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The Opioid Epidemic: Assessment of Primary Prevention Interventions in Muskingum County Public Schools

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The Opioid Epidemic: Assessment of Primary Prevention Interventions in Muskingum County

Public Schools

Terra Armstead, MSN RN

Doctor of Nursing Practice Final Scholarly Project

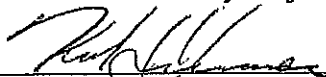
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Doctor of Nursing Practice

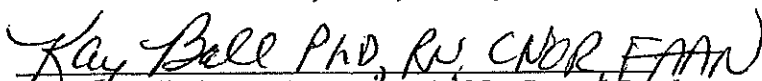
Otterbein University

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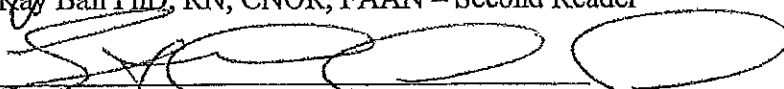
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Executive Summary

Understanding that the opioid epidemic is much greater than an epidemic of mortality is critically important. This epidemic is also an epidemic of dependence, addiction, disability, and other severe adverse events affecting millions of people in the U.S. (Franklin, Sabel, Jones, Mai, & Baumgartner, 2015). The opioid epidemic is complex and can be considered a manmade epidemic.

Many initiatives are currently in place across the U.S. that focus on tertiary prevention. However the literature reveals a lack of initiatives regarding primary prevention related to the epidemic. In 2014, 27 million people ages 12 years or older had used illicit drugs in the past 30 days which represents approximately 1 in 10 or 10.2% of Americans, and 11% of adolescents meet diagnostic criteria for substance abuse disorder before the age of 18 (Searcy, 2017, p. 2). The data reveals addiction is a disease with a potential onset during the pediatric lifespan.

The PAX (Peace, Productivity, Health, and Happiness) Good Behavior Game (GBG) is a universal evidence based intervention program that teaches self-regulation in young people with dramatic effects on behavior, academic, and long-term outcomes as preventing mental health and addiction disorders. The PAX GBG evolved from the original Good Behavior Game developed in the 1960s to reduce disruptive behaviors in an elementary school classroom. Kellman et al, published a study that revealed the PAX GBG implemented in the first and second grade classrooms can reduce drug and dependence disorders (Kellman et al., 2014). In 2002, prevention scientist D. Embry referred to the GBG as a behavioral vaccine which is a scientifically proven routine or practice put into widespread daily use that reduces morbidity and mortality (Embry, 2002).

Although evidence-based primary prevention programs exist, they are underutilized across the United States. School nurses have the ability to collaborate and serve as change agents with administrators, teachers, families, and community leaders and take an active role in the prevention aspect of addiction among school aged children in public schools. Focusing on school nurses to promote initiatives related to primary preventions could increase the number of evidence based prevention intervention programs and make a positive impact on primary prevention targeted at the opioid epidemic.

Analysis of the data collected through the assessment of Muskingum County School Nurses revealed the same trend noted across the U.S. Evidence-based primary prevention interventions are underutilized in Muskingum County; however the education forum was successful as evidenced by the increased awareness and willingness of the school nurses to advocate for implementation of the PAX GBG.

Introduction

According to the Centers of Disease Control and Prevention (CDC), 116 Americans die every day from an opioid related drug overdose, and from 1999-2016 more than 350,000 people died from an overdose involving any opioid, including prescription and illicit opioids (Centers for Disease Control and Prevention, 2017). In 2007, unintentional drug overdoses became the leading cause of injury death in Ohio surpassing motor vehicle crashes, and the trend has continued through 2017 (Ohio Department of Health, 2019). In 2017, the states with the highest rates of death due to drug overdose were West Virginia (57.8 per 100,000), Ohio (46.3 per 100,000), Pennsylvania (44.3 per 100,000), the District of Columbia (44.0 per 100,000), and Kentucky (37.2 per 100,000) (CDC, 2018). In 2016, the Ohio death rates caused by opioid related drug overdoses increased to 4,050 from 3,050 in 2015 (ODH, 2019). On a more local level of the epidemic, the number of deaths in Muskingum County for 2018 was 45 and in 2017, the total number of deaths was 22 (D. Zaato, personal communication, January 23, 2019). Based on the current drug overdose death rates in the United States, the CDC defined the problem as a national opioid epidemic affecting morbidity and mortality rates. In addition, drug overdose deaths are the leading cause of preventable injury death in the United States (Kerensky & Walley, 2017).

