

**Implementation of a Primary Care Evidence-based Practice Approach: Caring for
the Adolescent Using Recreational Marijuana in a Post-Legalization Climate**

A Scholarly Project

Presented to

The Faculty of Regis College

In Partial Fulfillment
of the Requirements of the
Doctor of Nursing Practice Degree

By

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This scholarly practice project of Bonnie Laurent, entitled Implementation of an EBP Approach: Caring for the Adolescent Using Recreational Marijuana in a Post-Legalization Climate directed and approved by the faculty advisor, has been accepted by the Nursing Faculty of Regis College in fulfillment of the requirements for the Doctor of Nursing Practice.

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Abstract

Adolescent use of recreational marijuana may lead to poor health, safety, and social outcomes. Many primary care providers do not have the knowledge, confidence or competence to discuss marijuana (Brooks et al., Carlini et al., Ziemanski et al., 2015) and do not use current evidence-based practice methods for screening and treating adolescent substance use (Harris et al., 2012; Levy, & Shrier, 2015; Van Hook et al., 2007; Wilson et al., 2014). Several professional organizations endorse the evidence-based Screening Brief Intervention and Referral to Treatment (SBIRT) method using a validated tool to address adolescent substance use. The quick and easy to implement Screening to Brief Intervention (S2BI) validated screening tool was recently developed by a team of providers at Boston Children's Hospital with support from the National Institute on Drug Abuse (Levy et al., 2014).

The purpose of the scholarly practice project (SPP) was to evaluate whether an education session about using the evidence-based method of Screening, Brief Intervention, and Referral to Treatment (SBIRT) and the Screening to Brief Intervention (S2BI) screening tool would result in an increase in Pediatric Primary Care Provider screenings and referrals for substance use treatment. The project utilized the Rosswurm and Larrabee (2009) evidence-based approach to practice change model. The conceptual framework chosen to guide the design of the quality improvement project was the Knowledge-to-Action Process Framework (Graham et al., 2006). A non-randomized convenience sample of Pediatricians at a private pediatric practice in the eastern region of the United States was chosen for the site and sample for this pilot quality improvement project.

The quantitative quasi-experimental project began with a two-month retrospective medical record review to establish current practice standards related to screening and treating adolescents for illicit drug use. A one-hour educational session was held about adolescent recreational marijuana use and how to implement the SBIRT method using the S2BI tool to screen and address substance use. Participants completed a pre and post self-assessment of knowledge about adolescent recreational marijuana use. Adolescent well-visit tracking forms were collected for two months following the education session to evaluate whether the SBIRT and S2BI method were implemented.

The results revealed an increase in substance use screenings and the use of a validated screening tool after the education session. There was no change in referrals.

While not statistically significant due to the small sample, the results of this project show an increase in the number of validated screenings which could lead to better health outcomes for adolescents. Replication of the project on a larger scale may further impact the provision of best care practices for addressing adolescent substance use.

Key Words: Adolescent, screening, SBIRT, substance use, recreational marijuana, legalization, evidence based, pediatric primary care, validated screening

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Implementation of a Primary Care Evidence-based Practice Approach: Caring for the Adolescent Using Recreational Marijuana in a Post-Legalization Climate

Chapter I: Introduction

The rise of illicit drug use in the United States (U.S.) has reached epidemic proportions. Much attention has been given to the opioid crisis and the focus on reducing prescription drug abuse (National Safety Council, 2018). However, over half of illicit drug users in the U.S. begin with marijuana. The 2013 National Survey of Drug Use and Health (SAMHSA) discovered that among those age 12 years or older who began illicit drug within the past 12 months began with marijuana use (Substance Abuse Mental Health Services Administration [SAMHSA], 2014a). In 2018, “the most common illicit drug disorder [in the U.S.] was marijuana use disorder (4.4 million people) with opioid use disorder ranking the second most common illicit drug disorder (2.0 million people)” (SAMHSA, 2019, p. 2). The prevalence of use and health and safety effects of marijuana merits the attention of healthcare providers.

The most common age for first-time drug use is during the period of adolescence (National Institute on Drug Abuse [NIDA], 2015a). The Treatment Episode Data Set (TEDS) is a national data system of annual admission to substance abuse treatment facilities. Researchers collect and analyze the data in TEDS to identify trends related to the age of initiation and the types of drugs that lead to drug abuse. The analysis revealed that among individuals admitted to a substance abuse facility whose age of drug initiation was age 14 years old or younger, marijuana was the most common primary substance of abuse. Among individuals admitted to a treatment facility at ages 18-30 years old, 74% initiated drug use at age 17 years old or younger (SAMHSA, 2014a).

Adolescence is a developmental period of risk taking and experimentation placing the adolescent at major risk for harm related to substance use including use disorders, unintentional injuries, motor vehicle accidents, and suicide (Alderman, & Breuner, 2019; NIDA, 2014a). Among adolescents, the transition from initiation to regular use or substance use disorder can occur within as little as three years (Wittchen et al., 2008). Identifying adolescents at risk for marijuana and other illicit drug use is a crucial step toward addressing the illicit drug problem in the United States and promoting the health and welfare of the adolescent population. Pediatric Primary Care Providers (PPCP) play a crucial role to prevent, identify and treat adolescent substance use.

Chapter I will discuss the effects of recreational marijuana, and the use of evidence-based practice methods by primary care providers to address adolescent substance use. The outcomes related to the lack of use of evidence-based practice methodologies to identify and treat adolescents using recreational marijuana or other illicit drugs will be addressed. Finally, the discussion will include a description of the evidence-based approach of the Doctor of Nursing Practice (DNP) Scholarly Practice Project (SPP) guided by the Rosswurm and Larrabee Model (Rosswurm & Larrabee, 2009) and will define project in the following sections; Statement of the Problem, Research Question and Hypothesis, Background and Significance, Project Objectives, and Philosophical Assumptions.

Statement of the Problem

As of June 2018, thirty-one states, Washington D.C., Puerto Rico, and Guam have legalized medicinal marijuana, and nine have legalized recreational marijuana (National Conference of State Legislatures [NCSL], 2018). All states where marijuana has been decriminalized have attempted to place safeguards by placing restrictions on use, minimum age,

and possession. State legalization of marijuana, especially recreational marijuana, may increase access and availability. The results of the 2014 National Survey on Drug Use and Health revealed that among 12-17-year-old participants who were past 12-month marijuana users, 47.8% felt that marijuana was easy to obtain (Azofeifa et al., 2016). The most common mode of acquisition reported was “getting it for free” and “sharing it” (57.3%) with the second most prevalent mode of acquisition reported as “bought it” (40.5%) (Azofeifa et al., 2016 p. 23, Table 8). In Colorado, where both medicinal and recreational marijuana is legal, nearly half of the adolescents in substance abuse treatment programs reported easy access to diverted medical and recreational marijuana (Wilkinson et al., 2016). The legalization of marijuana may lead to increased accessibility and use of the drug among adolescents. Increased use may lead to poor health and safety outcomes.

Several professional organizations have voiced concerns for adolescent welfare due to the potential adverse consequences of state legalization of marijuana (American Academy of Pediatrics, 2015a; American Psychiatric Association, 2014/2019; American Society of Addiction Medicine, 2012; Center on Addiction, 2017). Legalization may lead to greater use by youths and adolescents due to the public normalization of marijuana use and the misperception that it is safe (AAP, 2015a; AAP, 2015b). Legalization may also increase parental and sibling use, thereby increasing availability and further decreasing perception of risk (Hopfer, 2014; Cerda et al., 2012). PPCP provider understanding of the current laws related to marijuana and the resultant social climate will allow the provider to advocate for careful consideration of the impact of legalization of marijuana on adolescent health and to promote guidelines and regulations to minimize negative outcomes on adolescent welfare.

Pediatric Primary Care Providers (PPCPs) care for adolescent patients who use marijuana for recreational purposes, and with the increase in state legalization, this cohort is likely to increase. PPCPs have the opportunity to influence adolescent behaviors through screening and education during routine care (AAP, n.d.). In order to provide optimal care, the provider should be competent in identifying risk and using evidence-based methods to address adolescent substance use. “The pediatrician has a well-recognized and important professional and societal role in prevention, detection, and management of all pediatric health risks and disorders including tobacco, alcohol, and other drug use among children and adolescents” (AAP, 2011, p. e1330). Prevention begins with consistently screening for health risk behaviors (AAP, 2011).

Needs assessment surveys conducted among healthcare providers in the state of Colorado in the United States and providers in Canada have identified a lack of knowledge about caring for patients using marijuana and the desire for further education (Brooks et al., 2017; Carlini et al., 2017; Ziemanski et al. 2015). Although these studies did not focus on adolescents or recreational marijuana specifically, the wide gaps in knowledge identified are universal across the lifespan and will be discussed in chapter two. Further, there is current evidence in the literature that primary care physicians and nurse practitioners are not using evidence-based methodologies to identify and treat adolescents using illicit substances including recreational marijuana (Harris et al., 2012; Harris, & Yu, 2016; Van Hook et al., 2007; Wilson et al., 2004). Provider education may lead to an increase in the use of evidence-based methodologies to screen and treat adolescents for substance use and lead to improved health outcomes.

The Doctor of Nursing Practice (DNP) evidence-based Scholarly Practice Project (SPP) will address the PPCP gap in knowledge about recreational marijuana and provide evidence-based practice recommendations for addressing adolescent substance use. The goal of the project

is to increase PPCP use of evidence-based screening and treatment for adolescents using illicit drugs and improve adolescent health and wellbeing.

The following topics will be expanded upon in the Background section: adolescent prevalence of use of recreational marijuana, adolescent perception of risk associated with the use of recreational marijuana, the impact of the legalization of marijuana, the effects of adolescent use of recreational marijuana, and the role of the PPCP in using evidence-based methods to care for adolescents using recreational marijuana and other illicit drugs

Background

The consequences of adolescent substance use a grave concern due to the developing brain and stage of development, placing them at increased risk of detrimental consequences. The DNP scholarly project provider education session promoted evidence-based practice methods to address substance use that may lead to improved health outcomes for adolescents.

Prevalence of Marijuana Use

Marijuana has the second-highest rate of dependence or abuse when compared to alcohol, tobacco, and other illicit drugs. (CBHSQ, 2015b). In 2015, one out of every 17 high school seniors in the United States reported using marijuana (Meich et al., 2016). In 2017, among high school seniors, 45% used marijuana at least once in their lifetime, 37.1 used marijuana within the past year, and 22.9% used marijuana during the past month (NIDA, 2017). The current trend calls the attention of healthcare providers caring for adolescents to consider best practices to address the prevalence of use and risks for health and safety issues related to marijuana use. A national health goal is to reduce the number of adolescents who used marijuana in the past thirty days (Healthy People, 2020).

Influences on Adolescent Drug Use

It is imperative to identify the influences on adolescent drug use to determine the best approach to address this public health issue. The results of several studies have identified some possible contributing factors which may increase the risk of adolescent marijuana use.

Recognition of these influencing factors may lead to early health promotion interventions to decrease the initiation of drug use.

Perception of risk of marijuana use. Two factors to consider that may influence adolescent marijuana use are the perception of risk and permissive law enforcement (SAMHSA, 2014b). The perception of low risk of a drug is associated with increased use (Johnston et al., 2016; Hughes et al., 2015). In 2018, a survey of approximately 44,500 revealed that perceived health risk associated with marijuana use was at an all-time low among adolescents (Johnston et al., 2019, p. 11). If the legalization of marijuana decreases adolescents' perception of health risks, it will likely lead to an increase in use (Martins et al., 2016; Wright, 2015), which may contribute to poor health outcomes (Wright, 2015).

Johnston et al., (2020), the principal investigators and staff of the Monitoring the Future (MTF) project at the Institute of Social Research at the University of Michigan, consider trends of data collected over the past 44 years and discuss lessons learned about adolescent drug use. They propose that the historical trajectories of the use of various drugs over time suggest that determinants of use are specific to each drug. Adolescent views of perceived benefits, adverse effects, peer norms, and availability fluctuate depending on the drug. "Marijuana is one drug that is likely to be affected by some very specific policies, including medicalization and legalization of recreational use by adults" (Johnson et al., 2020, p. 52). The recent prevalence of marijuana use among 12th graders (37%) is lower than in the 1970s (50%); however, "...[if] states that legalize recreational marijuana allow advertising and promotion of marijuana, then prevalence

could rebound and approach or even surpass previous levels.” (Johnston et al., 2020, p. 52).

Healthcare providers who care for adolescents should stay abreast of adolescent drug use trends to inform practice recommendations for screening and risk assessment.

Impact of legalization of marijuana. The state legalization of marijuana may contribute to the adolescent perceived community norms. Influencing factors include having parents, friends, or acquaintances who use (or have used) marijuana, and the perception of easy access (SAMHSA, 2014). Legalization may also increase the frequency of use by people who used marijuana prior to legalization (Bailey et al., 2016). Adolescents may perceive the increase of consumption and legalization as a societal norm. Once recreational marijuana is legal, it may increase parental and sibling use, thereby increasing availability and further decreasing perception of risk (Hopfer, 2014; Cerda et al., 2012; CBHSQ, 2015b).

When states are considering the legalization of marijuana, the media reports conflicting views on risks of marijuana use leading to confusion in the perception of risk among both adults and adolescents (Hopfer, 2014). State lawmakers’ decisions to legalize or consider legalizing recreational marijuana may imply that the use of marijuana is safe for everyone (Hopfer, 2014; Miech et al., 2015; Saloner et al., 2015). The media attention may prompt parents and adolescents to ask the PPCP questions about marijuana.

Legalization may lead to an increase in advertising, promoting the social normalization of marijuana use. Colorado, one of the first states to add the legalization of recreational use, has been a popular site for research regarding the impact of legalization. Between 2006 and 2011, the Safe Alternative for Enjoyable Recreation (SAFER) organization in Colorado spent over \$240,000 on educating the public on the dangers of alcohol use and recommending marijuana as a safer alternative to alcohol (Schuermeyer et al., 2014). Healthcare providers caring for the

adolescent population should be aware of public advertising campaigns to be proactive in preventing misinformation from informing adolescent decision-making pertaining to drug use. This awareness can be brought to the Pediatric Primary Care Provider's consideration when approaching adolescent screening and education about marijuana and other illicit drug use.

Health and Safety Effects of Adolescent Marijuana Use

Recreational marijuana use can lead to several health and safety issues, especially among the adolescent population. Provider awareness of the effects of adolescent marijuana use may inform best practices to assess risks, provide health promotion teaching to adolescents and their parents and caregivers, and to treat or offer referrals to patients who may be experiencing any health or safety issues related to substance use.

Marijuana use may be associated with adverse effects on the developing adolescent brain, such as problems with memory, concentration, and behavior (Jacobus & Tabert, 2014). Limitations of this association were identified as lack of a defined amount and length of use, and other predisposing factors such as physiological markers or genetics calling for additional longitudinal studies (Jacobus & Tabert, 2014).

