or less (Fletcher, 2015). In rural communities, the level of education remains low affecting understanding and comprehension of diseases, disorders, and health ailments.

Obaremi and Olatokun (2021) examined the effects of access to health information and limitations to obtaining health information in the rural community of Nigeria. Health information was provided in larger cities of Nigeria, but residents of the rural communities were unable to access pertinent information necessary to understand and correlate personal health to common diseases or disorders. Due to the lack of access to health information, rural communities experienced higher risk and diagnoses of diseases, resulting in a sicker population. Rural communities have lower health literacy

due to inaccessible health information and educational opportunities. Health information and education must be provided and be accessible to effectively understand one's health and seek care when appropriate.

Providing education sessions based on cultural perspectives, views, and beliefs results in improving knowledge and understanding of diseases, such as obstructive sleep apnea. Poor knowledge of obstructive sleep apnea results from disparities in healthcare, such as lack or no health insurance, health care, lack of preventative screening opportunities, and overall medical care. Providing education to members of the community who lack education and understanding of health disorders results in increased treatment adherence, assessment, and thorough understanding of the sleep disorder (Seixas et al., 2018).

Needs Assessment

PICOT Statement

In the rural community setting, how does participation in an education session on obstructive sleep apnea affect the underserved population's knowledge of the sleep disorder, correlate symptoms, and risk of diagnosis as compared to the level of knowledge prior to the educational opportunity?

Targeted Population

The project will deliver free obstructive sleep apnea education to men and women living in a rural community in the north-central part of North Carolina. Participants will need to be at least 18 years and older.

Sponsors/Stakeholders

Stakeholders for this DNP project include the directors of two county libraries within the rural community in the north-central part of North Carolina. Additional stakeholders include medical providers, healthcare clinics, and residents within the community. Residents are key stakeholders as the education will enhance their knowledge and awareness of sleep apnea allowing them to be advocates for their health.

Team Selection

The DNP project consists of a faculty member of the Hunt School of Nursing at Gardner-Webb University who holds a Doctorate in Nursing Practice and Nurse Practitioner certification. Practice partners consist of two managers from two different county libraries within the rural community.

SWOT Analysis

Table 1

SWOT Analysis

SWOT Analysis	
Strength	Weakness
○ Public transportation is free or low-cost ○ Two county libraries have the technology required to provide educational sessions readily available ○ Improve the underserved population's health through offering education and knowledge ○ Space and rooms available at two county libraries	○ The underserved population is not informed and does not attend the educational session ○ Monetary donations and or personal funding by the DNP project leader will be necessary to cover costs of facility rental, advertisement of the educational opportunity, OSA specific brochures/pamphlets, and refreshments ○ Conflicts with scheduling and time constraints

SWOT Analysis	
Opportunity	Threat
○ The goal is to educate all participants on OSA to promote early recognition and screening of the sleep disorder. ○ STOP-Bang screening questionnaire was given to participants to help individuals identify if he or she is at risk for OSA ○ Providing the participants with thorough education and information on OSA and what findings and symptoms to report to a provider ○ Information handouts will be available for consultation and assessment	○ Ensuring participants seek to follow up with PCPs or health departments if at moderate to high risk for OSA ○ Culture, language, literacy barriers

Cost/Benefit Analysis

Table 2

Cost/Benefit Analysis

Cost/Benefit Analysis	
Cost	Budget
Fixed Cost	
• Rent	$50-100
Revenue	
• In-kind donations	$300
Variable Costs	
• Flyers	$40
• Brochures	$125
• Refreshments	$60
• Local News Station Advertisement	$75
• Supplies per person (paper for printed PowerPoint, pens, list of primary care providers, STOP-Bang screening questionnaire)	$5
Total Expenses	$405

Outcomes

Table 3

Project Outcomes

Desired	Expected
○ To enhance the education and knowledge of obstructive sleep apnea (OSA) to the underserved members of the community ○ To empower the underserved members of the community to actively participate in their health and seek medical guidance for OSA ○ To inform the underserved members of the community of the symptoms, contraindications, exacerbations, and life-threatening effects of OSA	○ Participants will become more knowledgeable on the sleep disorder, obstructive sleep apnea (OSA) ○ The underserved population provided the educational opportunity to become familiar with OSA, could identify and correlate symptoms/complications of OSA, and seek medical care for further testing and diagnosis if he or she are at risk of the sleep disorder ○ Education provided allows the underserved population of the community to identify OSA, increasing their opportunity to be diagnosed and treated quickly, improving overall health

Goals, Objectives, and Mission Statement

Goals

The goal of the DNP project was to provide thorough education about obstructive sleep apnea (OSA) to individuals within a rural community in the north-central part of North Carolina to enhance their knowledge and awareness of OSA.

