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Increasing CPR Awareness in School Staff

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by

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Abstract

There are a limited number of staff members in Stokes County Schools that are CPR certified. A CPR workshop was conducted to provide an opportunity to allow more staff members to become certified, to gain knowledge and gain confidence in Cardiopulmonary Resuscitation, and to reduce delays in administering aid. Participants were asked to complete the Perceived Competence Scale (PCS) before and after participation in the CPR Workshop. The PCS is a 4-item questionnaire, based on a 7-point Likert scale. Answer choices range from Not True to Very True. Each question provides a lead-in statement, allowing for the concept being studied to be added to the question. A paired-sample *t*-test was calculated to compare the mean pretest score to the posttest score. The mean on the pretest was 8 (*sd* = 21.3), and the mean on the posttest was 28 (*sd* = 0). A significant increase from pretest to posttest was found $t(3) = -8.66$, $p < .05$. The results revealed that all four staff members that took part in the workshop felt more confident in their CPR knowledge and ability to deliver CPR. Overall, the results showed that the workshop helped to increase awareness, confidence, and knowledge of CPR.

Keywords: CPR, teachers and CPR, staff and CPR, and CPR in schools

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Problem Recognition

Cardiopulmonary resuscitation (CPR) is an essential skill that can impact the outcomes of individuals experiencing a medical emergency. Each year cardiac arrest claims the lives of more individuals than cancers and viruses. Cardiac arrest is occurring more outside of the hospital setting. Initiating Cardiopulmonary resuscitation (CPR) immediately improves outcomes, it can double or triple the individual's chance of survival (American Heart Association, 2022).

School nurses are responsible for maintaining the health needs of all children and staff in the school they are assigned to. This includes maintaining updated information related to significant health issues and providing educational training to staff to assist in the safe care of these individuals. The school nurse is responsible for the emergency care of individuals and emergency action plans for the schools. They also help coordinate health-related education programs (Simone, 2021), which may include programs such as CPR training.

In 2007, a local Stokes County student died while participating in the Reserves Officer Training Corps (ROTC). The student suffered cardiac arrest and due to no availability of an Automated External Defibrillator (AED) and the delay in the initiation of CPR, the student died on campus. The school was not prepared for this emergency (Boone-Wood, 2007). North Carolina currently does not require staff to be Cardiopulmonary resuscitation (CPR) certified (SchoolCPR, n.d). There are 19 schools in Stokes County, in which there is no requirement for the number of staff members that must be certified in CPR, nor is there a workshop available for each school. The number of staff needed to be certified in CPR varies from school to school. Some schools have

three CPR-certified staff members and others may have six CPR-certified staff members. There are currently three out of five school nurses in Stokes County that can teach CPR, with limited availability for new staff members to be trained. These factors all play a part in the number of staff that is trained per school. The staff members that are trained are not always available during an emergency and some of the staff members float from school to school. Mell et al. (2017) share that on average, emergency medical services take about 7 minutes for response time. In rural areas, response time doubles to an average of 14 minutes. It has been shown that initiating cardiopulmonary resuscitation while emergency medical services are en route results in better patient outcomes (Mell et al., 2017).

Problem Statement

There are a limited number of staff members in Stokes County Schools that are CPR certified. The goal of this DNP project was to conduct a CPR workshop to provide CPR education to staff at an elementary school, this will ultimately assist in increasing CPR certifications and CPR knowledge in an effort to reduce delays in administering CPR in the event of an emergency.

Literature Review

A literature review was conducted by searching a variety of databases and search engines. These databases included PubMed, MEDLINE, and Google Scholar. Key terms for the search included CPR, teachers and CPR, staff and CPR, and CPR in schools.

Vermeulen et al. (2019) surveyed 95 Chicago teachers on their knowledge of CPR, AED, cardiac arrest, and preparedness for emergencies. The results revealed that 30% of the staff were not confident/prepared for emergencies despite having previously

learned about CPR/AED, 66% of the staff were trained in the CPR/AED, 40% of the teachers did not know how to work AED, 90% reported that they would like to know more about CPR, and 3.2% reported that CPR was available/offered to them through the school system. This was a survey only to gather knowledge (Vermeulen et al., 2019).

Birkun and Frolova (2021) investigated the prevalence of CPR training, knowledge, attitudes, and willingness to perform CPR among school teachers. Participants included 5,921 teachers that completed an online survey. They were asked to rate their knowledge and willingness to perform CPR on a 5-point scale. They were also asked to provide the recommended number of chest compressions and where the hand positioning needed to be for compressions. The study revealed that 64% of teachers had previous CPR training. Of those, 55% had CPR training a year or more ago, 44% had completed the course only once, and 38% reported not getting trained due to no demand to be. In addition, 44.6% reported their knowledge/preparedness as being poor, while 16% were able to specify the number of compressions correctly and 66% were correct on hand positioning.