Every lobe of the adolescent's brain is immature, as noted on MRI scans (Anderson et al., 2015). This includes the frontal aspect, which is involved in learning, moral intelligence, abstract reasoning, judgment, and strategizing. Adolescents cannot reason or make decisions as adults do. The cerebellum, the area responsible for the ability to manage social situations, is the last to fully mature (Anderson et al., 2015). Adolescent brains also have a higher level of dopamine, allowing them to become more easily addicted to marijuana (Anderson et al., 2015). They require more excitement to generate dopamine production and therefore engage in high-risk behaviors more readily than adults. The hippocampus in the immature adolescent brain is more sensitive to

alcohol and marijuana effects. The younger the age of first exposure, the greater the damage, longer-lasting effects, and higher rate of addiction (Anderson, 2015).

More evidence is needed regarding the effects of marijuana use on IQ scores. A study by Meier et al. (2012), found that adolescent onset of frequent cannabis use resulted in an 8-point drop in I.Q. and that cessation of use did not restore functioning. However, Meier et al. (2018) more recent longitudinal co-twin control study refutes these findings. Researchers found that adolescents with cannabis use dependence did not experience a decline in IQ. They concluded that short term use of cannabis in adolescence does not cause IQ decline and suggests that IQ changes are closely related to the family background (Meier et al., 2017). Further research is needed to explore whether any long-term effects remain into adulthood (Meier et al. 2017; NIDA, 2016).

Pharmacokinetics of Marijuana

Cannabinoid receptors are widely distributed throughout the brain, and they play a role in neurotransmitter release and concentrations across the neural system (Jacobus & Tapert, 2014). The receptors increase during adolescence and have a role in the genetic expression of neural development. Marijuana use may result in a cascade of neurochemical and neurostructural alterations leading to poor cognitive and emotional outcomes in adulthood. The damage to the macrostructure of the brain causes changes in the white matter, which may result in poor attention and memory. The changes may persist after cessation of use (Jacobus & Tapert, 2014).

Different trajectories of use of cannabis are associated with patterns of neural reward circuit in early adulthood (Leventhal et al., 2017). An increase in use may lead to a higher risk of impaired motivation, depressive symptoms, anhedonia, and poor educational attainment.

Adolescents with anhedonia experience very little pleasure from daily rewards such as eating and

social interaction. They may then seek out drugs to stimulate the neural circuitry to give them pleasure pharmacologically. Repeated exposure to THC produces deficits in the brain reward system and may lead to anhedonia (Leventhal et al., 2017). Anhedonia has also been shown to increase the risk of substance use among adults (Leventhal et al., 2017).

Gateway

The debate about whether marijuana is a gateway drug remains ongoing. The findings of a national study by Secades-Villa et al. (2015) illustrate that marijuana is a gateway drug for those who are at risk for mental illness. The likelihood of progressing to other illicit drugs may be driven by individual characteristics. Males are more likely to progress to other illicit drugs, as well as those in urban settings, divorced, separated, or never married. There is also an association regarding race with black individuals having lower risk than whites. Higher availability, lower family cohesion, and more diffuse social networks may be the reason for a steeper progression in urban settings. Adolescents who initiate the use of marijuana at an early age are at an increased risk of also using other illicit drugs (Secades-Villa et al., 2015).

Cost of Abuse and Addiction

Abuse and addiction to alcohol, nicotine, and illicit and prescription drugs cost the United States more than \$700 billion a year in increased health care costs, crime, and lost productivity (NIDA, n.d.). Each year abuse and addiction contribute to deaths of more than 90,000 Americans. Costs associated with marijuana use include substance use disorder and other psychiatric disorder treatment, roadside drug testing for impaired drivers, an increase in auto accidents, and an increase in emergency room visits for accidental ingestion by children (McGuire, 2014).

Marijuana use is also costly in the workplace (Dougherty, 2016). Employees using marijuana cause over twice as many accidents as those who do not and suffer 85% more on-the-job injuries than non-users of marijuana (Dougherty, 2016). Increased absenteeism and loss of work productivity create additional costs for the employer. The National Drug Intelligence Center reports that substance abuse costs the United States over \$193 billion each year (National Drug Intelligence Center, 2011). Adolescents may contribute to these costs as they are entering the workforce.

Pediatric Primary Care Provider Knowledge

Decriminalization, increased awareness, and public demand has brought marijuana use to the attention of mass media. The legalization of marijuana may lead the Pediatric Primary Care Provider to practice modifications, including having discussions with patients about marijuana (Brooks et al., 2017). The American Nurses Association's (ANA) supportive position of patient access to therapeutic marijuana and the passing of bills in at least five states allowing physicians and nurse practitioners to become certifying medicinal marijuana providers further necessitates increased knowledge about marijuana (Philipsen et al., 2017).

Several recent studies have illustrated knowledge gaps among physicians and nurse practitioners about marijuana (Balneaves et al., 2018; Carlini et al., 2015; Kondrad & Reid, 2013; Norberg et al., 2012). As marijuana use is brought to the forefront of the public eye, practitioners need to feel comfortable educating patients. Recent studies have shown that some providers assess patients for marijuana use but are uncomfortable providing specific information regarding its use and health effects (Brooks et al., 2017)

Pediatric Primary Care Provider Role

The role of the pediatric primary care provider (PPCP) is indispensable in reducing adolescent drug use. Nearly 83% of adolescents visit their primary care provider yearly and are receptive to discussing substance use (Knight et al., 2010). Primary care providers have the opportunity to reduce the risk of initiation of drug use, discourage ongoing use, and refer patients with substance use disorders for further treatment (Levy, & Williams, 2016).

The American Academy of Pediatrics Committee on Substance Use and Prevention (AAP, CSUP) (2016) recommends that primary care providers screen adolescents for alcohol and drug use at least yearly (AAP Committee on substance Use and Prevention, 2016). Universal screening using the Screening Brief Intervention and Referral to Treatment (SBIRT) method with a validated tool can identify adolescents who are using alcohol and drugs and measure the extent of use (Levy, & Williams, 2016). “Adolescents are the highest risk of acute and chronic health consequences, so they are also the age group most likely to derive the most benefit from universal SBIRT” (AAP, 2011, p. e1331). If the patient is not using any drugs, then positive reinforcement may decrease the risk of initiation of use. Among the patients who are using drugs, a validated screening tool assists the provider in recognizing issues of drug abuse and addiction. Recognition of the early signs of abuse and addiction may lead to interventions including a referral to a mental health or substance abuse specialist, which may result in increased health and wellness for the adolescent (AAP, CUSP, 2016).

Significance

The SPP is important to the areas of nursing practice, education, leadership and research. A brief description of the impact of the project to these areas will be discussed in the following paragraphs.

Nursing Practice

Pediatric Primary Care Providers (PPCP) may care for late adolescents in a variety of community settings, including primary care offices, urgent care clinics, and schools (National Organization of Pediatric Primary Care Provider Faculties [NONPF], 2013). As advocates for the protection and education of adolescent health, PPCP's can make a positive impact on creating programs and policies pertaining to marijuana. Healthcare providers need to understand the issues associated with adolescent marijuana use (White & Helbig Toughill, 2015). PPCP's must also stay current with adolescent social trends and behaviors when designing teaching and counseling methods. For example, marijuana has over 300 names among various adolescent groups (White & Helbig Toughill., 2015).

PPCP's who care for adolescents or are involved in public health can initiate discussions on drug use. Recent literature states former methods of anti-drug education focusing on abstinence are not effective. An honest, open approach promoting harm reductions and factual information without judgment may be a more realistic approach (Rosenbaum, 2016). A review of the literature revealed lessons learned from tobacco and alcohol trends among adolescents. In both drugs, education lead to increased risk perception and a decrease in use (CDC, 2012). Unfortunately, many healthcare providers both physician and non-physician do not feel comfortable discussing marijuana with their patients (Brooks et al., 2017; Ziemianski et al., 2015)

Pediatric Primary Care Providers include physicians, nurse practitioners, and other mid-level providers. Although the mid-level PPCP's scope of practice and level of autonomy differs by state, the role of the PPCP may include the responsibilities of patient advocacy, providing evidence-based care, performing competent health assessments and treatments, managing patient illness including diagnosing, prescribing, treating, evaluating and educating, and most

importantly providing well and preventative care (American Academy of Nurse Practitioners [AANP], 2012-18). These roles are expanded to include maintaining current knowledge of new treatment modalities and the laws and regulations related to or influencing clinical practice.

Increasing the PPCP knowledge of recreational marijuana and promoting the implementation of evidence-based methods through the implementation of the DNP Scholarly Practice Project (SPP) may contribute to meeting the responsibilities of the PPCP caring for the adolescent.

Nursing Education

Nurse education programs of all levels (including primary care nurse practitioner programs) should discuss the biophysical, social, and public health concerns related to marijuana use and the impact of legalization (White & Helbig Toughill, 2015). This discussion may impact public health by promoting the dissemination of the information to the general public. Students may also be encouraged to conduct further research and advocate for the health and safety of adolescents (White, & Helbig Toughill, 2015). All Pediatric Primary Care Provider education programs should include this public health problem and current evidence based methods to address adolescent substance use in their curricula. Many healthcare providers have expressed a lack of knowledge and the need for education regarding marijuana (Brooks et al. 2017; Carlini et al., 2015). Dissemination of the findings of this SPP and the evidence based clinical practice recommendations can be shared with academic institutions.

A Gallup poll of public opinion revealed for the 16th year in a row that nurses are the most honest and ethical profession in the United States (Brennan, 2017). Nurses are often sought by patients for health education. A national survey in Canada revealed that more than 9 out of 10 people surveyed expected nurses to provide education regarding the risks and benefits of

recreational marijuana use (Canadian Nurses Association [CNA], 2017). All licensed healthcare providers should seek education to fill the gap of knowledge related to caring for patients using or considering using marijuana.

Nursing Leadership

The Public Health Nursing Section of the American Public Health Association (2013), defines public health nursing as, “the practice of promoting and protecting the health of populations using knowledge from nursing, social and public health sciences” (APHA, 2013,” Definition,” para. 1). Nurses are the largest group of health care professionals enabling them to have a strong voice regarding health policy (ANA, 2016) Viewed by the public as the most trusted profession, policymakers often turn to nurses for their expertise (ANA, 2016). Core competencies for the Doctor of Nursing Practice include advocating for health care through engagement in health policy and improving the health of the nation through clinical prevention and population health (AACN, 2006). Healthcare providers who care for adolescence should advocate for the health and welfare of this vulnerable population and urge policymakers to consider the effects of legalization and regulation of drugs and alcohol.

Research

The review of the literature identified a gap in healthcare provider knowledge, competence, and confidence in caring for patients using or considering using medicinal or recreational marijuana. The dissemination of the method, outcomes, and evaluation of this DNP scholarly project may contribute to the literature as a strategy to address the lack of knowledge through an education intervention. An increase in knowledge may lead to increased competence and confidence in implementing the SBIRT method to address adolescent substance use.

Project Aim and Objectives

The purpose of this scholarly project was to increase the knowledge of PPCP's about caring for adolescent patients who use recreational marijuana or other illicit drugs and to recommend evidence-based methodologies for screening and caring for these patients. The increased knowledge of the Pediatric Primary Care Provider and their adoption of evidence-based practice methodologies to address adolescent substance use may benefit the health and wellness of adolescents. The project aim was to create an education session to increase pediatric primary care provider knowledge about adolescent recreational marijuana use, and to recommend the evidence-based screening, brief intervention, and referral to treatment (SBIRT) method for addressing adolescent substance use. The objective was to increase provider use of the SBIRT method using a validated screening tool. The results will be discussed in Chapter IV.

Research Question

1. Will an education session about using the evidence-based method of Screening, Brief Intervention, and Referral to Treatment (SBIRT) method and the validated Screening to Brief Intervention (S2BI) screening tool result in an increase in Pediatric Primary Care Provider screenings and referrals for substance use treatment?

Evidence-Based Practice Model

Evidence-based practice is the development and practice of applying credible research evidence as a basis for patient care (Terry, 2015). Interventions based on practice expertise combined with research evidence, improve patient outcomes as well as improve safety, delivery, and efficacy of nursing care (Terry, 2015). This project utilized an evidence-based approach using the Rosswurm and Larrabee Model (Larrabee, 2009). Rosswurm and Larrabee's evidence-based approach to the practice change model consists of a six-step process (Larrabee, 2009). The six steps include:

1. Assess the need for change in practice.
2. Locate the best evidence.
3. Critically analyze the evidence
4. Design practice change.
5. Implement and evaluate the change in practice.
6. Integrate and maintain change in practice.

Philosophical Assumptions

- Legalization has led to an increase in questions from parents and adolescents posed to Pediatric Primary Care Providers who may not be prepared to counsel, screen, or monitor patients who use marijuana.
- Adolescents often view marijuana as harmless because they do not suffer from any immediate consequences, and it is seen as healthy because it is an herb.
- It is the responsibility of Pediatric Primary Care Providers to stay current with practice change, health policy, and public health concerns to provide patients with education, health promotion, treatment, and optimal care.
- Pediatric Primary Care Providers are not adequately educated about recreational marijuana.
- Primary care providers do not consistently screen adolescents for substance use.
- There is a lack of knowledge among pediatric primary care providers about current evidence-based methods to address adolescent substance use.

Summary

Chapter I addressed the problem of the effects of recreational marijuana use by adolescents, and the lack of knowledge among PPCPs regarding evidence-based practice

methods to address adolescent substance use. The statement of the problem, research question background, significance, objectives, and philosophical assumptions were discussed.

Chapter II will describe the process that was used to search and identify current literature related to the scholarly project. The literature analysis and synthesis will be examined and summarized with a reflection on its application to the project.

Chapter II: Review of Literature

Chapter II will support the purpose and aim of the project with evidence. The chapter will begin with a description of the process that was used to search and identify current literature related to the scholarly project. Theoretical support and the conceptual framework used to guide the project will also be described. The literature analysis and synthesis of the literature findings will be explained, reflecting on its application to the project.

Process of the Review of the Literature

Evidence to support the scholarly project was gathered through a review of the literature. The search of the literature began in September 2015 and ended in December 2019. The results were first unlimited to the year of publication, then narrowed to 2010-2019. Search engines and databases included; Cumulative Index to Nursing and Allied Health Literature (CINAHL), Pubmed, Ovid, Cochrane library, Google Scholar, EMBASE, EBSCOhost, and ResearchGate. Professional organization websites were reviewed for practice guidelines, recommendations and position or policy statements including; Substance Abuse and Mental Health Services Association (SAMHSA), Center for Disease Control (CDC), American Academy of Pediatrics (AAP), World Health Organization (WHO), American Nurses Association (ANA), National Institute on Drug Abuse (NIDA), United States Preventative Services Task Force (USPSTF), Federal Drug Administration (FDA), American Association of Colleges of Nursing (AACN), National Association of Pediatric Primary Care Providers (NAPNAP), and HealthyPeople 2020.