Objectives

- Objective 1: To provide obstructive sleep apnea (OSA) education to individuals in a rural community through handouts and educational presentations.
- Objective 2: To enhance individuals within the rural community knowledge of obstructive sleep apnea (OSA).
- Objective 3: Individuals will be able to identify symptoms of obstructive sleep apnea (OSA).

Mission Statement

The mission statement of this project was to provide accurate, concise, and expedient education and screening of obstructive sleep apnea (OSA) to the underserved population of the rural community in promoting early recognition, diagnosis, and prompt treatment of the sleep disorder.

Theoretical Underpinnings

The theoretical underpinning utilized for this DNP project included the Tannahill Model which was created in 1980. Andrew Tannahill's intervention-based model focuses on health promotion through health education, health prevention, and health protection. The health model suggests providing literacy-appropriate health education to patients, he or she will be able to actively participate in their health care, guiding care plans, treatment, evaluation, health awareness, and enhancement of well-being (Chan, 2018). Health education provides one the knowledge and information necessary to properly care for oneself and become aware of high-risk health behaviors, ailments, diseases, symptoms of diseases, and disease-related risk factors that one may be susceptible to. The

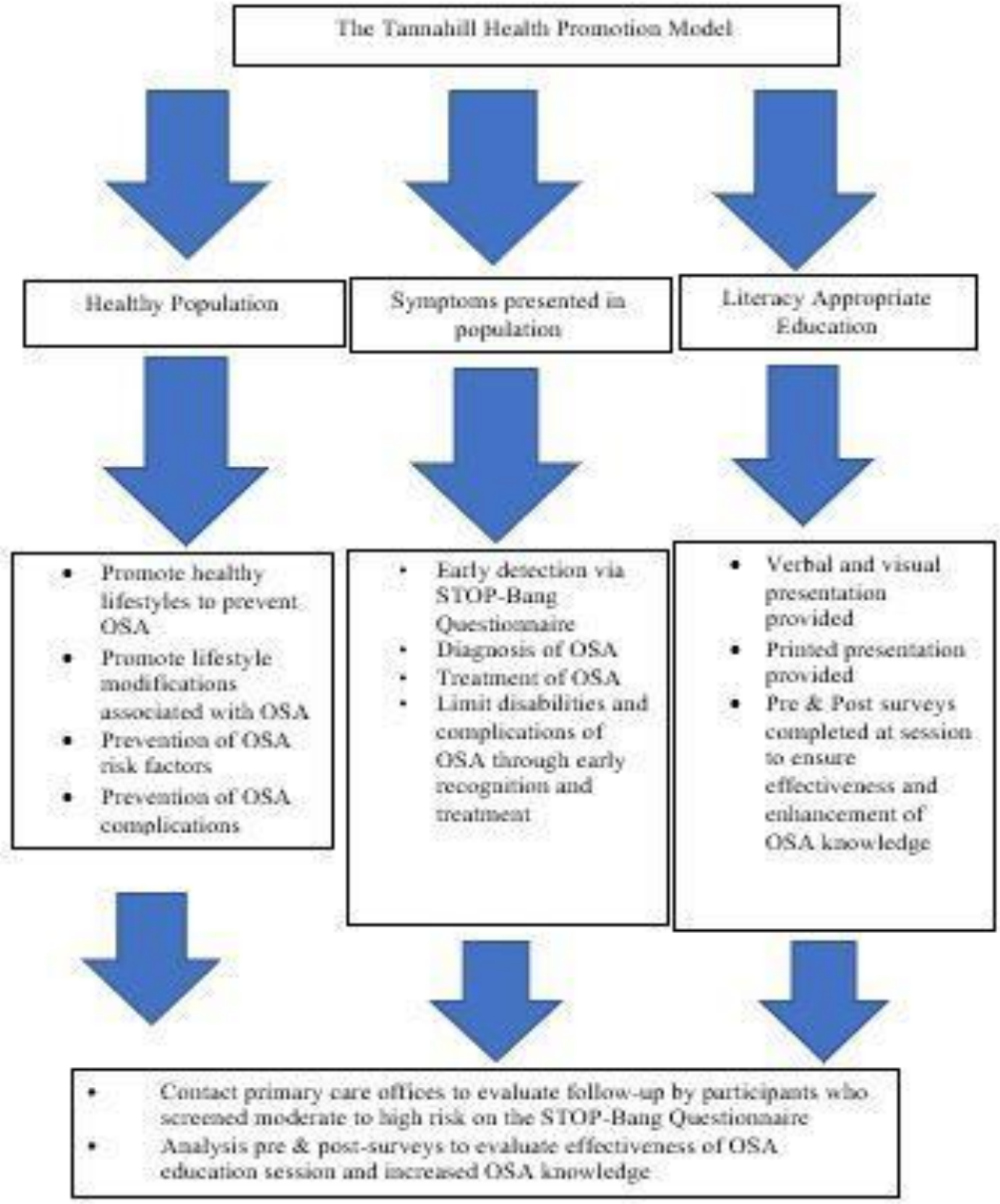
Tannahill Model notes offering health education influences modifications in health decisions, beliefs, behaviors, and attitudes. Tannahill affirms health education promotes personal empowerment, enhances self-worth, improves self-esteem, and builds the confidence essential to making decisions and modifications to improve one's health (Raingruber, 2017). Positively altering a person's health beliefs and behavior through thorough health education results in the improvement of health perception, health decisions, and overall well-being (Evans et al., 2017). Through the delivery of health education, people can identify diseases, correlate symptoms to diseases, and recognize symptoms experienced leading to examination and evaluation by primary care providers. Health education enhances one's knowledge of health, effective and high-quality health care, and promotes the prevention of diseases through health awareness or screenings. Health education is crucial to identifying ailments, ill health, diseases, and the association of symptoms to diseases.