Abelairas-Gomez et al. (2021) utilized a cross-sectional study to evaluate the knowledge of first aid and basic life support of school teachers in Spain. There were 3,516 teachers that responded to a 4-part survey which included general information about participants, previous training experience, cardiac arrest and basic life support questions, and their attitudes towards including CPR in the curriculum. The study showed that 87% of the teachers that were in charge of first aid only, called EMS; while, 75% reported knowing first aid, and 17% reported that they taught first aid. Out of the 3,516 teachers that participated in the survey, 65% of them were willing to perform CPR in the

event of an emergency and 98% agreed to include first aid in the curriculum.

De Smedt et al. (2018) conducted a survey to explore the willingness of students, teachers, and principals to conduct bystander CPR if needed. Participants included 390 Flemish school children (10-18 years old), 439 teachers, and 100 principals. Participants were asked to complete a survey including demographics, their CPR training experience, and their attitude towards CPR teaching and training. Thirty-three percent of children in the survey had CPR training previously, 81% of teachers had CPR training, and 82% of principals had CPR training. Seventy-seven percent of children were willing to take a CPR course, 79% of teachers were willing to learn CPR, and 86% of principals were willing. Teachers revealed that 84% of them would be willing to perform CPR in real-life situations. Ninety-two percent of principals were willing to perform CPR if needed.

Khademian et al. (2020) explored the effect of a CPR training program on the knowledge and performance of CPR in Iran. Ninety-two participants were asked to complete a demographic form, a CPR knowledge questionnaire, and an observational CPR checklist. Participants were divided into a control group and an intervention group. The intervention group participated in a training session that included 2 hours of lecture and 2 hours of practicing with manikins. The study concluded that there was a significant increase in knowledge scores in the intervention group after the training session.

Alharbi et al. (2016) conducted a cross-sectional study to determine knowledge of CPR among teachers in Riyadh, Saudi Arabia. Two hundred twenty-eight participants completed a 12-question questionnaire about their knowledge of CPR. The study concluded that 57% of the teachers had no prior knowledge of CPR. Approximately 23.7% of teachers had experienced an emergency that required CPR intervention during

school hours, and 38.9 % of the teachers had performed CPR during school hours. When asked about ways to improve CPR knowledge, 68% responded to the need to add CPR to the curriculum (Alharbi et al., 2016).

Pichel Lopez et al. (2018) conducted a quasi-experimental study to assess the quality of basic life support by teachers after a training program. Eighty-one teachers completed a knowledge test, basic life support training, and a performance test. The participants attended a 40-minute lecture and an 80-minute hands-on workshop. Post training, the participant's ability to perform CPR skills increased from 1.2% to 46%, the quality of chest compressions and hand positioning increased from 72.3% to 97.6 %, and the quality of chest compressions delivered at the recommended rate increased from 26.9% to 64.2%. Overall, the study concluded that the training program increased the ability of teachers to perform CPR skills.

Hirlekar et al. (2018) conducted a retrospective study to explore the effect of comorbidities on the survivability rate of cardiac events occurring outside the hospital. The study included 12,012 patients, collected from the National Patient Registry run by the Swedish National Board and Welfare from 2011-2015. Of the patients included, only 13% of patients survived to 30 days. The study showed as comorbidities increased the survival rate decreases.

Needs Assessment

Sponsors/Stakeholders

The sponsors and stakeholders involved in this project included the staff of London Elementary, the Director of Academic and Emotional Support, the school nurses of Stokes County, and EMS. The staff's willingness to participate in the project affected

the project overall and was considered high power and low interest. Those with high power and high interest included the Director of Academic and Emotional Support and the school nurses, as this training would add support in the event of emergencies. Those with low power and low interest included EMS. The low power, high interest included the students of London Elementary.

SWOT Analysis

The strengths of this project included the ability to provide free CPR training to the staff of London Elementary. An additional strength was the London Elementary staff's willingness to be trained and certified in CPR. In Stokes County, there was also parental support for wanting more staff certified. Another strength included the benefit of having more staff CPR certified, which reduces delays in delivering CPR during an emergency. Weaknesses of the project included limited availability of training courses, staff availability to take the course, an already overwhelmed staff, costs, and limited school nurse resources. Opportunities included presenting the importance and benefits of CPR, providing CPR workshops at London Elementary, and assisting with the training of additional staff. Threats included the current lack of incentive to become CPR certified.