Search terms related to identified topics and sub-topics included ‘adolescent’, ‘teen’, ‘marijuana’, ‘cannabis’, ‘recreational marijuana’, ‘retail marijuana’, ‘pediatrician’, ‘primary care’, ‘primary’, ‘provider’, ‘pediatric primary care’, ‘illicit drug’, ‘substance’, ‘street drug’, ‘drug misuse’, ‘drug-use’, ‘drug abuse’, ‘substance related disorders’, ‘substance use’, ‘screen’

‘identify’, ‘risk assessment’, ‘nursing role’, ‘health policy’, ‘prevalence’, ‘frequency’, ‘nursing role in health policy’, ‘prevalence of marijuana use among adolescents’, ‘marijuana health effects’, ‘adolescent perception of risk associated with substance use’, ‘adolescent moral development’, ‘prevention of adolescent use of marijuana’, ‘consequences of legalization of medicinal and recreational marijuana’, ‘United States drug use’, ‘adolescent communication’, ‘confidentiality’, ‘drug prevention’, ‘DNP competencies’, ‘prevalence of marijuana use’, ‘health effects of marijuana’, ‘state legalization of marijuana’, ‘Colorado marijuana’, ‘effects of cannabis’, ‘Pediatric Primary Care Provider and marijuana’, ‘medical marijuana or cannabis’, ‘Pediatric Primary Care Provider and cannabis’, ‘Pediatric Primary Care Provider’, ‘pediatric Primary Care Pediatric Primary Care Provider role’, ‘pediatric Primary Care Pediatric Primary Care Provider and the adolescent’, ‘knowledge translation model’, ‘Rosswurm and Larrabee Model’, ‘knowledge to action process framework’, ‘substance use screening tools’, ‘preventing adolescent substance use’, and ‘screening for marijuana use’. Limited secondary sources were used, and each item was reviewed for additional search opportunities for hand searches of references or key search terms in the literature. Results were limited to publications within five years of the start of the SPP, which began in the fall of 2015. When current literature on the topic was not available in that period, older studies were considered through a broadened search. Articles were excluded if written in a language other than English. Additional exclusion criteria included if the study related to medicinal marijuana or adult substance use.

Professional organization websites were also reviewed for publications, practice guidelines, recommendations, and position statements pertaining to the SPP subject of interest. The professional organizational websites reviewed were American Academy of Nurse Practitioners (AANP), American Academy of Pediatrics (AAP), American Academy of Pediatric

Primary Care Providers (APPCP), American Nurses Association (ANA), HealthyPeople2020, National Organization of Primary Pediatric Care Provider Faculties (NOPCPF), National Council of State Boards of Nursing (NCSBN), Substance Abuse and Mental Health Administration (SAMHSA), United States Department of Health and Human Services (USDHHS), and World Health Organization (WHO). State and Federal government agency websites were reviewed for legislation, regulatory and statistical data related to recreational marijuana laws and prevalence of use; Bureau of Substance Abuse Services (BSAS), Center for Disease Control (CDC), Drug Enforcement Agency (DEA), the state Department of Public Health (MDPH), National Council of State Legislation (NCSL), National Drug Prevalence Alliance (NDPA), National Organization for Reform Marijuana Laws (NORML), National Safety Council (NSC), National Survey on Drug Use and Health (NSDUH), and Office of National Drug Control Policy.

Literature Review

There is a plethora of studies published in the United States and internationally about marijuana. A review of the current literature related to the scholarly practice project was conducted with several purposes; defining the variables and terminology related to the evidence-based project for clarity, examining the published information related to the topic, identifying best practices, and performing a thematical analysis to synthesize the information.

The review of the literature revealed the following themes; adolescent risk and harm reduction-related to recreational marijuana and other illicit drug use, adolescent cultural considerations, primary care provider knowledge about marijuana and adolescent marijuana use, current practice, and evidence-based best practice methodologies related to screening and caring for the adolescent using illicit drugs. Each theme will be discussed in the forthcoming synthesis

of the literature review. Support for the conceptual framework used in the study design and implementation will also be provided.

Adolescent Risk and Harm Reduction

There are many negative consequences associated with adolescent recreational marijuana use. The identification of the factors that influence adolescent decision-making about using marijuana is crucial to inform PPCP practices. Through the understanding of the decision-making process, harm reduction measures may be put into practice to offset negative influences and reduce the initiation or continuation of marijuana use. This section will speak to the risks associated with adolescent recreational marijuana use, including the impact of legalization of recreational marijuana and health and wellness outcomes related to adolescent recreational marijuana use. Harm reduction considerations concerning the adolescent culture, including communication, psychosocial, moral, and cognitive development, will also be presented. The Pediatric Primary Care Provider role in harm reduction-related to adolescent recreational marijuana use and evidence-based methods for screening and caring for adolescent patients at risk for using or currently using recreational marijuana will be explored.

Legalization. State legalization of marijuana may lead to a decreased adolescent perception of risk and increased use. Lessons can be learned through the history of the effects of positive marketing of tobacco and alcohol, which has been shown to lower adolescent perception of risk and increase use (Hopfer, 2014; Kasim et al., 2016; Pacula et al., 2014). A similar study related to energy drink consumption also supported that perceptions are associated with use; those who perceived consumption as safe and acceptable consumed more (Kumar et al., 2015).

There is a lack of empirical evidence related to the effects of the legalization of recreational marijuana on the adolescent population. Also, there are conflicting results as to

whether legalization for medicinal purposes affects adolescent perception of use. For example, the state of California decriminalized marijuana in 2010, making possession of less than one ounce a misdemeanor. Miech et al. (2015) reviewed adolescent attitudes toward marijuana three years pre and post decriminalization in the state of California. They found that there was more acceptance and increased use after decriminalization.

Palamar et al. (2014) analyzed Monitoring the Future surveys of adolescents from forty-eight states. Prior to 2007, eleven states had legalized medicinal marijuana and an additional five legalized during the study period. Questions were posed to adolescent participants regarding their use of marijuana if it became legalized (p. 426). The authors found that 10% percent of high school seniors who do not currently use marijuana would initiate use, and 18% of current users would increase their use of marijuana if it were legalized. A noticeable trend was also identified; adolescents were increasingly supportive of the legalization of marijuana and had decreased disapproval of its use (Palamar et al., 2014).

Other studies have refuted these findings. Choo et al. (2014) reviewed the Center for Disease Control Youth Risk Behavior Study survey results for 1991-2011 and found no increase in use in states that had legalized medicinal marijuana. They critiqued studies that found a positive correlation stating that prior studies, “did not control for state-specific trends” (p. 162). Harper et al. (2012) replicated an earlier study by Wall et al. (2011), which found an association between state legalization of medicinal marijuana and increased use among adolescents. The replication study by Harper et al. (2012) aimed to explore the causal effect noting confounders of state characteristics. The researchers concluded that there was no correlation between legalization and adolescent use and recommend future studies should consider confounders of state characteristics. Cerda et al. (2017) studied the effect on the legalization of recreational

marijuana on the adolescent perception of risks and use in the states of Washington and Colorado and found mixed results. In the state of Washington, adolescent perception of risk decreased, and use increased. However, in Colorado, there was no change in the perception of risk or rate of use of marijuana among the adolescent population.

Similarly, Lynne-Landsman et al. (2013) used the national Youth Risk Behavior Study data from 2003-2009 to evaluate the effects of state legalization of medical marijuana on adolescent marijuana use. The researchers found that there was no correlation between the legalization of medicinal marijuana and increased use by adolescents; however, they caution that additional longer-term results are needed.

Colorado, one of the first states to add recreational (retail) marijuana to existing medicinal legalization status, has been a popular site for research regarding the impact of legalization. The Colorado Department of Public Health and Environment (CDPHE) was mandated by the state legislature to study the health effects and concerns related to marijuana use (Barker et al., 2015). The CDPUH analyzes several national and state survey data sets and summarizes the key findings in an annual publication (Barker, 2015). The report, *Monitoring Changes in Marijuana Use Patterns in Colorado: Summary and Key Findings* (Barker, 2015), revealed conflicting marijuana use rates among several surveys. The statewide *Healthy Kids Colorado* (HKCS, 2013) survey showed the statewide past 30-day marijuana use rate among high school students as 20%; the *National Survey on Drug Use survey* results (2013) showed the rate of adolescent past 30-day use of marijuana in Colorado as 11%, which was higher than the survey results in the surrounding states, and higher than the national average of 7%; and the Youth Risk Behavior Survey (YRBS, 2013) showed a national adolescent marijuana 30-day use rate of 23% which is higher than the reported HKCS state survey rate (Barker, 2015).

The findings of a systematic literature review by Vigil (2015) identified a research gap related to adolescent marijuana use in Colorado. There is a need for additional studies comparing factors contributing to the initiation of use by adolescents between states with different legal statuses (Vigil, 2015).

Although adult use and medicinal use of marijuana is not the focus of this project, the legalization of marijuana may increase parental and sibling use, thereby increasing availability and further decreasing perception of risk (Cerda et al., 2012; SAMHSA, 2015). There is little data available about adult use of marijuana before the legalization in Colorado; the National Survey on Drug Use and Health (NSDUH) is the only known source of this information (Vigil, 2015). The NSDUH information regarding adult marijuana use before and after legalization may assist in determining the effect of state marijuana legalization. The report, *Monitoring Changes in Marijuana Use Patterns in Colorado: Summary and Key Findings* (Barker, 2015), revealed greater marijuana use in the adult population than in other states (Barker, 2015). The legalization of medicinal marijuana may not impact the general adolescent population unless they have a friend or relative affected by it. Media content related to medicinal use may not impact the adolescent perception of risk if it is not applicable. Conversely, the legalization of recreational marijuana may impact the general adolescent population, though more longitudinal research is needed.

Adolescent Cultural Considerations

Many changes occur during the adolescent period, which can lead to an increased level of stress. The adolescent experiences significant physical, mental, and social growth and development. It is essential to be knowledgeable about the adolescent stages of development and to consider these when planning and implementing primary care practice interventions

The Adolescent. The adolescence period is the cultural focus group for this scholarly project. The World Health Organization (WHO) defines ‘Adolescents’ as persons of ages 10-19 years of age (World Health Organization [WHO], n.d.). The American Academy of Pediatrics (AAP, 2017) describes the adolescent period as ages 11-21 years. The adolescent period of ages 13-19 years old was chosen for this project, which includes the early to late adolescent period. The culturally competent PPCP should promote an environment of cultural acceptance and awareness, valuing diversity, and respecting individual differences (Purnell, 2009). Cultural competence begins with knowledge of dominant cultural characteristics (Purnell, 2009). Dominant features of the adolescence focus on areas of growth and development.

Moral Development. The adolescent period is a pivotal time in moral development. Kohlberg’s theory of moral development depicts adolescence as a period of developing one’s set of morals and values (Kohlberg, 1984). The adolescent begins to question former morals and values established through upbringing. They progress toward developing their own morals as they realize moral decisions are based on rights, values, and principles that are agreeable to society. Their choices are based on emotions, and they question societal standards as they begin to realize that their morals may conflict with laws (Kohlberg, 1984). As they explore moral or ethical dilemmas, they may exhibit strong emotions with introspect and self-reflections (Kohlberg, 1984).

Peers are vital to the adolescent and serve as a moral compass. Development of ideas and values may come from exposure to peer points of view and a desire to fit in (Erikson, 1959/1980). Factors that may affect drug use during the adolescent stage of development are the feeling of being “high,” the perception of risk of drug use, how their peers view drug use, and the

accessibility of the drug. The riskier or less accepted a drug is by peers, the less likely it will be used (Erikson, 1980/1959).

Psychosocial Development. Erikson's (1980/1959) theory of psychosocial development focuses on the ego. He theorized that ego develops as an individual accomplishes tasks of social learning through interactions with culture and society. According to Erikson's theory, the adolescent period is aged 12-18 years, and the psychosocial task of this age group is ego identity versus role confusion. Adolescents are more independent and begin to look toward future planning for a career, relationships, and housing. They desire to belong to a society and fit in. Failure to establish identity within society can lead to role confusion and an identity crisis where the adolescent may experiment with many different lifestyles. Any pressuring from others into an identity can lead to rebellion and unhappiness (Erikson, 1980/1959).

Erikson's and Kohlberg's theories correlate to peer pressure, experimentation with different lifestyles (possible risky behavior), and the influence of society that may contribute to substance use. The adolescent may be driven to try out new behaviors as part of the process of separating from parents to gain independence and autonomy (Griffin, & Botvin, 2010). The goal of role identity is strongly influenced by the acceptance and popularity among peers. Adolescents may be drawn to substance use for fun, adventure, and rebellion against authority (Griffin, & Botvin, 2010).

Cognitive Development. Piaget (1950/2001), described the age of adolescence and adulthood as a stage of formal operational thought where intelligence is demonstrated through the use of symbols and abstract concepts (p. 140). The thought is logical, organized, and consistent, as the adolescent is now able to see things from various viewpoints. They solve problems by ranking possible solutions.

Young adolescent thinking centers around themselves. Their thought is based on what they think is ideal and may rebel toward things that do not fit their idealistic thinking. As they progress through adolescence, they continue with introspective thoughts and assume that others think the same way they do. They feel unique, special, exceptional, and invincible. These feelings in addition to a firm commitment to their own beliefs, may lead to risk-taking behaviors (Piaget, 1950/2001; Piaget & Inhelder, 1966/1969). Risk taking behaviors may include substance use.

Communication. The adolescent period is marked with immense transitions in psychosocial, sexual, cognitive, and social development and maturation, necessitating special clinical communication skills, particularly when discussing sensitive topics such as substance use (Christie, & Viner, 2005). PPCP must establish a rapport with the adolescent to promote open communication and to foster a comfortable environment. It is important to assure confidentiality and be empathetic, respectful, and non-judgmental when discussing risk behaviors such as substance misuse that can result in harm to adolescent health and welfare (Christie & Viner, 2005).

Multiple professional organizations have endorsed adolescent confidentiality through policy statements and practice recommendations, including the Society for Adolescent Medicine, the American Academy of Pediatrics, and the American College of Obstetricians and Gynecologists (Society for Adolescent Health and Medicine and the AAP, 2016). A policy compendium with contributions from professional organizations invested in adolescent health care was compiled through a collaborative initiative between the Adolescent Health & the Law (AHL), the American Medical Association (AMA), the AMA National Coalition on Adolescent Health, and the AMA Educational Forum on Adolescent Health (Morreale et al., 2005). The compendium compiles data from professional healthcare organizations about policies, position

papers, and practice guidelines about adolescent confidentiality and then analyzes and synthesizes the information according to themes. The purpose of the compendium is to educate healthcare providers about the role of confidentiality in access to care, encourage organizations to develop policies recommendations about confidentiality, and serve as a resource for healthcare providers working toward ensuring that public policy supports confidential health services (Morreale et al., 2005). While pediatric and adolescent health organizations endorse confidentiality and have made significant efforts to support direct care providers, such as the policy compendium, the execution of the recommended practice guidelines can prove challenging.

To foster confidentiality during adolescent healthcare visits, the provider must spend time alone with the adolescent and protect the information shared during the visit. However, studies have shown that adolescent healthcare providers spend time alone with the adolescent in one third to one-half of the total visits (Bravender et al., 2014; Grilo et al., 2019; McKee et al., 2011). Bravender et al. (2014) examined how often confidentiality is assured and how often adolescents spend time alone with their primary care provider. The results revealed that time spent alone with the adolescent and provider occurred during half of the encounters, a statement about confidentiality was presented during 31% of the encounters, and motivational interviewing techniques were used during 71% of visits. Pediatricians were more likely than family practitioners to spend time alone with the adolescent (Bravender et al., 2014).