The Tannahill Model was utilized throughout the DNP project as it focuses on providing health education on obstructive sleep apnea (OSA) to the underserved population of the rural community. This health promotion nursing theory associates health education with health prevention and health protection (Chan, 2018). The Tannahill Model applies to the DNP project by indicating delivery of health education to a diverse population improves one's overall understanding of his or her health, enhances the knowledge vital to recognize ill health or diseases, fosters the confidence necessary to actively participate, and make health decisions, and intensify one's accountability to live healthier, promoting well-being. As Tannahill explained, providing health education

positively influences one's overall health by supplying the knowledge and information required to become health conscious and aware. (Figure 1)

Figure 1

CTE Diagram



Note. This figure illustrates the theoretical framework of the project.

Work Planning

The project entailed numerous tasks and necessary steps to ensure implementation and completion. Many resources were utilized to adequately plan and expedite the completion of the project. The project budget illustrates the projected and actual expenses of the DNP project. The GANTT chart displays a sequential breakdown of the planning process and progression timeline of the DNP project adhered to by the DNP student. (Table 4, Figure 2)

Project Budget

Table 4

Budget

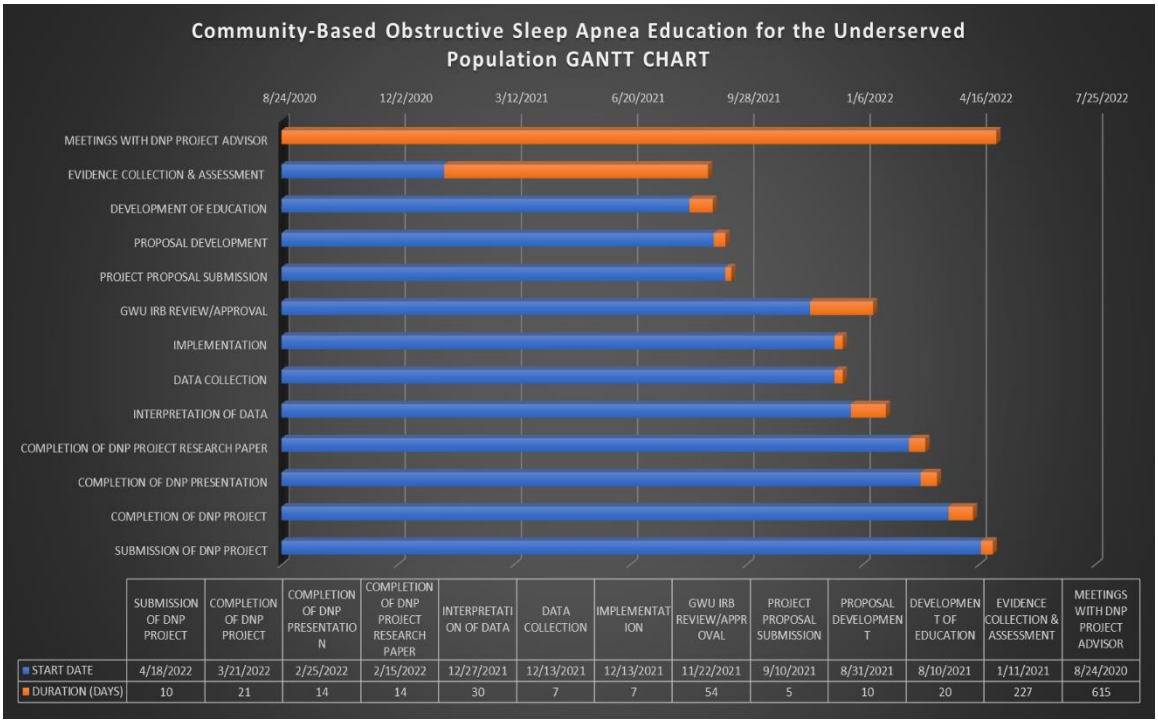
Community-Based Obstructive Sleep Apnea Education for the Underserved Population Seminar Budget

Expenses	Budget	Estimated Costs	Actual Costs
Fixed Costs			
Personnel	$40.00	$0.00	$0.00
Conference Room Rental	$75.00	$50.00	$0.00
Advertisement (Personal Social Media)	$10.00	$0.00	$0.00
Advertisement (County Library's Social Media)	$10.00	$0.00	$0.00
Variable Costs			
Advertisement Flyers For Education Seminar (Qty:15)	$15.00	$10.00	$3.75
PowerPoint Handouts (Qty:30)	$30.00	$20.00	$35.00
Printed Stop-Bang Questionnaires (Qty:30)	$5.00	$2.00	$7.50
Printed Education Pre-Survey (Qty:30)	$5.00	$6.00	$7.50

Community-Based Obstructive Sleep Apnea Education for the Underserved Population Seminar Budget			
Printed Education Post-Survey (Qty:40)	$5.00	$6.00	$15.00
Box Of Paper Clips	$3.00	$1.50	$0.75
Hand Sanitizer	$5.00	$3.00	$3.97
Pens (Box Of 36)	$8.00	$6.00	$4.00
Food (Fruit, Vegetables, Chips, Crackers, Dips)	$75.00	$50.00	$22.00
Drinks (Water, Soda)	$20.00	$15.00	$10.00
Plates, Napkins, Utensils	$20.00	$15.00	$7.00
	$326.00	$184.50	$116.47

Figure 2

GANTT Chart



Note. This figure illustrates the planning and timeline of the project.

Logic Model