Understanding the opioid epidemic is critically important, the opioid epidemic as much greater than an epidemic of mortality- it is also an epidemic of dependence, addiction, disability, and other severe adverse events affecting millions of people in the US (Franklin, Sabel, Jones, Mai, & Baumgartner, 2015). The opioid overdose epidemic is a statistical reflection of unintentional overdoses that lead to unintentional deaths. Unintentional overdoses and unintentional deaths are the outcome of addiction.

Unintentional drug overdose deaths are preventable deaths and advanced practice nurses have the ability to lead clinical prevention interventions to provide risk reduction and illness prevention through interprofessional collaboration. The advanced practice nurse can apply the epidemiology approach of primary prevention to decrease the number of Americans who suffer from addiction with focus on the American Association of Colleges of Nursing Doctorate of Nursing Practice (DNP) essentials VI: inter-professional collaboration for improving patient and population health outcomes, and VII: clinical prevention and population health for improving the nation's health.

The opioid epidemic is complex and can be considered a manmade epidemic. Primary prevention is the ultimate goal of epidemiology; however, the literature reveals a gap regarding implementation of evidence based primary prevention programs. The epidemiologic approach needs to be a dual approach including primary and tertiary prevention. Primary prevention represents an action taken to prevent the development of the disease and tertiary prevention represents preventing complications in those who have already developed signs and symptoms of the illness and have been diagnosed (Gordis, 2014). In 2014, 27 million people ages 12 years or older had used illicit drugs in the past 30 days which represents approximately 1 in 10 or 10.2% of Americans, and 11% of adolescents meet diagnostic criteria for substance abuse disorder before the age of 18 (Searcy, 2017). Focusing on evidence-based addiction prevention programs prior to adolescence will probably decrease the incidence of addiction which will decrease the unintentional overdose death rates.

Problem Statement

Adolescents who use addictive substances before the age of 15 are 6.5% more likely to develop an addiction compared to those who delay use until age 21 or older (Searcy, 2017). The

lack of evidence-based addiction prevention programs in the preadolescent population may contribute to the increased number of unintentional overdose deaths in Muskingum County. Are public school nurses (P) aware of evidence based primary prevention interventions (I) related to the opioid epidemic?

The purpose of the project is to increase evidence based primary prevention interventions to the preadolescent population, within Muskingum County, with the intent of decreasing the number of unintentional overdose deaths associated with the current opioid epidemic. The project applied DNP essentials V and VII that focus on health care policy for advocacy in healthcare, and clinical prevention and population health to improve the nation's health. Application of primary prevention of the epidemiological process provided structure to assess current initiatives being utilized to combat the epidemic. The following are the specific objectives for the project:

1. Assess current primary prevention interventions being utilized in Muskingum County public schools, private schools and community school
2. Provide instruction/education and implementation of the PAX Good Behavior Game
3. Increase the number of school aged children in Muskingum County who receive the PAX GBG
4. Follow-up on the impact and attitudes of the instruction/education offered

Background and Significance of Problem

The nation's drug problem is complex; often opioids are identified as the crucial element of the nation's drug problem and that prescription opioids are the cause of the tragic drug overdose epidemic (DuPunt, 2018). The nation's drug problem extends well beyond the opioids; seldom opioids are the route to addiction for people who do not have prior

histories of misuse of alcohol and other drugs (DuPunt, 2018). The totality of the nation's drug epidemic is widespread recreational pharmacology in which people with addiction use the drugs for "self-medication." Addiction continues to grow as a public health concern with significant impacts on morbidity and mortality, health care expenditures, crime, and health outcomes (DuPunt, 2018). The public health approach needs to focus on preventing the addiction with a multifaceted approach involving medical and nonmedical evidence based prevention interventions.