In a similar study, Grilo et al. (2018) defined the factors associated with providers spending time alone with adolescents and whether the provider discussed confidentiality by administering a computer-based survey. Findings suggest that about half of the adolescents reported spending time alone with the provider (55% female and 49% male) with similar results

for discussing confidentiality (55% female and 44% male). Variables that appeared to positively influence time alone and confidentially were age, higher income, not being enrolled in school, and patients who participated in risky behaviors such as tobacco use, binge drinking, or sex. Adolescents who did experience private time reported more positive attitudes about their provider (Grilo et al., 2018, p. 313).

McKee et al. (2011) explored provider perspectives about delivering confidential care to adolescents. Primary care providers were asked to document on a pocket card after each encounter with an adolescent aged 12-18, regardless of the reason for the visit. They were asked to document time alone and the specific services provided. The providers were also interviewed to explore the provider's decision making about when to include time alone and introduce confidentiality. Of the adolescents who were accompanied by a parent, 31.9% did not have any time alone with the provider. During the interviews, the providers stated that they always provide time alone with the adolescent during annual well visits starting around 12 years of age. Physical and emotional maturity were themes mentioned as factors of their decision making of what age to start the time alone. During visits other than annual well visits, providers reported time alone was based on the chief complaint and whether it was related to a sensitive issue. They also mentioned that they assess the dynamic between the parent and adolescent and look for cues of a need for time alone, such as either the parent or adolescent appearing angry or upset.

Ambresin et al. (2013) conducted a systematic review of the literature to determine domains and indicators of adolescent perspectives on health care. Researchers identified 22 articles that met the inclusion criteria; 15 quantitative, six qualitative, and one mixed-methods. The findings of their review identified eight domains central to the positive adolescent experience with health care. The eight domains were: "accessibility of health care; staff attitude;

communication; medical competency; guideline-driven care; age-appropriate environment; involvement in health care; and health outcomes” (p. 678, Box 1.).

The adolescents participating in the study describe an adolescent-friendly care provider as having accurate knowledge respectful, supportive, honest, trustworthy, and friendly with respect as the most common (Ambresin et al., 2013). They defined friendliness as someone who greeted them as a friend and is interested in non-medical aspects of their lives and shares personal information with them. For the adolescent participants to discuss sensitive issues and feelings, there needed to be a sense of trust. One of the most important aspects of communication was listening. They wanted physicians to use direct communication with clear technical information without lecturing and straight talk when delivering bad news (Ambresin et al., 2013).

Communication between the adolescent and a figure of authority can be very challenging related to their psychosocial developmental stage. The adolescent may view the interaction as threatening to their role identity and independence. It is important to keep these in mind when communicating with the adolescent while still assessing them as an individual. Slang may also be used by the adolescent, and the practitioner must clarify meaning by asking without being embarrassed or using avoidance. Pediatric primary care providers addressing substance use with adolescents may find the results of the aforementioned studies addressing confidentiality and communication useful. Findings may also be used to provide advice to parents on how to speak to their child about substance use.

Parent communication about substance use has a strong impact on adolescent substance use (Mason et al., 2015). Parents need to have knowledge about adolescent marijuana use and guidance on how to have discussions about illicit drug use with their adolescents. Mason et al.

(2015) examined perceptions, knowledge, and parent-child discussions about Washington's recreational marijuana legalization. The found that there was no change to attitudes and behaviors associated with marijuana among both the parents and children participants after legalization. Parents occasionally discussed recreational marijuana with their children, although they did not have a clear knowledge of the law. Most of the discussions centered around rules and not about the health and safety consequences of using recreational marijuana. Parent communication with their children about risks and clear rules and guidelines is linked to a reduction in initiation and substance use (Mason et al., 2015).

Kosterman et al. (2016) explored the implications of the legalization of marijuana in the state of Washington on parents' attitudes and behaviors. The study revealed a knowledge deficit among parents regarding marijuana laws and the risks associated with marijuana use. During the same time-period, adult marijuana use and use disorder were at its highest, and adult perception of use was at its lowest. Parents in the study were opposed to granting permission for a child to use marijuana. However, a quarter of parents did not speak to their child about marijuana, and a third used marijuana where their child knew or could see them using it (Kosterman et al., 2016). Healthcare providers' efforts to decrease adolescent substance use should include guidance to parents on how best to talk to their children about marijuana.

Provider Knowledge about Marijuana

Healthcare providers are faced with the challenge of maintaining knowledge of current public health and health policy issues that may affect their clinical practice and patient health outcomes. Physicians and mid-level providers are also faced with the decision of whether to consider recommending medical cannabis. Several recent studies have illustrated knowledge gaps among physicians and nurse practitioners about medicinal marijuana (Balneaves et al.,

2018; Carlini et al., 2015; Kondrad & Reid, 2013). As marijuana use is brought to the forefront of the public eye, practitioners need to educate patients and promote positive outcomes (Parmar et al., 2016). Recent studies have shown that providers assess patients for marijuana use but are uncomfortable providing specific information regarding its use and health effects (Brooks et al., 2017)

The American Nurses Association's supportive position of patient access to therapeutic marijuana and the passing of bills in at least five states allowing Nurse Practitioners to become certifying providers further necessitates increased knowledge about marijuana (Philipsen et al., 2017). Regardless of the decision to become a medical marijuana provider, to address marijuana for recreational or medicinal use with adolescents and their parents, providers must be armed with knowledge about the drug.

Brooks et al. (2017) surveyed 114 Colorado-based providers who care for children, adolescents, pregnant and breastfeeding women to capture their knowledge of state marijuana laws, health and safety risk perceptions, clinical practices of counseling and assessment, needs and assessment for additional training, and the impact of training on change in practices. The results of the survey revealed that although most healthcare providers were familiar with state laws, few providers felt their knowledge about health risks associated with marijuana use was adequate and expressed a need for education. Close to 1/3 of respondents did not feel comfortable initiating a conversation about associated risks of marijuana use. However, most perceived risks of marijuana use as moderate to high risk. Of those completing the survey, practices were inconsistent around talking to patients about underage use, safe storage, and overconsumption of edibles. Educational resources and patient materials were listed as sources to increase provider confidence (Brooks et al., 2017).

Norberg et al. (2012) assessed general practitioners' and nurses' self-perception of knowledge, beliefs, and behaviors toward marijuana use, screening, and management ($n=664$). Results indicate that despite a lack of training, most participants were aware of marijuana-related issues and believe it is part of their role to be able to address these issues. However, many reported their knowledge and ability to screen and manage marijuana-related issues as poor.

Ryan and Ammerman (2017) offer guidance to pediatricians about counseling and providing anticipatory guidance to adolescents and parents about marijuana. The authors emphasize that the primary care office setting is optimal for providing the opportunity for education, counseling, screenings, and referrals. (Ryan & Ammerman, 2017). Increasing Pediatric Primary Care Provider (PPCP) knowledge may prepare them for addressing adolescent substance use.

Best Practice

Pediatric primary care providers can help adolescents avoid and reduce substance use by performing regular screenings. Most teens visit a pediatrician yearly (Hogan et al., 2008, as cited in AAP, n.d.). For those not using any substances, screening is the opportunity to reinforce safe, healthy choices, which is effective in reducing initiation (Brown & Wissow, 2009 as cited in AAP, n.d.).

Accurate identification of adolescent patients who use or are contemplating substance use has a high degree of subjectivity without a validated screening tool. Still, most primary care providers do not use a validated screening tool (Harris et al. 2012, Levy, & Shrier, 2015; Palmer et al., 2019 Van Hook et al., 2007). Providers who rely on their clinical impression alone may gain basic information on whether the adolescent uses alcohol or illicit drugs, but often underestimate the extent of the substance use and miss the opportunity to address substance

misuse or abuse (Wilson et al., 2004). Pediatric health care providers underestimate the prevalence of substance use and may determine that screening isn't needed for "good kids" based on personal or clinical judgment. Nearly 88% of providers completing a survey state they are screening; however, only about 23% use a validated tool (AAP, 2014 as cited in AAP, n.d.).

Harris et al. (2012) conducted a statewide survey of primary care physicians about adolescent substance use screening practices, attitudes, and barriers ($n=743$). Survey results found that the majority (86%) of pediatricians follow recommended guidelines to screen adolescents for substance use annually, but only 46% use a validated screening tool. Younger physicians were more likely than older physicians to screen adolescents for substance use annually. The authors suggest this may be related to recent initiatives to include training in medical curriculum.

Screening for adolescent substance use with a validated screening tool may identify substance-use related risks and discourage imitation. Provider education and support may increase evidence-based screening practices.

Evidence-based Practice Recommendations

Incorporating (EBP) methods to identify and treat adolescents for substance use may reduce the risk of harm and addiction among the vulnerable adolescent population. The Screening Brief Intervention and Referral to Treatment (SBIRT) evidence-based method has been endorsed by the American Academy of Pediatrics, the Center for Disease Control, the National Institute of Health, and the National Institute on Drug Use and Health (Tanski et al., 2010). The Institute of Medicine first endorsed the use of SBIRT in the 1980s as a public health model to identify and reduce or prevent misuse, abuse, or dependence on alcohol or drugs (Agerwala, & McCance-Katz, 2012). The current SBIRT model is based on the more recent recommendation by the Institute of Medicine to use the SBIRT method to link community-based

screenings for substance use with referral to specialty services. (IOM, 1990 as cited in Agerwala, & McCance-Katz, 2012).

The steps of the SBIRT model begin with screening for substance use with a validated screening tool to establish current use, and the frequency of use of alcohol, tobacco, and illicit drugs. Positive reinforcement is recommended for negative screening results. The second step includes a brief intervention based on the frequency and severity of use to reduce risky or problematic use (Agerwala, & McCance-Katz, 2012). The interventions are used to motivate the patient to reduce or stop substance use. Types of interventions may include advice or motivational interviewing. The third step is to refer the patient with signs of substance misuse or abuse to a substance use treatment facility or mental health specialist (Agerwala, & McCance-Katz, 2012; CIHS, n.d.). Pediatric healthcare providers who use the SBIRT model can have a significant impact on adolescent behaviors (AAP, n.d.). Bernstein et al. (2009) tested the effectiveness of a brief motivational intervention provided in the emergency department in leading to abstinence or reduction of marijuana use by adolescents. The researchers found that the intervention did increase marijuana abstinence and reduced consumption.

Although the SBIRT method is recommended by several healthcare organizations, it is important to note that there is not enough longitudinal data to measure its effectiveness in addressing substance use among the adolescent population. The United States Preventative Services Task Force (United States Preventative Services Task Force, 2019) recommends the use of SBIRT to address adult substance use. However, the committee noted critical there is insufficient evidence regarding the risks and benefits of using the SBIRT method to address adolescent substance use. The committees' 2019 annual task force report to congress they identified adolescent illicit drug use as a high priority need for further evidence with emphasis on

the need to evaluate the effectiveness of screening tools to identify adolescent illicit drug use (United States Preventative Services Task Force [USPSTF], 2019). Li et al. (2015) found similar results in their systematic review and meta-analysis pertaining to motivational interviewing (MI) to reduce illicit drug use in adolescents. There was insufficient evidence to support that MI resulted in a reduction of use. They noted that MI might impact intentions to change, although there was study bias for the findings. The results of a systematic review by Young et al. (2014) indicate that BI may be effective in increasing motivation for a reduction or cessation of use in less frequent users. In conclusion, there is a need for more longitudinal evidence to support the outcomes for using SBIRT to address adolescent substance use.

There is a lack of use of the SBIRT method among primary care providers. Pediatricians who find it difficult to implement the SBIRT method report insufficient time, lack of knowledge on how to implement SBIRT or the screening tool, inadequate referral resources (Hook et al., 2007). Results of a large state-wide survey revealed that the majority of pediatricians follow recommended guidelines; however, the same survey found that pediatricians find it difficult to implement the SBIRT (Levy & Shrier, 2015). Addressing the barriers noted in the literature may lead to more effective education and increased pediatrician buy-in to implementing the recommended SBIRT method.

In 2003, the national Substance Abuse and Mental Health Services Administration (SAMHSA) launched an SBIRT initiative with funding for SBIRT services provided in emergency departments, primary care settings, colleges and universities, medical residency programs and medical professional training programs and state cooperative agreements (SAMHSA, n.d., Harris et al., 2012). The American Academy of Pediatrics (AAP) (n.d.) developed a guide to support pediatricians in incorporating screening, brief intervention, and

referral to treatment (SBIRT) to care for adolescents contemplating or using alcohol or illicit substances. Both of these resources may help support providers to incorporate the SBIRT method into their practice.

Validated Tools. The purpose of screening adolescents is not only to identify those who are already using substances but to evaluate the level of use on a continuum to prevent or reduce use (Levy & Shrier, 2015). There are several validated screening tools available to screen for adolescent substance use. The National Institute of Drug Abuse provides a *Screening and Assessment Tools Chart*, which lists evidence-based screening tools noting target population, substance, and how it is administered (NIH, 2018). The most frequently used substance use screening tool is the Car, Relax, Alone, Forget, Friends, Trouble (CRAFFT) screening tool (2009; Pilowsky, 2019). The CRAFFT is a valid and reliable tool for identifying problem substance use in adolescents (Knight et al., 2002) and is recommended by several pediatric organizations such as the American Academy of Pediatrics, the Center for Medicaid and CHIP Services, and the National Institute of Alcohol Abuse and Alcoholism Youth Screening Guide (<https://crafft.org/about-the-crafft/>).

The Screening to Brief Intervention (S2BI) is a recently developed validated substance use validated screening tool developed at Boston Children's Hospital with support from the National Institute on Drug Abuse (Levy et al., 2014; Levy, & Shrier, 2015). The S2BI is simplified and easier to use than the CRAFFT and correlates to the Diagnostic Statistics Manual, 5th edition (DSM-5). It also identifies the risk and extent of risk for substance use and misuse more quickly and easily. The authors recommend that the CRAFFT tool still be considered for opening interview questions and to identify topics to further discuss with the patient. The CRAFFT may also serve as motivational interviewing and an introduction to the next step in the

SBIRT; Brief Intervention (Levy & Shrier, 2015). The S2BI is integrated in an SBIRT toolkit (Levy, & Shrier, 2015) for providers, which includes the S2BI, anticipatory guidance, referral resources, and interactive case studies. The easy to use toolkit, which includes an algorithm for mapping interventions to the result of the screen, may address some of the barriers of implementing the SBIRT.

Conceptual Framework

The conceptual framework guiding this study is the Knowledge-to-Action Process Framework (KTA) (Graham et al., 2006). This conceptual framework has been adopted by the Canadian Health and Research Institute (Tetroe, 2007), the National Institutes of Health (Field et al., 2014), and the Center for Disease Control as a tool to expedite evidence into practice (CDC, 2014). The KTA framework includes steps that address the individual making decisions about the usefulness and appropriateness of the knowledge in their practice and seeking activities that may allow them to customize the knowledge to their situation (Graham et al., 2006). The model also includes identifying barriers and supporters when planning the action phase (Graham et al., 2006).

The KTA framework is an action-based model consisting of two phases and multiple steps (Graham et al., 2006)

Phase 1: Knowledge creation phase

Step 1: Knowledge Generation (Inquiry)

Step 2: Knowledge Synthesis

Step 3: Knowledge Tools and Products.