Logic models demonstrate the relationship between different aspects of a project. A logic model provides a thorough picture of how a project is expected to work, providing clarity and understanding. A logic model portrays a cause-and-effect relationship between resources and goals, visually explaining the intent of the project. Utilizing the logic model below, resources, activities, goals, and outcomes of the project were identified and evaluated. (Table 5)

Table 5

Logic Model

Purpose	Goals	Inputs	Activities	Outputs	Short-Term Outcomes	Long-Term Outcomes	Impact
To provide obstructive sleep apnea education to the underserved population of a rural community within the north-central part of NC. Residents of the underserved community lack the education, literacy, and means to recognize symptoms associated with obstructive sleep apnea. Underserved members of the community are uninsured/underinsured and do not have a PCP, lacking preventative methods to screen for obstructive sleep apnea and correlate symptoms (Nagappa et al., 2015).	Improved understanding of obstructive sleep apnea Improved awareness of symptoms related to obstructive sleep apnea Promotion of early recognition & diagnosis of obstructive sleep apnea	Funding Time to Complete Project Research Community Participation Adequate Sample Size Supplies & Equipment Required for the OSA Education Seminar Technology Space to Conduct OSA seminar Two volunteers to Assist with the OSA Education Seminar	Conduct needs assessment Develop OSA education Advertise & inform the community about the OSA education seminar Collect current information on OSA Gather information on OSA symptoms & complications Gather information on chronic diseases exacerbated by OSA	Number of participants in the study Education provided to participants Conduct 1-2 OSA education seminars Deliver educational intervention to the underserved	Education provided to participants with early recognition, management, & prevention of disease exacerbation Participants become more aware of OSA & effect on health Participants enhance their knowledge about OSA Participants learn symptoms, complications, & recognize the correlation with OSA Increased engagement in one's health	Reduced morbidity & mortality in an underserved population of the community Increased accountability in self-care Timely & early diagnosis of OSA Early initiation of OSA treatment Reduction in exacerbations of chronic diseases associated with OSA	Increased OSA awareness within the underserved population of a rural community within the north-central part of NC Decreased rate of undiagnosed & untreated OSA cases in the underserved community Increased compliance in OSA treatment and interventions Increased involvement of participants with their health and wellness