Advanced practice nurses can take an active role and make an impact implementing evidence-based interventions when the concepts of epidemiology are applied. Many nurses spend years working at the frontline of healthcare and see first-hand the unfavorable outcomes of a disease process but lack the knowledge of how to implement evidence-based practices to make an impact and decrease unfavorable outcomes of a disease process. Application of DNP essential V- (health care policy for advocacy in health care), and essential VII (clinical prevention and population health for improving the national's health) allow the advanced practice nurse to impact the unfavorable outcome. The combination of DNP essentials V and VII and utilizing the epidemiological approach applying primary, secondary, and tertiary prevention strategies, can impact the unfavorable outcome related to the increased death rate due to unintentional deaths from opioid overdoses. Advanced practice nurses can lead the healthcare culture to change practice, and implement evidenced based practice to improve the outcomes of those whom care is provided.

Many initiatives are currently in place across the United States that focus on tertiary prevention related to the opioid epidemic as a result of addiction. Rando et al., concluded intranasal naloxone administration by police first responders is associated with decreased deaths

in opioid overdose victims (Rando et al., 2015). A study by Penm et al, 2017 focused on the impact of the Governor's Cabinet Opiate Action Team (GCOAT) made on reducing the supply of opioids by prescription with a direct correlation noted with a decreased number of unintentional drug overdose deaths involving prescription opioids (Penm et al., 2017). Although these two studies prevented deaths related to unintentional overdose, and Ohio had the lowest number of prescription opioid overdose deaths since 2009, the overall death rate associated with overdose increased from 3,050 in 2016 to 4,050 in 2017 (ODH, 2018). Interestingly fentanyl was involved in 58.2 percent of all unintentional drug overdose deaths in 2016 as compared to 37.9 in 2015, 19.9 percent in 2014, and 4 percent in 2013, and 3.9 percent in 2012 ("Ohio Drug Overdose Data: General Findings ," 2018). The results indicate tertiary prevention efforts in Ohio are effective, but the increased death rate reflects a gap in the epidemiological approach related to primary prevention. The statistics also indicate the core issue of the opioid epidemic is directly related to addiction. The disease of addiction is not decreasing, the drug of choice for the people with substance abuse addiction continues to change. The current drug of choice has an increased incidence of unintentional overdose. Addiction is a chronic, life threatening disease without a cure in which the patient lives in remission or relapse. Thus, the rationale to increase primary prevention interventions of addiction and prevent the occurrence of the disease by utilizing primary prevention is important.

Focusing initiatives related to primary prevention of addiction could reduce the future number of fatal unintentional overdoses, and prevent future shifts in the drug of choice abusers who are addicted because of access or availability of the substance. The first-ever U.S. Surgeon General's report on addiction provides a starting point for systemic changes in the nation's approach to preventing, treating and managing substance use disorders as serious, chronic

diseases (DuPunt, 2018). The report indicates new prevention efforts need to encourage youth to grow to adulthood not using alcohol, nicotine, marijuana or other drugs for reasons of health (DuPunt, 2018). More than 600,000 deaths have occurred to date as a result of the opioid epidemic and 180,000 more are predicted by 2020 (Gostin, Hodge, & Noe, 2017). In addition, one of the goals of Healthy People 2020 is to reduce substance abuse to protect the health, safety, and quality of life for all, especially children (Office of Disease Prevention and Health Promotion, 2018). Healthy People 2020 also recognizes that educational and community-based programs play a key role in preventing disease and injury, while improving health and enhancing the quality of life.

Based on the statistics that link early onset of substance use can lead to increased incidence of addiction, and addiction being a disease with onset during the preadolescent stage of development, an area for dissemination of primary prevention interventions for youth is public and private schools. Public and private schools provide a vast resource of access to youth. However, the challenge of implementing primary prevention interventions into school curriculum is the lack of knowledge among school administrators and educators related to evidence-based practice and evidence-based curriculum. A study published in February, 2013, suggests that schools often develop their own curriculum to suit their students' needs. Students are exposed to multiple prevention programs through their school years, making assessment difficult to examine the effectiveness of any single program in preventing and reducing substance use among students (Kumar, O'Malley, Johnston, & Laetz, 2013). The Ohio Department of Mental Health and Addiction Services has partnered with the Ohio Department of Education and Drug Free Action Alliance and developed a toolkit and activity guide to help teachers utilize and share evidence-based drug-free messages in the classroom. In addition, the

Substance Abuse and Mental Health Services Administration (SAMHSA) developed the National Registry of Evidence-Based Programs and Practices (NREPP) to improve access to information on evaluated interventions in which school administrators, educators, and school nurses can access prevention intervention programs. However, these resources are underutilized, and oftentimes the programs are altered due to many factors. The factors include funding for the programs, staffing resources for the program, and lack of administrative support regarding the importance of primary prevention interventions due to the increased demand for proficiency of state mandated standardized tests that reflect the quality of the school districts academic performance.