Phase 2: Knowledge Application phase

Step 1: Identify the gaps and select the knowledge needed

Step 2: Adapt or customize the knowledge to the local context

Step 3: Assess barriers and facilitators to knowledge use

Step 4: Select, tailor and implement interventions

Step 5: Monitor knowledge use

Step 6: Evaluate outcomes or impacts of using the knowledge

Step 7: Determine strategies for ensuring sustained use of the knowledge

Many evidence-based clinical interventions have been successfully implemented into practice utilizing the KTA framework. For example, Licskai et al. (2012) used the KTA framework to implement asthma guidelines in a primary care setting where a gap was identified between international evidence-based guidelines and current practice; the recommendations were often not implemented. To address this concern, the authors utilized the KTA framework to develop a multi-step approach for a health system change. This approach was successful in closing the gap between evidence and practice implementation, proving a success in the implementation of six evidence-based guidelines for asthma. The results included a decrease in symptoms, a decrease in urgent visits, symptom improvement, and a decrease in absenteeism (Licskai et al., 2012). Authors recommend the KTA framework to guide multi-level organization change, facilitate practice implementation, and improve healthcare outcomes in primary care (Licskai et al., 2012).

Two literature reviews were conducted, each to apply the KTA framework to recommend steps to reduce falls in the hospital setting (Haines & Waldron, 2011; Tetroe et al., 2011). The authors conducted a literature review that revealed a gap in the number of preventable falls in the hospital setting and national recommendations for prevention. They used the KTA framework to identify what knowledge needed to be translated and how best to translate this knowledge into

practice. The Knowledge to Action framework has been successfully applied to identify knowledge gaps and implement evidence-based practice and applies to this SPP.

Summary

Chapter two described the process that was used to search and identify current literature related to the scholarly project. Themes identified through the analysis and synthesis of literature were expounded. Support for the chosen conceptual framework used in the study design and implementation was provided.

Chapter III will provide a more comprehensive description of the application of the EBP model and the KTA framework to the chosen project design. Each step of the project will be discussed, including sample, setting, data collection, informed consent, steps to maintain confidentiality, and measurement. The chapter will conclude with a discussion about the plan for data analysis.

Chapter III: Methodology

This DNP scholarly project focused on a quality improvement pilot study at a pediatric primary care clinic. The goal of the project was to educate the Pediatric Primary Care Providers (PPCPs) about evidence-based practice recommendations for the Screening Brief Intervention and Referral to Treatment (SBIRT) method using the validated Screening to Brief Intervention (S2BI) screening tool to address adolescent substance use.

Adolescent recreational marijuana use is a current healthcare concern, especially in states where the drug has been legalized for adult use. Studies have shown that there is a lack of knowledge about marijuana among healthcare providers. To address adolescent substance use, providers must be knowledgeable about the substances the adolescents may be using. Therefore, this project incorporated the topic of adolescent recreational marijuana.

Chapter III begins with a discussion of the project application of the Rosswurm and Larrabee Model for Change to Evidence-Based Practice (Larrabee, 2009), which was utilized by the researcher as a systematic guide to address a gap in evidence-based practice. The discussion will then progress to the Knowledge to Action (KTA) framework (Graham et al., 2006), which was used to enhance the implementation efforts. A detailed description of the research design, methods, and procedures will be included in the discussion.

Evidence-Based Practice Model

The six-step Rosswurm and Larrabee Model for Change to Evidence-Based Practice originated in 1999 and was reconstructed in 2009 from a unidirectional to a bidirectional model (Larrabee, 2009). In the following paragraphs, I will present the correspondence of each step of the model to the planning, implementation, and evaluation of the Scholarly Practice Project (SPP).

Step 1: Assess the Need for Change in Practice

The first step of the Rosswurm and Larrabee model (Larrabee, 2009) is to assess the need for change. Internal and external data concerning current practice is collected and compared. Assessment of the data should include input from stakeholders and result in the identification of the problem and the link to interventions and outcomes (Larrabee, 2009).

I identified the need to explore Pediatric Primary Care Practitioner (PPCP) knowledge about caring for patients using recreational marijuana through discussions among peers in the social, academic, and practice settings. State consideration of legalization of recreational marijuana has brought this topic to the forefront among healthcare providers who may be facing practice changes necessitating further education about what remains a controversial issue among politicians, lawmakers, patients, and healthcare providers. Mass media has also increased surveillance of marijuana use in states that have decriminalized marijuana use and possession (Miech et al., 2015; Schuermeyer et al., 2014; Vigil, 2015). This information has led to increased public health concerns about youth and adolescents (WHO, 2016; Wright, 2015), driving public demand for more information.

Identifying adolescents at risk for marijuana and other illicit drug use is a crucial step toward addressing the illicit drug problem in the United States. Evidence-based practice recommendations include addressing adolescent substance use utilizing the SBIRT method while incorporating a validated screening tool (Tanski et al., 2010). The majority of primary care pediatric healthcare providers screen for substance use; however, most do not use a validated tool (AAP, 2014 as cited in AAP, n.d.)

In August of 2019, a meeting with the pediatric primary care practice owner at the chosen site was held to discuss the proposed scholarly practice project and to gather brief preliminary information on current internal practice policies and procedures addressing adolescent substance

use. The discussion revealed that there was no current practice policy requiring the use of an evidence-based validated screening tool to screen for adolescent substance use. Adolescents were screened at least annually for substance use using a non-validated adolescent questionnaire, and the providers discussed substance use with adolescents at their discretion. The providers' interest in education about recreational marijuana use was also confirmed. I determined that a more in-depth collection and analysis of internal data related to the project purpose would need to be conducted during the implementation phase of the scholarly practice project to determine the best approach for addressing the change to evidence-based practice methods. These activities correlate to steps four through six of the Rosswurm and Larrabee model (Larrabee, 2009).

Step 2: Locate the Best Evidence

The second step of the model for evidence-based practice is to link the identified problem with interventions and outcomes (Larrabee, 2009). The identified practice problem of the gap in the use of evidence-based practice methods to address adolescent substance use and the lack of knowledge about adolescent recreational marijuana use among PPCPs merits interventions to increase knowledge and recommend practice changes.

Pediatric Primary Care Providers serve a vital role in effective screening to identify risks and provide adolescents with evidence-based educational interventions and health promotion interventions. The decreased perception of risks of marijuana use among adolescents may lead to an increase in use and adverse health effects. Increasing the adolescent's perception of risks through educational interventions may decrease use. Education is especially crucial when states are considering legalization as the adolescent may be exposed to media portraying marijuana as a safer alternative to alcohol and that it improves health (Saloner & McGinty, 2015; SAMHSA, 2014b). Educational programs have been effective in increasing the perception of risk and

decreasing the use of alcohol and tobacco smoking (Pacula et al., 2014). Increasing the PPCP's knowledge about recreational marijuana and the use of validated interventions will assist the practitioner with these charges.

A research question was formulated using the Population, Intervention, Comparison, Outcomes, Time-frame (PICOT) format (Poli, & Beck, 2017). The independent and dependent variables were identified, and these variables were used to determine associated search terms. A literature search was conducted to ascertain current evidence-based practice recommendations. Chapter II of this paper contains a full discussion of the review of the literature.

Step 3: Critically Analyze the Evidence

The third step in this model is to synthesize the best evidence (Larrabee, 2009). The synthesis was accomplished through a literature review of both empirical and non-empirical sources. The literature was systematically critiqued and synthesized, utilizing both quantitative and qualitative data. Content experts' clinical judgment and benefits and risks associated with the educational intervention and practice recommendations were assessed. A discussion of thematic analysis and synthesis of the literature review is included in Chapter II.

Step 4: Design Practice Change

The fourth step is to design a change in practice (Larrabee, 2009). The project design included an education session intervention to recommend current evidence-based best practices to screen and treat adolescents who are using recreational marijuana or other illicit drugs and closing knowledge gaps about recreational marijuana. Gaps in knowledge were identified through a review of the current evidence-based literature and informal conversations with the site providers. The intervention was based upon previous evidence-based educational models that

have been developed with similar objectives. A thorough explanation will be discussed in the procedures section of this chapter.

Step 5: Implement and Evaluate Change in Practice

The fifth step in the Rosswurm and Larrabee evidence-based model is to implement and evaluate the practice change (Larrabee, 2009). The Scholarly Practice Project (SPP) was implemented from September 2019 through January of 2020. The setting was a pediatric primary care site in the eastern region of the United States. The project began with identifying the current routine for screening adolescents for illicit drug use. A medical record review was completed to establish current provider practices of identification of adolescent drug use and treating adolescent patients using illicit drugs. An education session about practice recommendations for the implementation of the evidence-based Screening, Brief Intervention, and Referral to Treatment (SBIRT) method using the validated Screening to Brief Intervention (S2BI) tool was provided. The session included information about adolescent recreational marijuana use. The providers were asked to complete an Adolescent Well-Visit Tracking form after each adolescent well visit for two months to evaluate whether they implemented the SBIRT and S2BI during adolescent well visits.

Additional data was collected from surveying the providers about their self-assessment of knowledge about recreational marijuana and adolescent recreational marijuana use to address knowledge gaps during the education session. The providers completed the survey before and after the education session to evaluate whether the education session addressed the providers desired information about marijuana. Details of the design and methods are in the procedures section of this chapter.

Step 6: Integrate and Maintain the Practice Change

The final step in this model is to integrate and maintain the practice change (Larrabee, 2009). The researcher offered to meet with the site medical director to share the outcomes of the project. The educational intervention and outcomes may also be disseminated to stakeholders, which can include policymakers, educators, and Pediatric Primary Care Providers (PPCP's) via poster presentations at local and national conferences and during a nurse practitioner residency at an academic institution. Recommendations may be made to the practice site owner for ongoing assessment of the implementation of the evidence-based SBIRT method using the S2BI screening tool to address adolescent substance use.

Conceptual Framework

A conceptual framework can logically present how the research project was undertaken and show the relationships between the concepts or variables that are chosen (Adom et al., 2018). I employed the Knowledge-to-Action Process Framework (KTA) (Graham et al., 2006) to enhance the implementation efforts of the project. The KTA conceptual framework has been adopted by the Canadian Health and Research Institute (Tetroe, 2007), the World Health Organization, the National Institutes of Health (Field et al., 2014) and the Center for Disease Control as a tool to expedite evidence into practice (CDC, 2014). The KTA framework was suitable for this SPP due to its utility in application to research knowledge across a wide range of stakeholders; practitioners, policymakers, patients, and the public (Sudawad, 2007).

The KTA framework is an action-based model consisting of two phases and multiple steps (Graham et al., 2006). The two phases, knowledge creation and action, are fluid and can occur simultaneously or sequentially as knowledge may influence the action phase throughout the project. As illustrated in Figure 1, there is a funnel in the center, which contains the three steps of knowledge creation. Knowledge creation begins broadly at the top of the funnel. As

knowledge increases and develops, it becomes more refined and is sifted through the funnel until the most useful knowledge to the stakeholders is gained. The action phase, consisting of seven steps, is situated in a circular pattern surrounding the funnel. The circle contains actions for the implementation and application of knowledge. Each action step may influence another and influence or be influenced by the funnel of knowledge. The following paragraphs will discuss the alignment of this SPP with the phases and steps of the KTA framework.

Phase 1: Knowledge Creation Phase

The three steps of the knowledge creation phase are knowledge inquiry, knowledge synthesis, and knowledge tools and products. Knowledge inquiry is the broadest type of knowledge defined by Graham et al., (2006) as broad knowledge that may consist of primary studies and other information of varying quality. During the knowledge inquiry stage, I conducted a literature review of general terms and variables related to adolescent recreational marijuana use to identify the practice problem. The problem of a gap in primary care provider use of evidence-based practices to address adolescent substance use was identified, and the research question was developed. Next, I continued a directed search of the literature focused on the research question.

The second action step of the knowledge phase is knowledge synthesis described by Graham et al. (2006) as using reproducible methods to appraise and synthesize relevant information. Knowledge synthesis was accomplished by analyzing and synthesizing the findings of the literature review. After gathering peer-reviewed articles related to the research question, I then appraised each article for relevance, quality, and level of evidence.

The third step in the knowledge phase is knowledge tools or products. During this step, practice guidelines, care pathways, or other tools are sought to aid in the application and

implementation of knowledge. It is important to choose relevant tools that are “clear, concise and user-friendly” (Graham et al., 2006, p. 19). The SPP method design was drafted during this stage. After identification of the practice problem, an educational session was determined appropriate for the SPP intervention. I returned to the literature for evidence of current validated screening tools for adolescent substance use. After identifying the current evidence-based practice recommendations as to the Screening, Brief Intervention and Referral (SBIRT) method and the Screening to Brief Intervention (S2BI) screening tool, I then searched and analyzed the literature related to teaching tools to educate and train providers on these evidence-based practice recommendations. The selection of the tools was based on criteria for tools that were concise and clear due to the time and provider availability limitation for the education session, and provider feedback regarding limited time to add screenings or interventions to their existing practice. I reviewed a multitude of SBIRT training materials available on many state departments of public health and healthcare organization websites. The SBIRT toolkit, located on the state of Massachusetts Public Health website that is recommended by several organizations and is available to the public with free training materials, met the tool criteria. The unique appeal of the training materials was the focus on the adolescent, and the inclusion of the recent S2BI validated tool that was quick and easy to implement during the patient visit.

Although not the focus of the research question, I searched for a tool to measure provider knowledge of recreational marijuana. I located two recent studies that conducted needs assessments to measure provider self-assessment of knowledge about medicinal marijuana. Although medicinal marijuana is significantly different than the recreational marijuana focus of this project, the survey tool provided a foundation for a tool for this project. I then contacted the authors of the two studies to ask for permission to use their provider self-assessment survey tool

with modifications of changing medicinal marijuana to recreational marijuana (Appendix A) (Balneaves et al., 2018; Ziemianski et al., 2015).

The self-assessment survey tool developed by Ziemianski, et al. (2015), and modified by Balneaves et al. (2018), includes questions about barriers and attitudes. However, these areas relate specifically to authorizing or prescribing medical marijuana or medical marijuana use; therefore I did not include these sections. I also developed a demographic questionnaire for the SPP project and, therefore, did not need to include the demographic section, which was included in the original self-assessment survey tool. The adapted and modified tool was used for a pre-post educational session provider survey of self-assessment of knowledge about recreational marijuana (Appendices G & H) to measure the effectiveness of the portion of the education session about recreational marijuana. Due to the significant modification of the tool, the results must be interpreted with caution.

Returning to the literature to search for tools and practice recommendations demonstrates the bi-directional flow of the knowledge steps between step two, knowledge synthesis, and step three, knowledge tools and products. During all three steps of knowledge creation, the knowledge producers can customize the search for knowledge and dissemination of knowledge to the needs of the users (Graham et al., 2006).

Phase 2: Action Cycle (Application)

The second phase of the Knowledge to Action Framework (KTA) consists of a seven-step action cycle to address behavior and practice change (Graham et al., 2006). The activities in each step relate to the application of knowledge. The steps may influence one another or can be influenced by the steps in the knowledge creation funnel. The first action step is to identify the gaps and select the knowledge needed (Graham et al., 2006). This step was completed when I

identified the knowledge gap and need through a review of the literature and an initial discussion with the owner of the practice site.

The second step in the action cycle phase is adapting the knowledge to the local context. This step is critical to promote the translation of knowledge to initiate a change in practice. Engaging the participants in learning and applying the knowledge that addresses the practice gap must be tailored to the learner. Each participant decides whether the knowledge is useful, valuable, and appropriate to their setting and circumstance (Graham et al., 2006). The activities related to the dissemination of knowledge must be catered to the local context.