Project Implementation

The purpose of the DNP project was to provide obstructive sleep apnea (OSA) education to adult men and women who reside within the rural community in the north-central part of NC. The formal proposal of the doctoral project was submitted by the doctoral student and project chair to the School of Nursing Institutional Review Board with approval. The target population for this project was adult men and women of the rural community. The project setting included two county libraries. Quantitative data were collected utilizing a pre-survey assessing the knowledge of obstructive sleep apnea (OSA) prior to receiving health education on OSA. A post-survey assessing the participants' knowledge of OSA following the health education presentation was given to participants. The pre-and post-surveys were created by the DNP project leader for the purposes of this project and were reviewed by the DNP project chair for face validity. The doctoral student and project chair analyzed the data to evaluate the effectiveness of the health education presentation provided.

All subjects were provided informed consent before participation in the educational presentation and completion of pre-and post-surveys. Subjects had the right to choose to participate or withdraw from the project and completion of the pre-and post-surveys. There was no penalty for withdrawing. No personal information or identifiers were collected nor associated with the educational presentation or surveys. Subjects anonymously completed pre-and post-surveys and submitted them into a locked survey box that remained out of sight of the project leader. The project leader was not affiliated with the sites of the project. There were no potential conflicts of interest between the project sites or the subjects.

The project leader hosted three educational presentation sessions for the adult men and women of the rural community within the north-central part of North Carolina. Permission was obtained by branch managers at two county libraries to conduct educational sessions at their facilities. Flyers were shared via social media and placed in health care offices, community centers, and libraries within the rural community to advertise the free educational event to the rural community. Education was provided on obstructive sleep apnea (what is obstructive sleep apnea, signs and symptoms, effects of obstructive sleep apnea on the body and health, how obstructive sleep apnea is diagnosed, treatments for obstructive sleep apnea, and the importance of early recognition, diagnosis/treatment of obstructive sleep apnea).

The project contained three phases:

- **Phase One:** Upon arrival at the educational presentation, all subjects were given a printed copy of the informed consent and were provided a printed paper copy of the pre-survey for completion, utilized to assess the participant's knowledge of obstructive sleep apnea before the presentation. Participants consented to participate in the survey with the completion of the pre-survey.

The pre-survey included the following:

1. What is Obstructive Sleep Apnea?
2. Which of the following are symptoms of Obstructive Sleep Apnea?
3. Who is at risk of developing Obstructive Sleep Apnea?
4. Obstructive Sleep Apnea is screened for often by providers:
5. What percentage of the U.S. population is undiagnosed/untreated for Obstructive Sleep Apnea?

6. Undiagnosed/untreated Obstructive Sleep Apnea increases one's risk of stroke, heart attack, heart failure, type II diabetes & sudden death:

- **Phase Two:** The educational presentation sessions were conducted by the project leader. Education was provided on obstructive sleep apnea (what is obstructive sleep apnea, signs and symptoms, effects of obstructive sleep apnea on the body and health, how obstructive sleep apnea is diagnosed, treatments for obstructive sleep apnea, and the importance of early recognition, diagnosis/treatment of obstructive sleep apnea) via PowerPoint presentation. The educational presentation session lasted approximately 1.5-2 hours total.
- **Phase Three**: At the conclusion of the educational presentation, all subjects will be provided a printed paper copy of the post-survey for completion, utilized to assess the knowledge of obstructive sleep apnea after the presentation.