School nurses have the ability to collaborate and serve as change agents with administrators, teachers, families, and community leaders and take an active role in the prevention of substance abuse among youth. Health education and promotion is an essential function of the school nurse, and should be provided across the care continuum especially in the case of substance abuse prevention education (Patestos, Patterson, & Fitzsimos, 2014). The PAX GBG is a universal evidence based intervention program that teaches self-regulation in young people with dramatic effects on behavior, academic, and long-term outcomes as preventing mental health and addiction disorders. The PAX GBG evolved from the original Good Behavior Game developed in the 1960s to reduce disruptive behaviors in an elementary school classroom. Kellman et al, published a study that revealed the PAX GBG implemented in the first and second grade classrooms can reduce drug and dependence disorders (Kellman et al., 2014). In 2002, prevention scientist D. Embry referred to the GBG as a behavioral vaccine which is a scientifically proven routine or practice put into widespread daily use that reduces morbidity and mortality. An historical example of a behavioral vaccine is antiseptic hand

washing to reduce childbed fever. Some people refer to the behavioral vaccine as cultural practices that have been adopted because of a correlation reflecting a self-sustaining consequence.

In addition to being referred to as the behavioral vaccine and reducing drug and dependence disorders, the PAX GBG has produced powerful results in multiple demographic settings. PAX GBG has been implanted in more than 10,000 classrooms across the United States, and in Canada, across grade levels in inner cities, suburban schools, and small towns and on tribal lands in very remote communities (Embry & Biglan, 2008). A study was published in 2015 that examined the effects of the GBG in relation to academic achievement during one academic year for students and found significant improved effects on reading and mathematics outcomes thus, making this evidence-based intervention beneficial to be delivered in the school setting and improve overall student performance in addition to behavioral benefits (Weis, Osborn, & Dean, 2015). One challenge presented in the literature search regarding impact of the PAX GBG is the lack of recent longitudinal studies that follow students into early adulthood; however, if advanced practice nurses can increase the implementation of the PAX GBG program, the opportunity for longitudinal studies will also increase.

The opioid epidemic is a public health concern at the national, state, and county level directly impacting the morality rate of Muskingum County. All aspects of the epidemiological approach including primary, secondary, and tertiary evidence-based interventions must be implemented to combat the disease of addiction and decrease the number of people who become addicted. The literature reveals the impact primary prevention interventions can have on the outcomes of the opioid epidemic by decreasing the incidence of addiction. School nurses have the opportunity to deliver primary prevention interventions programs to a vast number of school

aged children while simultaneously improving academic outcomes. They also have the ability to help achieve the Healthy People 2020 goal to reduce substance abuse, and the U.S. Surgeon Generals guideline for systemic changes to prevent addiction by encouraging youth to grow into adulthood without using addictive substances.

Project Description and Design

Purpose. The purpose of the project is to assess evidence-based primary prevention interventions in the preadolescent population, focused on Muskingum County, with a future desire to increase evidence-based primary prevention interventions in public schools. The project applied DNP essentials V and VII that focus on health care policy for advocacy in healthcare, and clinical prevention and population health to improve the nation's health. Application of primary prevention of the epidemiological process provides structure to assess current initiatives being utilized to combat the epidemic.

Theoretical framework. Throughout the review of the literature and multiple resources associated with the opioid epidemic, many conceptual and theoretical frameworks were observed that produce outcomes. One of the challenges present in the primary prevention phase of the opioid epidemic is the multitude of disciplines that interact with the population where prevention interventions need to occur. Ohio recognizes nineteen different credentials that are allowed to provide prevention services with only minimal requirements for training in prevention science (Ohio Department of Job and Family Services, 2014). The blueprint for effective implementation of evidence-based interventions needs to utilize a blended framework to ensure evidenced based interventions are implemented and intended outcomes are achieved.