To adapt the knowledge needed to the local contest, I held an informal introductory luncheon with the site providers to introduce the project and solicit their feedback. The meeting allowed me to gather thoughts and opinions about the usefulness of the project to the group and individual approach to caring for the adolescents in their practice panel. Each provider contributed to the discussion and offered information about the challenges associated with addressing adolescent substance use. There was a consensus among the group that adolescent recreational marijuana and other illicit drug use was a risk to the adolescent's health and wellbeing and that legalization may impact the perception of risk associated with marijuana use among parents as well as adolescents. During the discussion, the providers shared requests for topics to be included in the SPP educational session which included confidentiality concerns related to screening and interventions, resources for referrals, signs of misuse or addiction of marijuana, and current evidence-based risks associated with adolescent marijuana use that could be shared with the adolescent.

The next three steps of the action phase of the KTA framework, assessing barriers and facilitators of knowledge use, selecting, tailoring and implementing interventions, and

monitoring knowledge use (Graham et al., 2006), overlapped during the execution of the SPP. Assessing barriers and facilitators occurs on multiple levels. At the individual level, it was important to assess barriers and facilitators for the providers to complete the consent form, demographic questionnaire, and pre-education session self-assessment. One barrier was identifying the ideal method to deliver the web link to the forms housed in *Qualtrics*®. The practice does not have a group email platform; therefore, I needed to obtain permission from the providers to use their personal email addresses. Also, I met challenges with the dissemination of the forms, which required consultation with *Qualtrics*® (<https://www.Qualtrics.com>) technology support staff. Some of the providers expressed difficulty using the link to the pre-education session survey; therefore, a revision was made to collect paper copies for the post-survey. The small number of providers was a facilitator in this process as it made it easy to navigate any challenges with completing the paperwork.

A barrier at the systems level was my unfamiliarity with the electronic medical record system. I attended a training session at the site, which enabled me to gather the data from the retrospective medical record review. The busy practice and part-time employment of some providers proved to be a barrier as there was limited provider availability to attend the education session. Consideration of the patient volume on different days of the week, and other provider commitments that could interfere with attendance needed to be considered. To address this concern, I worked with the site administrator when scheduling the education session and all follow-up meetings and accommodate any changes. Two identical education sessions were held to meet scheduling needs. The facilitator in this process was the site administrator who went above and beyond to assist with coordinating schedules. The practice was very busy on the date of the first education session resulting in a late start for the session. As a result, the session lasted

approximately 40 minutes. The interest and engagement of the participants during the session facilitated the success of the intervention. Copies of educational materials were provided to the participants, and I was available to answer questions in-person, via email, and cell phone regularly. The second session was successful with starting and ending on time.

To monitor knowledge use, I created an Adolescent Well Visit Tracking form. The two-month data collection was met with some challenges due to timing. There were fewer well visits scheduled, three major holidays, and provider vacation time during the data collection period. A facilitator for completing the adolescent tracking form was the assistance of a medical assistant who made certain the form was available to study participants at each well-visit and who collected and stored the forms in the designated locked area.

According to Graham et al., (2006) three types of knowledge should be monitored during implementation: conceptual, “levels of knowledge, understanding, or attitudes” (p.21), instrumental, “describes changes in behavior or practice (and translates to improved health outcomes)” (p. 21), and strategic, “the manipulation of knowledge for power or profit goals” (p.21). Frequent monitoring of the use of knowledge is helpful to evaluate whether the activities used to promote the recommended change were sufficient. Communication with the participants throughout the implementation phase can provide feedback regarding the reasons that the providers did or did not adopt the recommended practice change. I conducted frequent check-ins with the participants in-person and via email to identify any barriers to implementing the practice recommendation.

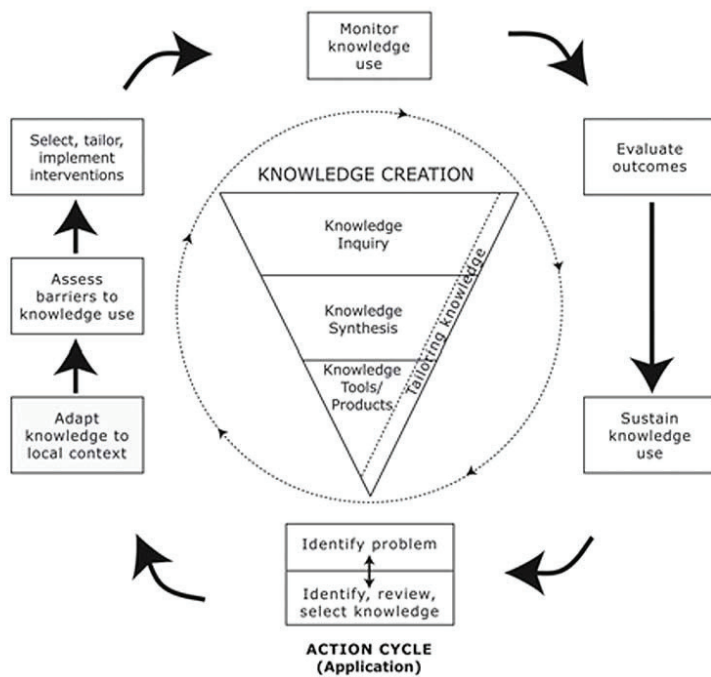
Steps six and seven of the KTA framework are to evaluate the outcomes or impact of the knowledge and to determine strategies for ensuring sustained use of the knowledge (Graham et al., 2006). The SPP activities, which attended to these steps, were data analysis and

interpretation. The pre-education medical record review was compared to the post-education session Adolescent Well Visit Tracking forms to determine if there was an increase in patient screenings and referrals. Chapter IV includes a detailed description of the data analysis and results and additional findings of the pre-post Provider Self-Assessment of Knowledge about recreational marijuana.

Figure 1

Knowledge to Action Framework

Figure adopted with permission (Appendix I): Graham et al., (2006) Lost in knowledge translation; Time for a map? *Journal of Continuing Education in Health Professions*, (26) No.1, p. 13. <http://doi.org/10.1002/chp.47>



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Procedures

The following paragraphs will describe the steps of the SPP.

Project Aim and Objectives

The aim of this scholarly practice project was to encourage providers to use evidence-based practice methods to address adolescent substance use in the pediatric primary care setting. The objectives of the SPP were; 1. Establish current practice procedures at the chosen site by reviewing medical record data from two months before the start of the project, 2. Present an education session to the providers about the evidence-based SBIRT method and the validated S2BI screening tool and include information about recreational marijuana, 3. Measure the practice change using the Adolescent Well Visit Tracking form, 4. Analyze the medical record and Adolescent Tracking form data, 5. Evaluate the project results and limitations, 6. Develop recommendations for practice and further research, and 7. Disseminate the findings to the DNP committee, site medical director, and other stakeholders via the SPP defense and presentations at local and regional conferences.

Hypothesis

The author hypothesized (*H*) that Pediatric Primary Care Provider (PPCP) participation in an education session about the evidence-based method of Screening, Brief Intervention, and Referral to Treatment (SBIRT) and the S2BI screening tool would increase adolescent screenings and referrals for substance use. The null hypothesis (*H₀*) was that Pediatric Primary Care Provider (PPCP) participation in an education session about the evidence-based method of Screening, Brief Intervention, and Referral to Treatment (SBIRT) and the S2BI screening tool would not increase adolescent screenings and referrals.

Research Design

The quality improvement scholarly practice project followed a quantitative, pilot, single group quasi-experimental design.

Research Question

1. Will an education session about the evidence-based method of Screening, Brief Intervention, and Referral to Treatment (SBIRT) and the S2BI screening tool increase Pediatric Primary Care Provider a) screenings and b) referrals for substance use?

Independent Research Variable

The independent variable related to the research question is conceptually and operationally defined in Table 1.

Table 1

Independent Research Variable

Variable	Conceptual Definition	Operational Definition	Level of Measurement	Quantitative Statistical Analysis
Education Session	[Information Session] "A presentation or other instructional activity delivered in a short period of time that focuses on a specific topic" (CDC, n.d.)	A one-hour education session presented to pediatric primary care providers about using the evidence-based method of Screening, Brief Intervention, and Referral to Treatment (SBIRT) and the Screening to Brief Intervention (S2BI) screening tool.	Nominal Provider attendance of the education session.	Attendance of education session is one of the criteria for inclusion in the participant sample.

Dependent Research Variables

Dependent variables related to the research question are conceptually and operationally defined in Table 2.

Table 2

Dependent Variables

Variable	Conceptual Definition	Operational Definition	Level of Measurement	Quantitative Statistical Analysis
Screening	Presumptive identification of a disease or risk of disease in a healthy individual by using tests or other procedures that can be performed quickly and easily (WHO, 2019)	Utilization of validated screening tool to identify adolescents at risk of the use or misuse of recreational marijuana	Categorical Ordinal (assigned 2 for yes, 1 for no)	Ratio
Brief Intervention	“...a spectrum of responses that includes positive reinforcement for no substance use, brief advice to quit for occasional use and use that does not reach the level of substance use disorder, and brief motivational intervention and referrals for adolescents with substance use disorders” (Levy & Shrier, 2015, p. 14).	The conceptual definition will be used for this study as it is from the toolkit that will be used for the educational intervention.	Categorical Ordinal (assigned 2 for yes, 1 for no)	Ratio
Referral	“A request from one physician to another to assume responsibility for management of one or more of a patient’s specified problems” (AAFP, 2019)	Referral to behavioral, substance use, or mental health specialist	Categorical Ordinal (assigned 2 for yes, 1 for no)	Ratio

Setting

The setting for the SPP was a private pediatric primary care site located in the eastern region of the United States. The state was chosen based on the legal status of adult use of medicinal and recreational marijuana.

Sample

The scholarly project utilized a non-randomized convenience sample of Pediatric Primary Care Providers at a private pediatric practice site in the eastern region of the United States.

Sample Size

The sample size target was 100% of the five PPCPs at the chosen practice site. One PPCP decided not to participate in the study, resulting in a final sample size of four PPCPs (n=4).

Informed Consent and IRB Approval

The Institutional Review Board (IRB) application and project proposal were submitted to the Regis College IRB committee during the summer of 2019. An expedited review was approved due to minimal risks to participants. Risks associated with this project include unanticipated emotional or social discomfort related to the topic of marijuana. The subject of marijuana use remains controversial in the United States, including among healthcare providers. The subject may also cause discomfort if the participants have themselves or know someone that has had negative experiences or associations with marijuana or other recreational drugs. These risks were disclosed and included in the informed consent. The submitted IRB application was approved by the Regis IRB in August of 2019.

The practice site chosen for this SPP did not have its own Institutional Review Board (IRB). The site administrator completed an Institutional Review Board (IRB) Authorization Agreement, which stated that they would rely on the Regis College IRB for review and continued oversight of human protection requirements.

The investigator followed IRB recommendations for electronic consent per Regis College guidelines and the U.S. Health and Human Services code of federal regulations policy for protecting human research subjects (USHHS, 2018). Each participant was fully informed of the purpose, risks, and benefits of the study and was asked to sign the consent form. The consent

form explained the purpose of the study and risks associated with completing it, such as unforeseen emotional distress. The consent form clearly stated that participation was voluntary, that the participant could opt-out at any time, and instructions on how to opt-out. The researcher's and IRB chairperson's names, credentials, and contact information were included in the consent form, and participants were encouraged to contact them with any questions or concerns.

Privacy and Confidentiality

Participants were notified of the steps to maintain privacy and confidentiality. To ensure privacy, the study data is stored electronically on a secure server with password-protected access, and the study data will be destroyed within one year of study completion. To maintain confidentiality, the researcher assigned a code to de-identify participant information. The researcher was the only person aware of the assigned codes. The researcher also signed the site HIPPA and confidentiality agreement.

Recruitment

Participants were recruited by electronic invitation through an email link sent to all PPCP at the chosen site. A link to access study materials was included in the email. The link directed the participants to a secure *Qualtrics*® survey software site containing the recruitment letter (Appendix D), which included a brief description of the study, name, credentials and contact information of the researcher, and an informed consent form (Appendix E). Participants were informed that the questionnaire should take about 10 minutes to complete, the pre and post knowledge assessment survey approximately 15 minutes each to complete, and the in-person education session approximately one hour to complete. They were also informed that they would

be asked to complete an Adolescent Well Visit Tracking forms (Appendix I) during or after adolescent well visits for two months which take approximately 2 minutes each to complete.

If the participant chose to answer 'Yes' to participate in the study, an embedded survey link brought them to the demographic questionnaire (Appendix F) and then to the pre-education session provider self-assessment of knowledge about recreational marijuana survey (Appendix G). The demographic questionnaire included demographic and background questions formulated by the researcher.

The original dissemination plan included sending the information to the providers using the organization's email system. However, there is no organization email system at the site. Therefore, providers were asked for personal email addresses, stating this was optional. All participants provided their email addresses.

Participants who met the inclusion criteria and completed the entire data collection package; demographic questionnaire, pre and post-education session provider self-assessment tool about recreational marijuana surveys (Appendix E), education session, and completion of Adolescent Well Visit Tracking forms were entered in a drawing to win a \$100.00 online store gift card.

Inclusion and Exclusion Criteria. The inclusion criteria was detailed to solicit a sample that provided useful information and enabled the researcher to learn about the study subject (Creswell, 2012). In this study, the inclusion criteria for participants were Pediatric Primary Care Providers (PPCPs) practicing at a pediatric primary care practice site located in the eastern region of the United States. For the purpose of this study, a Pediatric Primary Care Provider is defined as a board-certified pediatrician or board-certified pediatric nurse practitioner currently working at a primary care site in the chosen state and caring for patients ages 13-19. Additional

inclusion criteria required to participate in this study was the completion of the informed consent form (Appendix E) and the entire data collection package: demographic questionnaire (Appendix F), pre and post-education session provider self-assessment of knowledge about recreational marijuana surveys, attendance of the education session, and completion of the adolescent well visit tracking forms (Appendix I).

Exclusion criteria included those who did not meet the inclusion criteria, those who did not complete the informed consent form (Appendix E), and those who chose to opt-out.

Current Practice

To establish current practice standards at the chosen site, the researcher spoke with the site owner and administrators. Adolescents who arrive for a well visit are asked by front desk personnel to complete a questionnaire while in the waiting room. The form contains questions about substance use and other health promotion categories. The site practice manager, with medical director approval, created the form which consists of questions driven by quality measures. The completed form is then given to the medical assistant who enters the adolescent responses to the questionnaire into the patient electronic medical record.

Medical Record Review

A retrospective medical record review was conducted to determine the current provider practice of screening and referring adolescents for substance use. A review of similar studies (Hargraves et al., 2017; Monico et al., 2019) was conducted to determine the medical record sample size. Although the studies reviewed used multi-site designs with larger populations, they all reviewed electronic health records (EHR) for evidence of implementation of SBIRT as the primary means of evaluation. In the two studies reviewed, a chosen date range was determined by the author, driven by the length of the study. Then, all EHR records that met the inclusion

criteria during the timeframe were used for post-education evaluation of whether SBIRT was implemented during patient visits. There was no effect size, standard deviation, or confidence interval stated in either of the two research studies (Hargraves et al., 2017; Monico et al., 2019).