Available Resources

At the time of this project, there were only three school nurses that were trained to teach CPR classes at London Elementary; however, they were not able to provide CPR workshops to all teachers and staff interested in getting CPR certified. The schools of Stokes County have their own equipment for CPR demonstration, along with access to projectors and computers. The local EMS of Stokes County offered to assist with CPR training courses for staff members to become certified.

Desired/Expected Outcomes

The desired and expected outcome was to initiate/designate a CPR workshop at London Elementary School to assist with the training of additional staff within the school, which would in turn increase the amount of CPR-certified staff members in the school.

Team Selection

The Director of Academic and Emotional Support for Stokes County Schools served as the Practice Partner for this DNP Project. Her daily responsibilities included maintaining all staff CPR certifications/renewals and supporting additional staff training. She was able to assist with access to London Elementary. The Stokes County EMS will conduct the CPR training. Additional team members included the principal and staff at London Elementary School.

Cost/Benefit Analysis

This project was estimated to cost approximately $221 for 30 participants. In 2020, the Federal Emergency Management Agency (FEMA) stated that the statistical value of life was estimated to be $7.5 million (FEMA, 2020).

Scope of Project

This project intended to provide access to a CPR workshop for staff at London Elementary School, to increase the number of CPR-certified staff on campus, in the event of an emergency. This project did not address the retention of CPR certification, or the number of staff certified post-workshop. Potential barriers to this project included staff hesitancy to get CPR certified.

Goals, Objectives, and Mission Statement

Goals of the Project

The goal of this project was to design and initiate a CPR workshop at London Elementary School to increase the number of CPR-certified staff on campus, in the event of an emergency.

Process/Outcome Objectives

Process Objectives

- Initiate/designate a CPR workshop at London Elementary School to assist with the training of additional staff.

Outcome Objective

- At the conclusion of this DNP Project, there will be an increased number of CPR-trained staff at London Elementary.

Mission Statement

The mission of this DNP project was to bring more availability of cardiopulmonary resuscitation (CPR) training opportunities to the staff of a local elementary school in an effort to provide quick and effective response times in the event of an emergency.

Theoretical Underpinnings

The theoretical framework for this project was Patricia Benner's Novice to Expert theory. Benner's theory focuses on the stages of competence, which include: novice, advanced beginner, competent, proficient, and expert. Benner describes a novice as someone with brand new exposure to information, the limited ability to think quickly, and a person with limited experience to refer to in a situation. An advanced beginner is

described as someone who has the knowledge to pull from, but not the experience. Competent persons can assess and recognize with ongoing experience but are not considered quick-witted. Proficient persons are considered quick, they can make adjustments as they come, and see the picture as a whole. An expert has the ability to make decisions without checking off lists and is considered more intuitive with their work because of their experience and the large knowledge base they have obtained. Benner's theory shows that she believes to become an expert and to become competent at something one must go through each stage of competence (Nursing Theory, 2021).

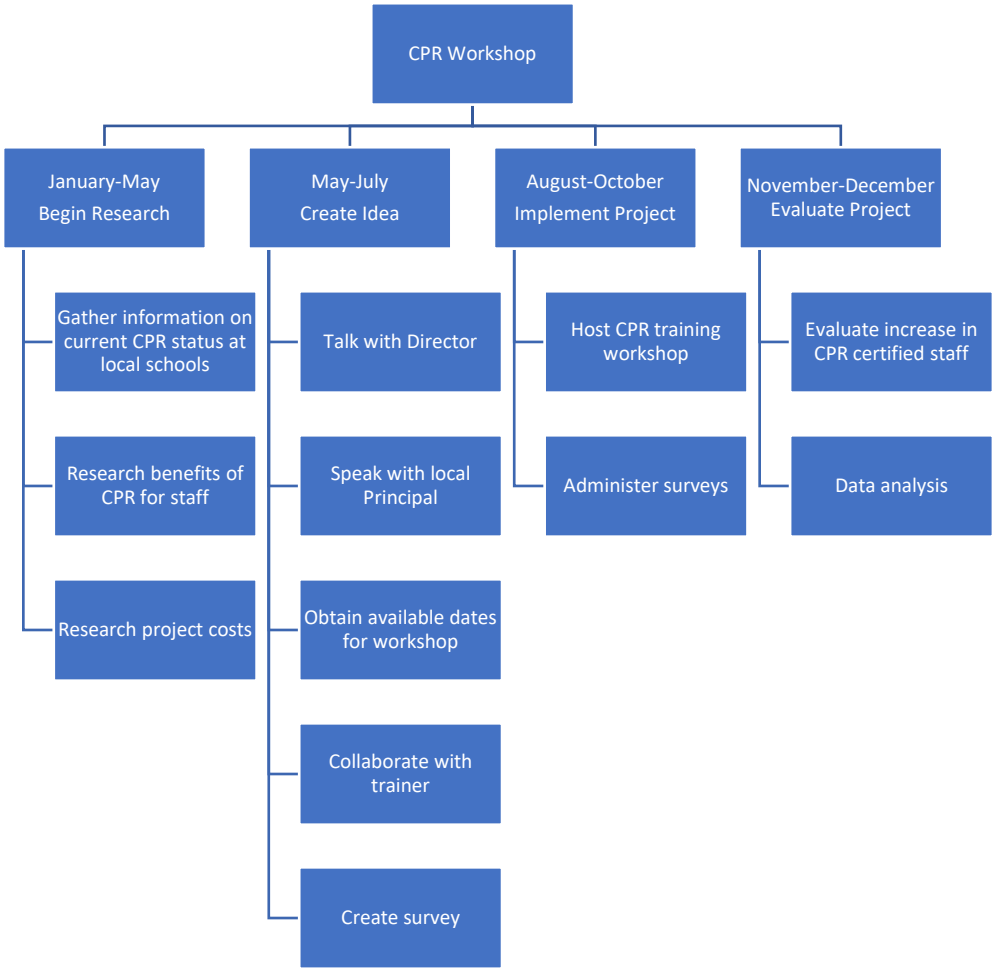
As teachers become CPR certified they will go through the stages as they begin the course and become more educated and confident in their knowledge and ability to perform CPR. They will begin as a novice and eventually grow in stages (Nursing Theory, 2021). The teachers will be able to utilize each other for additional support based on levels of experience and gain expertise having taken the workshop together.