The conceptual framework for this project is the Donabedian model that allows focus on three main categories: structure, process, and outcome. The project structure defines the setting

in which the project was implemented and who was be involved in the project (Moran, Burson, & Conrad, 2014). The process defines what will be done and how it will be delivered, and the outcome defines what was measured, reviewed, or assessed (Moran et al., 2014). In addition, the conceptual framework, application of the middle range theory related to the health promotion model by Nola Pender, was utilized. The health promotion model was first published by Pender in 1975 and was revised in 1996. The model includes three major categories: individual characteristics and experiences, behavior specific cognitions and affect, and behavioral outcome (Moran et al., 2014). The post-questionnaire outcome related to behavior or schools nurses willingness to advocate for implementation of the PAX GBG validates the success of implementing Pender's behavioral outcome.

Project Objectives. The following are the specific objectives for the project:

1. Asses of current primary prevention interventions being utilized in Muskingum county public schools, private schools and community school
2. Provide instruction/education and implementation of the PAX GBG
3. Increase the number of school aged children in Muskingum county who receive PAX GBG
4. Follow-up on the impact and attitudes of the instruction/education offered

Methodology

Design. A mixed model research approach a utilizing cross sectional descriptive study was utilized to assess evidence-based primary prevention interventions in the preadolescent population in public schools. The quantitative portion of the study consisted of the electronic collection of demographic data, and assessment of current primary prevention interventions being utilized in Muskingum county public schools, one private school, and one community

school. The qualitative portion consisted of the electronic collection of post survey data after instruction/education and implementation of the PAX GBG. A descriptive study is useful when there is lack of research or available literature in the area of interest to researchers (Terry, 2015).

Sample. Following the University Institutional Review Board Approval (Appendix A), a convenience sample of eight school nurses in six public schools, one private catholic school, and one community conversion school in Muskingum County were recruited. A list of school nurses in Muskingum County was obtained from the Zanesville-Muskingum County Health Department. Initial recruitment occurred through email communication and follow up phone call or personal visit to the school system if no response was obtained from initial efforts. The inclusion criteria included being a registered nurse working as school nurse within the defined population.

Survey Instrument. Although the literature revealed evidence that primary prevention interventions can prevent and decrease the incidence of addiction, the literature revealed a lack of evidence that programs are being implemented. The literature review did not produce a tool or instrument to determine the number of evidence-based programs currently being utilized, or how to effectively educate and disseminate the evidence. The project plan incorporated a pre and post questionnaire as the tool to obtain data regarding current programs being utilized in Muskingum County schools related to primary prevention interventions, and the probability of implementation if not currently being used. The questionnaire was developed during the process section of the Donabedian model, conceptual framework. The reliability and validity of the questionnaire was determined by giving a pretest of the questionnaire to a convenience sample of three Muskingum University Nursing Faculty.

The questionnaire was created electronically using SurveyMonkey and the participants remained anonymous. The following concepts were developed into question format within the software and a link was emailed to each participant for completion.

The demographics for first questionnaire include:

- age or range of age
- gender
- type of nursing degree
- employment of the nurse by a school district or contracted through another agency
- number of hours worked per week
- certification of the nurse as a school nurse
- number of years practicing as a nurse
- number of years practicing as a school nurse
- number of students he/she is responsible for
- number of buildings the nurse has to cover – access to students
- number of school nurses in the district

Questions for the pre and postquestionnaire include:

- Is the nurse aware of the opioid epidemic?
- Is the nurse familiar with evidence -based primary prevention interventions for the primary prevention of addiction?
- Is the nurse aware of the impact of evidence-based primary prevention interventions that have been related to the incidence of addiction?
- Is the nurse familiar with the PAX GBG?
- Does the school district utilize the PAX GBG? If yes, what grade of students receive the PAX GBG, who delivers the intervention, and who funds the intervention?
- If not using the PAX GBG, does the school provide primary prevention interventions related to addiction? If yes what grades, who delivers the intervention, and is the intervention evidence –based?
- If not using PAX GBG, would the school nurse be willing to advocate for implementation of this program within the school district?
- If not using PAX GBG, what barriers are present in the school system that prevent implementation of evidence -based primary prevention interventions for addiction (administrative support, funding, lack of knowledge regarding evidence based interventions for addiction, resources to deliver content)

Project Timeline. The following proposed timeline was developed utilizing the table recommended by Moran et al. (2014, p. 311). The Donabedian model that focuses on three main categories: structure, process, and outcome, is applied to provide the framework for the project.