The post-survey included the following:

1. What is Obstructive Sleep Apnea?
2. Which of the following are symptoms of Obstructive Sleep Apnea?
3. Who is at risk of developing Obstructive Sleep Apnea?
4. Obstructive Sleep Apnea is screened for often by providers:
5. What percentage of the U.S. population is undiagnosed/untreated for Obstructive Sleep Apnea?
6. Undiagnosed/untreated Obstructive Sleep Apnea increases one's risk of stroke, heart attack, heart failure, type II diabetes & sudden death:
7. Please rate the effectiveness of this educational intervention on a scale of 1 (least effective) to 5 (very effective).

8. Do you feel you understand more about Obstructive Sleep Apnea?
9. Can you now identify signs & symptoms of Obstructive Sleep Apnea?
10. If you experience signs & symptoms of Obstructive Sleep Apnea, would you go to your Healthcare provider now knowing the danger of the sleep disorder?
11. Do you have any recommendations to improve the educational class in the future?

Participants were given the opportunity at the end of the educational presentation session to complete a STOP-Bang questionnaire handout that assessed his or her risk of obstructive sleep apnea. The STOP-Bang questionnaire handout is a screening tool that participants completed on their own. The subjects were encouraged to take the completed STOP-Bang questionnaires with them to their primary care provider for follow-up if identified as moderate or high risk of obstructive sleep apnea. The STOP-Bang questionnaire handout was not collected, and participants kept the handout for their own knowledge.

Implementation of the project was maintained within budget for the DNP project leader. Costs of project implementation were funded by the DNP project leader. Evaluation of budget and costs of project implementation are provided below. (Table 6)

Table 6

Initial & Revised Project Budget Analysis

Project Budget			
Expenses	Budget	Estimated Costs	Actual Costs
	Fixed Costs		
Personnel	$40.00	$0.00	$0.00
Conference Room Rental	$75.00	$50.00	$0.00
Advertisement (Personal Social Media)	$10.00	$0.00	$0.00
Advertisement (County Library's Social Media)	$10.00	$0.00	$0.00
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Printed Education Pre-Survey (Qty:30)	$5.00	$6.00	$7.50
Printed Education Post-Survey (Qty:40)	$5.00	$6.00	$15.00
Box Of Paper Clips	$3.00	$1.50	$0.75
Hand Sanitizer	$5.00	$3.00	$3.97
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Project Budget			
Drinks (Water, Soda)	$20.00	$15.00	$10.00
Plates, Napkins, Utensils	$20.00	$15.00	$7.00
Total Costs	$326.00	$184.50	$116.47

Project Closure

Participation in the project was voluntary and posed no risks to subjects. The project did not involve deception of any kind. Subjects who participated in the project received no incentives. All subjects had the right to withdraw from the project at any time without penalty. If subjects wished to not participate in the project, they were instructed not to complete the pre-or post-survey or submit a blank survey. It was the right of subjects to leave the project at any time. There was no penalty for withdrawing. No personal information or identifiers were collected or associated with surveys.

At the completion of the three educational presentation sessions, the project leader and the project chair assessed, analyzed, and reviewed data collected via the pre-and post-surveys. Survey results and data were documented into a personal, password-protected Microsoft Word and Excel Spreadsheet and saved to a personal USB flash drive, and kept with the project leader in a locked box. The results and research were presented in a formal DNP Project paper and on Scholar's Day. Information containing project findings will be presented to community healthcare providers and healthcare organizations via a presentation. The USB flash drive and questionnaires will be stored at the School of Nursing for 3 years and then be destroyed.

Interpretation of Data

The purpose of the project was to provide obstructive sleep apnea education to the men and women of a rural community. By educating men and women of the rural community, their knowledge of obstructive sleep apnea is enhanced, improving their ability to identify risk factors, symptoms, debilitating effects on the body, and understanding the importance of being diagnosed and treated for the sleep disorder promptly. Early recognition, diagnosis, and prompt treatment of obstructive sleep apnea greatly reduce debilitating consequences and complications one may experience.

A pre-survey was provided for participants to complete prior to receiving education to assess their current knowledge of the sleep disorder. At the completion of the educational presentation, a post-survey was provided for participants to complete to assess their understanding of obstructive sleep apnea after receiving education. The project leader hypothesized participants would be more knowledgeable about obstructive sleep apnea after partaking in the educational presentation, successfully understanding obstructive sleep apnea.