Work Planning

Timeline

Figure 1

Timeline of DNP Project Implementation



Evaluation Planning

Figure 2

Logic Model

Inputs	Outputs		Outcomes - Impact		
What we will invest	Activities - What we will do	Participation – Who we will reach	Short Term Results	Medium Term Results	Long Term Results
Trainer Time Materials Staff	Provide Workshop Provide education	Staff members	Learning CPR	Behavioral Action Feel more comfortable in the event of an emergency and when asked questions about CPR	Ultimate Impact Will be able to perform CPR and utilize CPR if needed

Project Implementation

Threats and Barriers

Implementing a project at a school involving teachers and outside resources could have many threats and barriers to interfere with the success of the project. The threats and barriers that occurred were minimal participation. There were only four staff members arrived and participated in the CPR workshop. The Stokes County EMS staff also had a delay in their start due to traffic and technical difficulties.

Monitoring of Implementation

The DNP Project Leader coordinated with the Stokes County Emergency Medical Services (EMS) staff to provide a free CPR workshop to staff members at London Elementary School. The class was taught by EMS staff that are certified as American Heart Association CPR instructors. The EMS staff used the American Heart Association CPR curriculum which included the use of videos, books, tests, and a skills demonstration and checkoff. The workshop was hosted on a teacher workday and took 4 hours.

At the beginning of the workshop, the DNP Project Leader introduced herself, the purpose of the project, and explained informed consent. Participants were asked to complete the Perceived Competence Pretest. Participants completed the CPR workshop. Following completion of the workshop, they were asked to complete the Perceived Competence Posttest.

Participants were asked to complete the Perceived Competence Scale (PCS) before and after participation in the CPR Workshop. The PCS is a 4-item questionnaire, based on a 7-point Likert scale. Answer choices range from Not True to Very True. Each

question provides a lead-in statement, allowing for the concept being studied to be added to the question. The tool was created by the Center for Self-Determination Theory and is free for public use. The tool is scored by adding up all items from each question. The higher the score, the higher the level of perceived competence. The questions for this project were reviewed by the DNP Project Chair for face validity.

Interpretation of the Data

A paired-sample *t*-test was calculated to compare the mean pretest score to the posttest score. The mean on the pretest was 8 ($sd = 21.3$), and the mean on the posttest was 28 ($sd = 0$). A significant increase from pretest to posttest was found ($t(3) = -8.66$, $p < .05$. The results revealed that all four staff members that took part in the workshop felt more confident in their CPR knowledge and ability to deliver CPR.

Conclusion

As a result of this project, there is now four more CPR-certified staff at London Elementary School, giving the school more resources to utilize in the event of an emergency. Staff will now have the ability and resources to attend CPR training. This project will be sustained by the partnership with Stokes County EMS, which will continue to assist with CPR workshops for London Elementary. Going forward it would be beneficial to have additional incentives to encourage additional staff to want to get CPR certified. Overall, the results showed that the workshop helped to increase awareness, confidence, and knowledge of CPR.

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