Project Phase	Milestone	Estimated Month of Completion							
		June	July	Aug	Sept	Oct	Nov	Dec	Jan
Structure	Project Proposal Approved		X						
	IRB approval			8/12					
Process	Development & Approval of Questionnaire				9/14				
	Site visit to all Muskingum County School Nurses (MCSN)				9/17-9/28				
	Email link for prequestionnaire to MCSN					10/1			
	Analyze pre data & develop presentation for meeting in December with MCSN						11/1-11/9		
	Meet with MCSN and provide initial feedback from prequestionnaire & provide education intervention forum on evidence based primary prevention interventions & impact on decreasing incidence of addiction							12/13	
	Email link for postquestionnaire to MCSN							12/14	
Outcome	Analyze pre & post data & determine effectiveness of project								1/7-1/21

Project Budget. The proposed budget for the project was minimal and is reflected in the following table recommended by Moran et al. (Moran et al., 2014, p. 313). The proposed budget includes information for an online pre and post-questionnaire. The online platform was SurveyMonkey and is available for use by Muskingum University Faculty at no cost. Added to the budget is a \$200.00 amount to purchase lunch for the Muskingum County School Nurses at the December 2018 meeting. Dr. Hallie Baker PhD, Associate Professor of Psychology at Muskingum University, assisted with the statistical analysis and interpretation. Although she agreed to provide the service at no cost, a thank you \$100.00 gift card was provided.

One time Costs	Project	On-going				
Staff						
Professional Service		\$100.00				
Food for December meeting		\$200.00				
Capital Costs		On-going				
Software - SurveyMonkey		\$0.00				
Handout copies for December meeting		\$50.00				
Total		\$350.00				

Throughout the process of the project, one variance occurred related to the timeline. The author provided a second education intervention forum on January 3, 2019, due to schedule conflicts for two school nurses and they did not receive the post questionnaire until January 4, 2019. Two variances occurred related to the budget. The proposed budget included a cost of \$50.00 for printing of handouts for the December meeting but the actual cost for handouts was \$22.00. The other variance related to the budget was regarding the cost of food for the December meeting. Initially, during the planning stage of the project, the time for the December meeting was scheduled to occur during the lunch hour. However, the meeting occurred at 3pm due to conflict with school nurses' schedules. The decision was made to provide cookies and drinks instead of a meal which resulted in a cost of \$62.00.

Outcomes and Evaluation

Data Analysis. Descriptive statistics were utilized to analyze the qualitative data related to demographic information from the pre questionnaire utilizing a bivariate analysis, central tendency, and dispersion. All participants were females, ranging in age from 27 to 61 (Mean = 44, Standard Deviation = 11.43) with total number of years practicing as a nurse ranging from five years to 28 years (M=18.1, SD= 15.3). The total number of years practicing as a school nurse ranged from zero to 23 years (M=8.25, SD=8.2) and the total hours worked in school per

week ranged from 4.3 hours to 40 hours (M=18.1, SD= 15.3). The total number of students the nurse was responsible for ranged from 500 to 2737 students (M=1683, SD 759.9), and the total number of buildings the nurse was responsible to cover ranged from one to six buildings (M=3.25, SD=1.8). The final descriptive demographic analysis was the total number of school nurses in the district that ranged from one to four nurses (M=1.87, SD=1.268). Table 1: Demographics, represents additional descriptive elements of the school nurses participating in the survey:

Table 1: Demographics

Variable	n	%
Female	8	100
Degree:		
Associate's Degree in Nursing (ADN)	2	25
Bachelor of Science in Nursing (BSN)	6	75
Is the nurse employed by:		
School District	3	37.5
Agency	5	62.5
Are you National Board Certified School Nurse (NBCSN)		
Yes	2	25
No	6	75
What age range of students do you serve as a School Nurse?		
14-19	1	
5-18	1	
p-12	2	
5-20	1	
4-19	1	
3-14	1	
5-20	1	

Additional data was analyzed in the pre questionnaire that are directly related to the assessment of current primary prevention interventions being utilized in Muskingum County schools as to provide instruction/education and implementation of the PAX GBG. Eight of eight