For the purpose of this DNP scholarly practice project, the sample size for the medical record review was determined using nursing research standards. Power is the strength of how well the study calculations will detect the differences in relationships that exist in the population (Burns & Grove, 2009). Four variables are involved in establishing power: sample size, significance, effect size, and statistical power (Cohen, 1992). When three of these variables are established, a calculation can be performed to determine the fourth variable.

A power analysis was performed using G*Power software (Heinrich-Heine Universitat Dusseldorf, 2010-2019) to calculate the sample size for this Scholarly Practice Project (SPP). A power of 0.80 was chosen as this is the minimum acceptable power for nursing studies (Burns & Grove, 2009, p. 357).

The effect size is the presence of phenomena where the null hypothesis is rejected. In nursing research, “the most desirable method of this information is evidence from previous studies” (Burns & Grove, 2009, p. 358). Although it is highly recommended that this information is included in the publication of studies, many articles do not contain this information (Burns & Grove, 2009, p. 358). If this information is lacking, small pilot studies may be performed to determine the sample size for a larger study or a power table where the effect size is estimated as small, medium, or large (Burns & Grove, 2009, p. 358). This SPP was conducted at one site and is considered a small pilot study; therefore, a medium effect size of 0.3 was chosen.

The level of significance commonly used in research in the minimal acceptable level of 0.05 unless otherwise determined in other like studies (Burns & Grove, 2009, p. 459; Cohen, 1992; Polit & Beck, 2008, p. 588).

The medical records reviewed were from visits that occurred over two months, July 13-August 13, 2019. A query was run in the electronic medical record database by the site administrator to identify medical records with diagnosis codes for adolescent well visits during the chosen time period. The result was 390 medical records. The sample size for this SPP project was determined to be 64 medical records using *G*Power Statistical Analysis Software* (<http://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower.html>) to perform the calculation with the following variables: significance 0.05, effect size 0.3, and power 0.80.

The chosen population for this study was adolescents ages 13-19 years old. As shown in Table 3, of the 394 medical records identified in the query, the number of medical records was not equal for each year of age. In an attempt to ensure equal representation of each age group in the medical record review, a sample size of 18% of the total number of medical records in each age group was used.

To randomize the sample within each age group, the total number of records in each age group was divided by the number of charts needed. As described in Table 4, adjustments were made to round to whole numbers. The final medical record sample size was a total of 86 records. Although this number was greater than the target sample size of 64, it was used to add greater strength to the study and to provide an equal representation of each year of age.

Table 3:

Medical Record Sample Determination, Step 1

Age (years)	Total Records	18% of Records	Records for Review (N=86)
#	#	%	<i>n</i>
13	61	10.98	11
14	70	12.6	13
15	56	10.08	10
16	54	9.72	10
17	70	12.6	13
18	30	5.4	5
19	43	7.74	8

Table 4*Medical Record Sample Determination, Step 2*

Age (years)	Total Records	Records Needed	List Interval	Sequence Interval (every <i>n</i> th record)	Adjusted Number of Charts Reviewed (N=86)
#	#	#	#	#	<i>n</i>
13	61	11	5.54	6 th	11
14	70	13	5.38	5 th	15
15	56	10	5.09	5 th	12
16	54	10	5.4	5 th	11
17	70	13	5.38	5 th	16
18	30	5	5	5 th	7
19	43	8	3.58	4 th	14

Privacy

The data collected from the medical records was coded with a numerical system to deidentify information protected by the Health Insurance Portability and Accountability Act (HIPAA). Data collected included the following: date of visit, age, provider, whether the provider screened the patient for substance use, type of any screening tool utilized, any intervention performed, and the type of intervention. Information regarding whether a referral

was made related to substance use and the type of referral, such as mental health or substance abuse professional, was also included in the data collection.

Education Session

The project intervention was an educational session about recreational marijuana and recommendations to implement current evidence-based best practices to screen and treat adolescents who are using recreational marijuana or other illicit drugs using the Screening, Brief Intervention and Referral to Treatment (SBIRT) method and Screening to Brief Intervention (S2BI) validated screening tool. The education session consisted of a live, narrated, interactive PowerPoint slideshow presentation. Interactive links to evidence-based sources, including peer-reviewed articles, websites, and educational materials were embedded throughout the slide presentation. The *Adolescent SBIRT Toolkit for Providers* materials (Levy, & Shrier, 2015), available for public open access use on the state department of public health website, were used for the practice recommendations portion of the education session. Each provider was given a folder containing the *Adolescent SBIRT Toolkit for Providers* materials (Levy, & Shrier, 2015). The folder also included a copy of the Adolescent Tracking form with a cover page, including written instructions. The instructions for completing the Adolescent Well Visit Tracking form also contained the contact information for the researcher and Regis IRB chair, and confidentiality and privacy statements.

Two identical education sessions were offered to meet the scheduling needs of all providers. The two education sessions were planned to last for one hour, with the first lasting 40 minutes due to limited provider availability. Providers were invited to attend both identical sessions, although they only chose to attend one. Following the presentation, a copy of the PowerPoint (Ppt) slides was emailed to all providers who attended. All five providers attended a

session, but no data was collected from the provider who chose not to participate in the study. Following the education session, an email containing a copy of the PowerPoint slideshow presentation was sent to all the participants.

Immediately following the education session, the study participants were asked to complete a paper copy of the post-education Self-Assessment of Knowledge About Recreational Marijuana survey. The survey responses were entered into the password-protected *Qualtrics*® survey software by the researcher. The paper copies were kept in a locked file cabinet in the researcher's home office.

Frequent site visits were made by the researcher to continue to support all providers, including those who chose not to participate in the study. The support included checking in and answering any questions related to the implementation of the SBIRT and S2BI. I was also available to answer any questions from the study participants about the study itself, or about the adolescent well visit tracking form. I provided reminders and encouragement to implement the SBIRT and S2BI screening tool and to complete the adolescent well visit tracking form. The encouragement and reminders were accomplished via in-person conversation and email communication.

I identified the need for an assistant at the site, whose role in the study was exclusive to ensure that the Adolescent Well Visit Tracking forms were given to the providers and to collect the completed forms. The site administrator assisted in identifying the lead medical assistant whose role was the best fit for this task. The site administrator had evidence that the medical assistant had received HIPAA training via a signed copy of the site's HIPAA and confidentiality policy. The adolescent well visit tracking forms were collected by the lead medical assistant who

placed them in a sealed envelope labeled with my name, and stored the sealed envelope in a locked file cabinet until I retrieved them.

Data Collection

Two months were allotted for implementation of the recommended evidence-based SBIRT method and the use of the validated S2BI tool. During the two months, data was collected using an Adolescent Well-Visit Tracking form (Appendix I) created by the researcher to determine if the practice recommendations were implemented and if there was an increase in validated screening and referrals for adolescent substance use. The lead medical assistant gave the one-page Adolescent Well Visit Tracking form (Appendix I) to the participants prior to each adolescent well visit. On the second day of data collection, there was a request from a participant to add an option for the site-specific adolescent form to save them time from writing it in. Therefore, the form was edited to add this option.

The Adolescent Well Visit form included a place for the provider name. The cover page included a statement of confidentiality that notified the providers that the researcher would assign a code to de-identify their information. Additional statements on the form included that the researcher was the only person aware of the assigned code and participation by the provider was in no way linked to job performance, their supervisor would not know which provider was assigned which code, and only de-identified demographic data would be used in the study. The patient information on the Adolescent Well Visit Tracking form (Appendix I) was de-identified: date of visit, age, and provider.

The practice site was closed for one holiday during the two months of pre-intervention data collection and was closed on three holidays during the post-intervention data collection period. Therefore, the post-intervention period was extended by two days.

Data Analysis

Data Analysis was performed using the Statistical Package for the Social Sciences (SPSS) statistical software platform, *IBM SPSS Statistics® version 24* (<https://www.ibm.com/analytics/spss-statistics-software>).

Demographic Analysis

Participants

Participant demographic categorical variables for age, race, gender, and years of practice were analyzed using frequencies and percentages.

Pre and Post Session Data

The age of the sample of adolescents in the pre-education session medical record data was analyzed using frequencies and percentages. The age of the sample of adolescents in the Adolescent Well Visit tracking forms was also analyzed using frequencies and percentages.

Pre-Post Education Session Comparison

Provider demographics of age, race, gender, and years of practice were compared to the pre-education session medical record adolescent age using chi-square analysis and t-tests with both parametric and non-parametric techniques. The same provider demographic variables were then compared to the post-education session Adolescent Well Visit Tracking form adolescent age using the same approach with chi-square analysis and t-tests.

Demographic Data and Research Question

Further analysis of medical record reviews and Adolescent Well Visit Tracking form data was performed to examine demographic relationships to rates of screenings and referrals.

Research Question

1. Will an education session about the evidence-based method of Screening, Brief Intervention and Referral to Treatment (SBIRT) and the S2BI screening tool result in
 - a. an increase in Pediatric Primary Care Provider in screenings and
 - b. referrals for substance use treatment?

Demographic Data and Research Question

Participant demographic variables of age, race, gender, and years of practice were compared to pre and post-education session screening rates. T-test scores were used for dichotomous categorical predictor variables, and ANOVA tests were used for categorical predictor variables with greater than two categories.

Research Question Data Analysis

Screenings

The research question dependent variable of screenings was analyzed using frequencies and percentages to compare the pre-education session medical record data with the post-education session Adolescent Well Visit tracking form screening rates. ANOVA tests were used to measure the pre-education session and post-education session difference among the mean of provider screening rates.

The education session medical record and post-education session Adolescent Well Visit Tracking form categorical variable of adolescent age was compared to the rates of provider screens using ANOVA tests.

Referrals

There were zero documented referrals in both the pre and post-education session data. No statistical analysis was performed.

Summary

This project provided an education session to PPCPs about the evidence-based SBIRT method and S2BI screening tool as a pilot quality improvement project. Chapter III described the methodology of the scholarly project, including the design, participants, recruitment, sample, setting, and analysis. Ethical considerations were also discussed. Chapter IV will present the results of the study.

Chapter IV: Results

Employing evidence-based practice methods may lead to improved outcomes for the adolescent using recreational marijuana or other illicit drugs. This quantitative quality improvement pilot project examined current provider practices at a pediatric primary care site for screening and treating adolescent patients for marijuana or other illicit drug use. The primary focus of the study was to provide an education session to the PPCPs about recommendations for implementation of the evidence-based Screening, Brief Intervention, and Referral to Treatment (SBIRT) method using the validated Screening to Brief Intervention (S2BI) screening tool to increase screenings and referrals. The session also included information about adolescent recreational marijuana use to address provider knowledge gaps identified in the literature.

Chapter IV will discuss the results of the data analysis. Quantitative data will be discussed as it relates to the research question. Findings and missing data will also be addressed.

Demographics

The project sample consisted of four pediatricians who work at the chosen pediatric primary care site. Table 5 contains the participant demographic variables that are described below.

Participants

The target sample size of the pilot project was the five primary care providers at the site. The actual participant sample size was 80%, with one provider opting out of the study. All participants are licensed pediatricians.

Age, Gender, Race

There was little variation in participant demographics. The age range of the participants was between 41 to over 60 years old. Two participants were 51-60 years old, one participant was

41-50 years old, and one participant was over 60 years old. Both genders were equally represented by two female participants and two male participants. All four participants are white and reside in the state where the practice site is located.

Practice

The participants ($n=4$) are primary care providers who specialize in pediatrics and who were currently working in the role of a pediatric primary care provider. All participants care for adolescent patients ages 13-19 years old and practice in an urban setting. Half of the participants have practiced in the pediatric primary care role between 16 and 20 years, and half have practiced in the pediatric primary care role for 21 years or more.

Table 5

Participant Demographics Summary

Demographic Variable	Participants (N=4)	
	<i>n</i>	%
Age (years)		
41-50	1	25
51-60	2	50
>60	1	25
Gender		
Male	2	50
Female	2	50
Race/Ethnicity		
White	4	100
Residence (State)		
state chosen for study	4	100
Role		
Pediatrician	4	100
pediatric primary care	4	100

Demographic Variable	Participants (N=4)	
	n	%
Currently working as pediatric primary care provider		
yes	4	100
Specialization		
Pediatrics	4	100
Years in pediatric primary care role		
16-20	2	50
>20	2	50
Practice setting		
Urban	4	100
Region of practice state		
Central	4	100

Participant Responses About Recreational Marijuana

Several questions about recreational marijuana were included on the demographic questionnaire related to education, practice, and legal status. As shown in Table 2, the four participants reported that both medicinal and recreational marijuana are legal in the state they reside in and where they are employed. None of the providers report prescribing or recommending medicinal marijuana to adolescent patients. Half of the participants report receiving formal training about both medicinal marijuana and recreational marijuana. Of those two participants, one reported receiving education about medicinal and recreational marijuana through self-taught methods, and one participant reported receiving education about medicinal and recreational marijuana through continuing education credits.

Table 6*Participant Responses About Recreational Marijuana*

Recreational Marijuana	Participants (N=4)	
	<i>n</i>	%
Legal in state work in		
Yes	4	100
Legal in state reside in		
yes	4	100
Prescribe/recommend medicinal marijuana		
no	4	100
Received professional education about marijuana		
yes	2	50
No	2	50
If yes, was education about medicinal, recreational, or both		
both	2	50
Venue of education		
self-taught	1	25
continuing education credit (CEU)	1	25

Pre-Education Intervention Medical Record Data

A retrospective medical record review of adolescent well visits (ages 13-19 years) was conducted to establish current provider methods for addressing adolescent substance use. As displayed in Table 7, data collected included: date of visit, age, provider, whether the provider screened the patient for substance use, which screening tool was used, any brief intervention performed, the type of intervention, referrals related to the substance use, and type of referral, i.e., mental health, or substance abuse professional.

Eighty-six medical records were included in the results of the electronic medical record query; two were excluded due to not meeting the inclusion criteria resulting in a final sample of 84 records (n=84).

Table 7*Retrospective Medical Record Review*

Medical Record Data		Medical Records (N=84)	
		<i>n</i>	%
Age (years)	13	11	13
	14	16	19
	15	12	14
	16	11	13
	17	16	19
	18	7	8
	19	11	13
Discussed Substance Use	Yes	84	100
	No		
Used Screening Tool	Yes	76	90
	No	8	10
Type of Screening Tool	S2BI		
	CRAFFT		
	BSTAD		
	site form	76	90
	Other		
Intervention	unknown		
	None	8	10
	Yes	83	99
Intervention Type	No	1	1
	motivational interview		
	education		
	counseling		
	positive reinforcement		
	other “do not use drugs or alcohol”	83	99
	Unknown		

Medical Record Data		Medical Records (N=84)	
		<i>n</i>	%
Referral	Yes		
	No	5	6
	not applicable	79	94
Referral Type	mental health		
	substance use professional		
	Other		
	unknown		
	not applicable	84	100

Screens

All eighty-four medical records contained documentation that substance use was discussed. Ninety percent of the medical records reviewed included the results of the site-specific, non-validated adolescent questionnaire. The remaining 10 percent did not contain evidence of a screen for substance use. There were no screens performed using a validated screening tool.