Prior to the educational session, a pre-survey was completed by participants to assess their knowledge of obstructive sleep apnea. Pre-survey results consisted of 56%of the participants answering correctly for question one. Eighty-eight percent of the participants answered correctly for question two. Eighty-eight percent of the participants answered correctly for question three. Sixty-eight percent of the participants answered correctly for question four. Nineteen percent of the participants answered correctly for question five and 100% of the participants answered correctly for question six.

At the completion of the educational presentation, a post-survey was completed

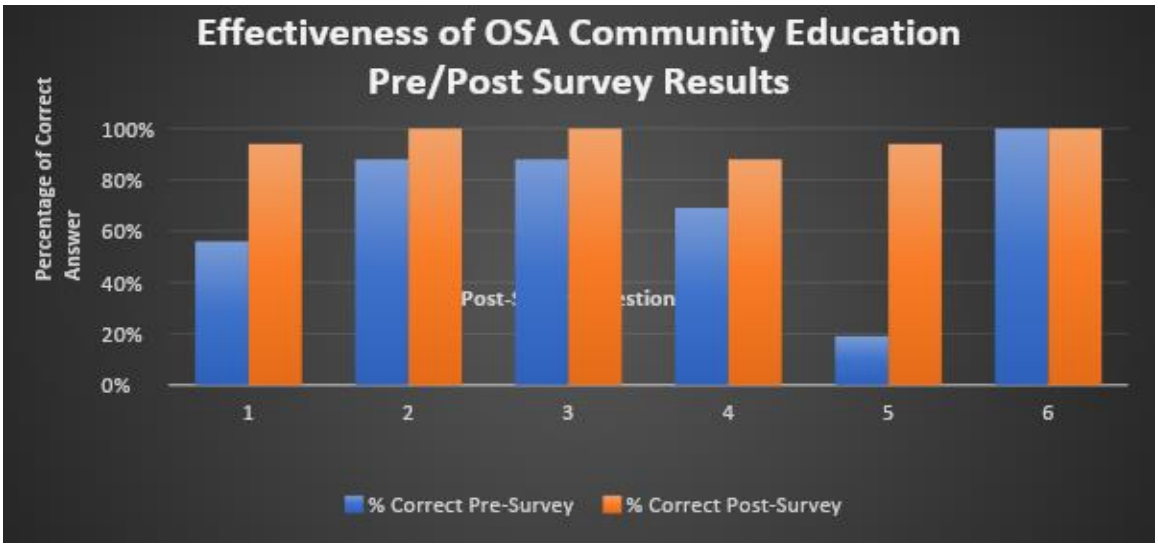
by the participants to assess their obstructive sleep apnea knowledge after receiving education. Post-survey results consisted of:

- 94% of the participants answered correctly for question one.
- 100% of the participants answered correctly for question two.
- 100% of the participants answered correctly for question three.
- 88% of the participants answered correctly for question four.
- 94% of the participants answered correctly for question five.
- 100% of the participants answered correctly for question six.

Upon review of the data, participants were effectively educated about obstructive sleep apnea and the accuracy of answers increased post-educational presentation. The following graph summarizes the data comparison between the pre-and post-surveys. (Figure 3)

Figure 3

Pre/Post Survey Results



Note. This figure illustrates the accuracy of survey answers before and after the OSA education presentation.

Data analysis utilized in this project was accomplished using a paired t-test. The sample size included 16 men and women from the rural community (n=16). An analysis measurement of the pre-and post-survey was calculated comparing the survey answers. The results of the pre-survey (M=69.79%, SD=0.2691) and post-survey (M=95.83%, SD=0.0447) indicated the educational presentation provided significant improvement in the knowledge of obstructive sleep apnea. Data analysis resulted: $t(5) = -2.37$ and p-value<0.03 conclude the educational presentation effectively improved the participant's knowledge of obstructive sleep apnea.

Conclusion

Obstructive sleep apnea symptoms, risk factors, effects on the body, treatments, and diagnostics are important components of early recognition and prompt treatment. Participants were able to identify obstructive sleep apnea symptoms, risk factors, effects on the body, and treatments after partaking in the educational presentation. At the conclusion of the project, a higher percentage of the participants answered survey questions accurately, indicating an understanding of the sleep disorder. Providing education to the rural community improved one’s knowledge of obstructive sleep apnea which can help lead to early recognition, diagnosis, and prompt treatment of the sleep disorder. In conclusion, the educational session on obstructive sleep apnea was effective in increasing awareness and knowledge in a rural community within the north-central part of North Carolina.

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