(100%) nurses are aware of the opioid epidemic, however only six of eight (75%) of the nurses are familiar with evidence-based primary prevention interventions for addiction. Five of the eight nurses (62.5%) are aware of the impact evidence-based primary prevention interventions have related to the incidence of addiction. Zero of eight (0%) nurses were familiar with the PAX GBG, and indicated their school district did not utilize the PAX GBG. One of the eight (12.5%) nurses reported although PAX GBG is not utilized, the school does provide primary prevention interventions related to addiction; however, the nurse does not know if the intervention is evidence-based. The last question of the pre questionnaire was a qualitative measurement asking the following question: If not currently using PAX GBG, would the nurses be willing to advocate for implementation of the program within the school district? Six of the eight (75%) nurses indicated they would be willing to advocate for the PAX GBG to be implemented within the school district.

In addition to descriptive statistical analysis, the author analyzed the data looking for correlations utilizing the chi-square statistic and the t-test. The t-test (Appendix B) was utilized to analyze the familiarity with evidence-based primary prevention interventions for addiction and the total number of years practicing as a nurse. The test shows a trend towards individuals in practice longer not having the knowledge of evidenced-based practice (EBP); however, the possible outlier of a nurse with 34 years in practice is aware of EBP. Thus the t-test was not significant ($p \geq 0.05$). A possible explanation for the 34 year practicing nurse being aware of EBP is that she also is a National Board Certified School Nurse (NBCSN).

The chi-square (Appendix C) was utilized to assess for a relationship regarding NBCSN and familiarity with evidence-based primary prevention interventions for addiction. Although the chi-square cannot validate significance, the small sample does show a possible trend that those

nurses with NBCSN are more aware of EBP than those without the certification. The small sample size, particularly focused on those with certification, limits the conclusions that can be reached.

After the collection of the pre questionnaire, the author provided an education intervention forum on December 13, 2018, at the Zanesville Muskingum County Health Department (ZMCHD). Seven school nurses attended the session, and as previously noted, the author met with two additional school nurses on January 3, 2019, and delivered the education intervention forum. As approved by the Otterbein IRB process, the education intervention forum included the following concepts:

- Current opioid epidemic statistics for the national, state and local level
- Current initiatives being deployed to target the opioid epidemic
- Overview of the evidence-based PAX Good Behavior Game
- Information and resources to access the PAX GBG for implementation
- Instructions regarding the post- questionnaire to complete for the study

The quantitative analysis of the post questionnaire consisted of the utilization of descriptive statistics. Six nurses completed the post questionnaire. Six of six (100%) indicated awareness of the opioid epidemic, familiarity with evidence-based primary prevention intervention for addiction, and familiarity with the PAX GBG. The qualitative analysis of the post questionnaire revealed five of the six (83.3%) nurse's willingness to advocate for implementation of the PAX GBG within the school district.

Data Outcomes. Findings from the pre questionnaire met project objective one regarding assessment of current primary prevention interventions being utilized in the defined demographic

location. The outcome of the assessment revealed zero of eight nurses' school districts currently utilize primary prevention interventions related to the incidence of addiction. The recorded attendance of nine school nurses attending the education intervention forum confirms the second project objective regarding delivery of instruction/education and implementation of the PAX GBG. The third and fourth project objectives were met as evidenced by the post-questionnaire outcome revealing 83.3% of school nurses are willing to advocate for the implementation of PAX GBG compared to 75% during the pre-questionnaire.

During the process of the project the author had the opportunity to participate in a Collective Impact (CI) grant funded project lead by the Zanesville Muskingum County Health Department (ZMCHD). The CI project goal was to map all primary, secondary, and tertiary addiction resources in Muskingum County. As a result of the authors' participation for the project, and the authors' on-call staff nurse position in the local community hospital, the author coordinated the development and implementation of standardized discharge instructions for all patients treated in the local community hospital emergency room for an overdose. Prior to the development of the standardized discharge instructions patients received generic instructions related to symptoms of post opioid overdose. The standardized discharge instructions provide instructions for treatment facilities, naloxone training, and support groups within the current treatment area. Although this was not an intended outcome, this change in process will provide valuable resources to the patients diagnosed with addiction.

Limitations and Barriers. The number of school nurses surveyed was small and limited to one demographic location in Ohio; however, the project was targeted to assess schools in Muskingum County and the total number of schools in Muskingum County is eight. An additional limitation is the list of school nurses obtained from the ZMCHD consisted of 11

nurses for eight schools. Participation in the pre and post questionnaire was anonymous, so the author cannot confirm all eight schools were assessed. For example, two nurses from the same school could have completed the questionnaire, and not all schools may have been assessed.

The author did encounter an unexpected barrier related to one school nurse verbalizing the fear of her employer finding out she participated in the questionnaire. The school nurse requested the author utilize her personal email instead of her work email provided by the ZMCHD. Fear of participating in prevention efforts is certainly a barrier that needs to be addressed in the public school venue. The public school venue provides direct access to the target population for primary prevention interventions, but if fear is present, interventions will not be implemented.

Conclusions, Summary and Recommendations

School nurses in Muskingum County provided data to assess the current primary prevention interventions being utilized in Muskingum county public, private and community schools. The data obtained supports the literature indicating lack of implementation of evidence based primary prevention interventions in public schools. However, the data validates the effectiveness of disseminating evidence-based interventions. Based on the data reflecting zero percent of the school nurses currently using evidence-based prevention interventions but 83.3% of nurses being willing to advocate for the implementation in the post education forum, the dissemination of education was effective. In October 2017, the Ohio Department of Education (ODE) data indicates a total population of 7,708 kindergarten through sixth grade in the public schools, and 48 students in the community conversion school (Ohio Department of Education, 2018). Muskingum County School Nurses have the potential to impact 7,756 students by accessing the public school venue.

School nurses have the ability to help achieve the Healthy People 2020 goal to reduce substance abuse, and the U.S. Surgeon General's guideline for systemic changes to prevent addiction by encouraging youth to grow into adulthood by not using addictive substances. However, the data reveals a gap in consistency for nurse to student ratio, hours worked by the school nurse, and employment status of the nurse related to direct employment by school or contract through an agency. The author has an opportunity to share the data collected with policy makers to advocate for mandatory school nurse positions that require a specific nurse to student ratio. This would allow the school nurse to effectively deliver evidence-based primary prevention interventions related to addiction and many other preventative health care interventions to address a multitude of preventable diseases, like obesity and type II diabetes.

Additional studies need to be completed to assess the long term effectiveness of the PAX GBG related to addiction prevention and improved academic performance. Utilization of public school venues provides a platform with the appropriate population of people to make an impact not only on addiction prevention but on many preventable disease processes present in the United States.

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Appendix A

**Research Description
Consent to participate**

The Department of Nursing at Otterbein University supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You should be aware that even if you agree to participate, you are free to withdraw at any time without penalty by contacting the PI or student researcher.

We are interested in studying the number of schools in Muskingum County who currently deliver evidence based primary prevention interventions related to opioid epidemic. You will be participating in two electronic questionnaires that will involve completing questions related to current practices within the school system, knowledge of evidence based primary prevention interventions, and attending an education session at the Zanesville Muskingum County Health Department in December 2018. It is estimated that this will take no more than two hours of your time. Although it is not likely, there is a chance that you might feel slightly uncomfortable with some of the questions. Although participation will not directly benefit you, we believe that the information will be useful in evaluating the current practices related to evidence based primary prevention interventions related to opioid epidemic. Your participation is solicited although strictly voluntary. We assure you that your name will not be associated in any way with the research findings.

If you would like additional information concerning this study before or after it is complete, please feel free to contact me by phone or mail.

By clicking on the survey link attached you consent to participate in the study and affirm that you are at least 18 years old.

Sincerely,

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Dr. Kirk Hummer
Assistant Professor
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Appendix B

T-Test

		N	Mean	Std. Deviation
Total number of years practicing as nurse	Yes	6	15.000	11.8152
	No	2	27.500	.7071

Appendix C

Chi-square			Are you familiar with evidence based primary prevention interventions for addiction	
			No	Yes
Are you National Board Certified School Nurse (NBCSN)	No	Count % within Are you familiar with evidence based primary prevention interventions for addiction % of Total	2 100.0% 25.0%	4 66.7% 50.0%
	Yes	Count % within Are you familiar with evidence based primary prevention interventions for addiction % of Total	0 0.0% 0.0%	2 33.3% 25.0%
Total		Count % within Are you familiar with evidence based primary prevention interventions for addiction % of Total	2 100.0% 25.0%	6 100.0% 75.0%