Interventions

All the medical records included documentation of verbal advice by the provider; “Do not use drugs or alcohol.” There was no other intervention documented.

Referrals

There was zero substance use related referrals documented in the 84 medical records reviewed.

Post Education Session Adolescent Well Visit Tracking forms

An educational session about recreational marijuana and recommendations to implement evidence-based Screening, Brief Intervention, and Referral to Treatment (SBIRT) method, and

Screening to Brief Intervention (S2BI) validated screening tool was presented to the participants. A PowerPoint slide presentation and the *Adolescent SBIRT Toolkit for Providers* (Levy, & Shrier, 2015) was used to disseminate the information which included information about recreational marijuana.

After the education session, participants were asked to complete Adolescent Well Visit Tracking forms for adolescent well visits of patients ages 13-19 years. The forms were collected for two months after the education session, November 25, 2019- January 27, 2020. As shown in Table 8, data collected included adolescent age, types of substances included in the screen, type of screening tool used, if an intervention was done, type of intervention, if a referral was made, and type of referral.

Completed forms

A Total of 36 Adolescent tracking forms were completed over the two-month data collection period; two were eliminated because they were incomplete, including the date, age, and provider only, reducing the sample to a total of 34 forms.

Screens

The first step of the SBIRT method is to screen for substance use. The screening should be administered using a validated tool that measures the frequency of use (Levy & Shrier, 2015). After the education session, the providers were asked to document information regarding their practices addressing adolescent substance use during well visits on the form created by the researcher. One hundred percent (n=34) of the Adolescent Well Visit Tracking forms contained documentation of screening for substance use. Providers were asked to select the screening tool(s) they used, including an option for 'other.' Nine percent of the forms indicated the use of the recommended validated S2BI screening tool. One form was missing an answer to this

question. Of the remaining 31 forms, (91%) indicated the use of a non-validated method of screening.

Non-validated methods. Providers had the option to select more than one screening tool. Of the 91% of Adolescent Well Visit Tracking forms that documented the use of non-validated screening methods only, 88% were completed using the non-validated site-specific adolescent questionnaire form. The option of ‘other’ method was chosen for 59% of responses. When the ‘other’ option was selected, a blank line was included for the provider to fill in the method of screening they used. Of the written ‘other’ responses, 80% stated “verbal,” “me,” or “talk;” “history” (30%); or, did not specify (30%). There was one Adolescent Well Visit Tracking form where the type of screen question was not answered.

Interventions

Upon completion of the screening, the SBIRT method calls for an intervention. The type of intervention recommended is based upon adolescent frequency and degree of substance use. The participants were asked to indicate on the Adolescent Well Visit Tracking form whether they provided an intervention. Responses indicated that 91% did not provide an intervention, with 9% responses omitted. If providers did provide an intervention, the following question asked to note which type of intervention was provided: ‘Motivational Interviewing (MI)’ or ‘something else.’ Although there were no ‘yes’ responses to providing an intervention, 6% of responses indicated Motivational Interviewing was provided.

Referrals

The SBIRT method recommends considering a substance use referral for weekly or more frequent use. There were zero referrals documented on the Adolescent Well Visit Tracking

forms. Fifty-six percent of responses to the question of whether a referral was made were “no.”

The remaining 44% of the responses were omitted.

Table 8

Adolescent Well Visit Tracking Forms Summary

Tracking Form Data		Forms (N=34)	
		<i>n</i>	%
Age (years)	13	9	26
	14	3	9
	15	6	18
	16	8	23
	17	4	12
	18	2	6
	19	2	6
Substances Screened	Marijuana	11	32
	Alcohol	10	29
	Tobacco	11	32
	Other “junk food”	1	3
	All	29	85
	Omitted		
Type of Screening Tool	S2BI	3	9
	Site Form	30	88
	Other	20	59
	Other “verbal”; “talk”; “me”	16	80
	Other “history”	6	30
	Other not specified	6	30
	Omitted	1	3
Intervention	Yes		
	No	31	91
	Omitted	3	9
Intervention Type	Motivational Interview	2	6
	Something Else		
	Omitted	2	6
Referral	Yes		
	No	19	56
	Omitted	15	44

Referral Type

Mental Health		
Substance Use Professional		
Other		
Unknown		
Not Applicable	34	100

Pre-Post Education Session

The pre-intervention medical record data frequencies and means were then compared with the post-intervention Adolescent Well Visit Tracking Checklist data.

Sample

The sample size for the pre-intervention medical records was eighty-four ($n=84$), and the number of completed post-intervention Adolescent Well Visit Tracking forms was thirty-four ($n=34$).

Screenings

The rate of screenings during well visits increased marginally after the education session. The pre-two-month retrospective medical record review revealed that 90% of adolescents were screened for substance use during their well visit, and the post-two-month post-education session Adolescent Well Visit Tracking form data showed 100% of adolescents were screened during their well visit. Table 9 shows the crosstabulation chi-square results for the number of pre and post screenings. The increase in the number of screenings post-education session is insignificant, with a chi-square test p-value of 0.10.

As shown in Figure 2, the rate of screenings utilizing a validated tool increased post-education session. Prior to the education session, there were zero screenings performed using a validated tool. The data analysis of the Adolescent Well Visit Tracking forms indicates that after the education session, 9% of the screenings were completed using the recommended S2BI

validated screening tool. The increase in the number of validated screenings post-education session is significant, with a chi-square test p-value of 0.006.

Table 9

Pre-Post Screening Rate

Pre-post Screen Crosstabulation

	Pre (n=84) n (%)	Post (n=34) n (%)	Total
No Screen	8 (9.5%)	0 (0.0%)	8 (6.8%)
Screen	76 (90.5%)	34 (100.0%)	110 (93.2%)

p-value from chi-square test 0.062

p-value from Fisher’s exact test (2-sided) 0.0103

Figure 2

Pre-Post Screens

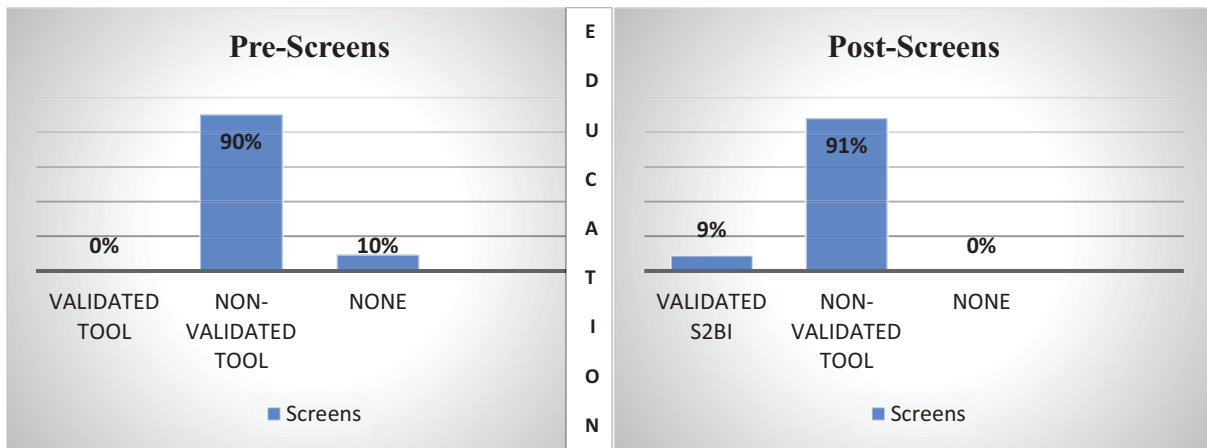


Table 10*Pre-Post Validated Screening Rates*

Pre-post Validated Screen Crosstabulation

	Pre (n=84) <i>n</i> (%)	Post (n=34) <i>n</i> (%)	Total
No Validated Screen	84 (100.0%)	31(91.2%)	115 (97.5%)
Validated Screen	0 (00.0%)	3 (8.8%)	3 (2.5%)

p-value from chi-square test 0.006

p-value from Fisher's exact test (2-sided) 0.022

Interventions

As illustrated in Table 11 and Figure 3, the retrospective medical record review data indicates that the participants provided a substance use related intervention. They discussed substance use during 100% well visits during the 2-month retrospective period. The documentation states that the discussion advised the adolescent” do not use drugs or alcohol” and did not indicate that the discussion was based on the frequency of substance use. Zero medical records reviewed included documentation of any other type of intervention. The mean comparison of pre and post-intervention rates are shown in Table 11 with a significant chi-square p-value of <0.000.

In the post-education session data, none of the participants documented an intervention. However, 6% of the adolescent tracking forms indicated the type of intervention provided was the evidence-based recommended motivational interviewing. As shown in Table 12, the pre-post mean rate association of the evidence-based motivational interview intervention was significant, with a chi-square p-value of 0.025.

Table 11

Pre-Post Intervention

Pre-post Intervention Crosstabulation

	Pre (n=84) <i>n</i> (%)	Post (n=34) <i>n</i> (%)	Total
No Intervention	0 (0.0%)	31 (91.2%)	31 (26.0%)
Intervention	84 (100%)	2 (5.9%)	86 (73.0%)

p-value from chi-square test < 0.000

p-value from Fisher’s exact test (2-sided) <0.000

Figure 3

Pre-Post Interventions

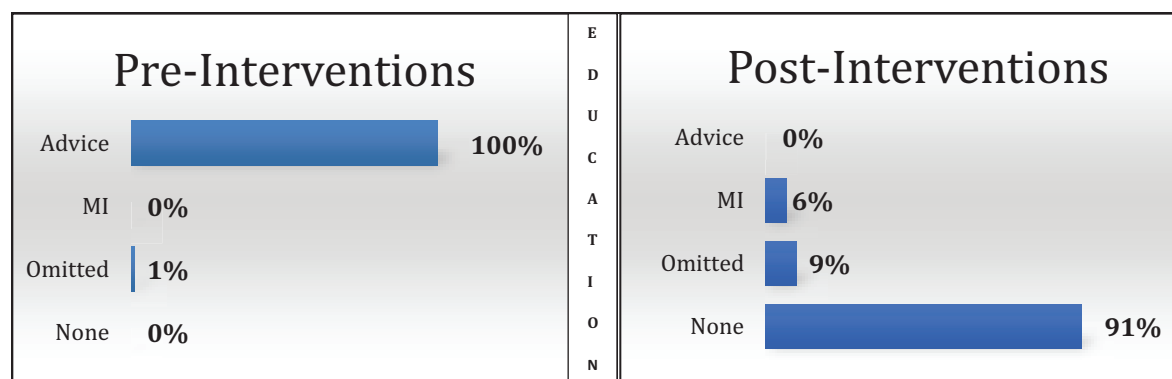


Table 12

Pre-Post Evidence-Based Intervention

Pre-post Intervention Crosstabulation

	Pre (n=84) <i>n</i> (%)	Post (n=34) <i>n</i> (%)	Total
No Motivational Interview	84 (100.0%)	32 (94.1%)	33 (28.0%)
Motivational Interview	0 (0.00%)	2 (5.9%)	85 (72.0%)

p-value from chi-square test 0.025

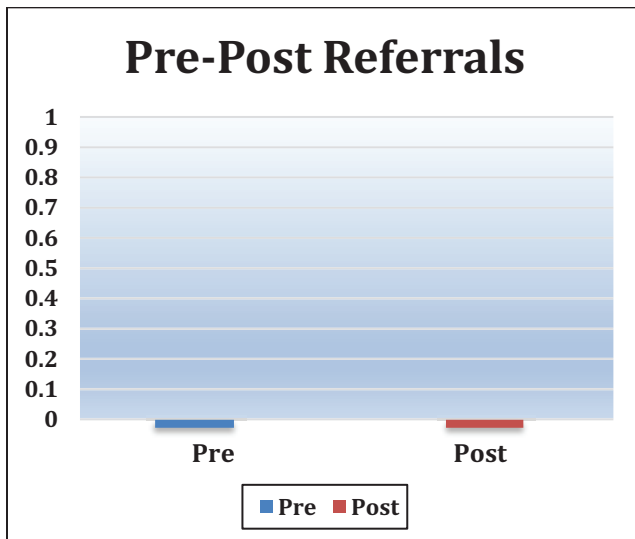
p-value from Fisher's exact test (2-sided) 0.081

Referrals

The final step in the SBIRT method is the referral. Referral to a mental health or substance use professional may be indicated for frequent use of weekly or more (Levy, & Shrier, 2015, p. 14). As shown in Figure 4, there were zero referrals documented both before and after the education session.

Figure 4

Pre-Post Referrals



Additional Data

Additional data analysis was performed for the comparison of results to findings in the literature. A pre and post-survey about provider knowledge about recreational marijuana was conducted before and after the education session. The results of the additional data analysis for;

pre and post substances screened, provider age and screening rates, previous provider education about marijuana and screening rates, and pre-post provider survey about knowledge related to recreational marijuana is presented in the remaining portion of this chapter. A discussion of these results will be included in Chapter V.

Substances Included in Screenings

Data pertaining to the types of substances included in the retrospective medical record review and the post-education adolescent well visit tracking forms was analyzed using descriptive statistical methods.

Pre-Substances. Ninety percent of the medical records reviewed included the results of the site-specific, non-validated adolescent questionnaire. The questionnaire includes questions about tobacco, alcohol, and drugs, including marijuana.

Post-Substances. The Adolescent Well Visit Tracking form asked providers to place a checkmark next to the substances included in the adolescent substance use screen. Providers could choose more than one option. Most providers screened for three substances: marijuana, alcohol, and tobacco (85%). Other responses included: marijuana (32%); alcohol (29%); tobacco (32%). There was one response of ‘other’ substance (3%). The written in response to the option of ‘other’ was “junk food.”

Pre-Post Substances. The medical record review results indicate that adolescents were screened for three substances: alcohol, tobacco, and marijuana during 93 % of well visits. The remaining 7% were not screened for substance use.

After the education session, the adolescent tracking form results (n=34) showed that adolescents were screened during 100 % of well-visits. The screening included three substances: alcohol, tobacco, and marijuana during 97 % of the visits. The remaining 3% screened for

marijuana and tobacco only. As shown in Table 13, these results indicate that there was a 4 % increase in screening for all three substances: alcohol, tobacco, and marijuana.

Table 13

Pre-Post Substances Screened

Substance	Pre-Screening (<i>n</i> =84) <i>n</i> (%)	Post Screening (<i>n</i> =34) <i>n</i> (%)
Alcohol		
Tobacco		
Marijuana		
Tobacco and Marijuana		1 (3%)
All 3: Alcohol, Tobacco, Marijuana	76 (93%)	33 (97%)

Provider Demographic Variables and Screening Rate

Further analysis of the number of pre and post substance abuse screens was performed to examine the relationship to demographic questionnaire variables.

Provider Age and Screening Rate

Figure 5 shows the categorical demographic variable of age cross-tabulated with the number of screens using a non-parametric ANOVA test. The results in Table 14 show that there was a significant difference in the number of screens by the age of participants, with the most screens being performed by participants aged 51-60 (p-value 0.027).

Further analysis was done to compare the number of screens by age group using an independent samples Kruskal-Wallis test, as shown in Table 15. The results reveal that the only significant difference in the number of screens by age group was performed by those over 60 years of age when compared against the number of screens performed by those 51-60 years of age (p-value 0.15).

Figure 5

Screens by Participant Age

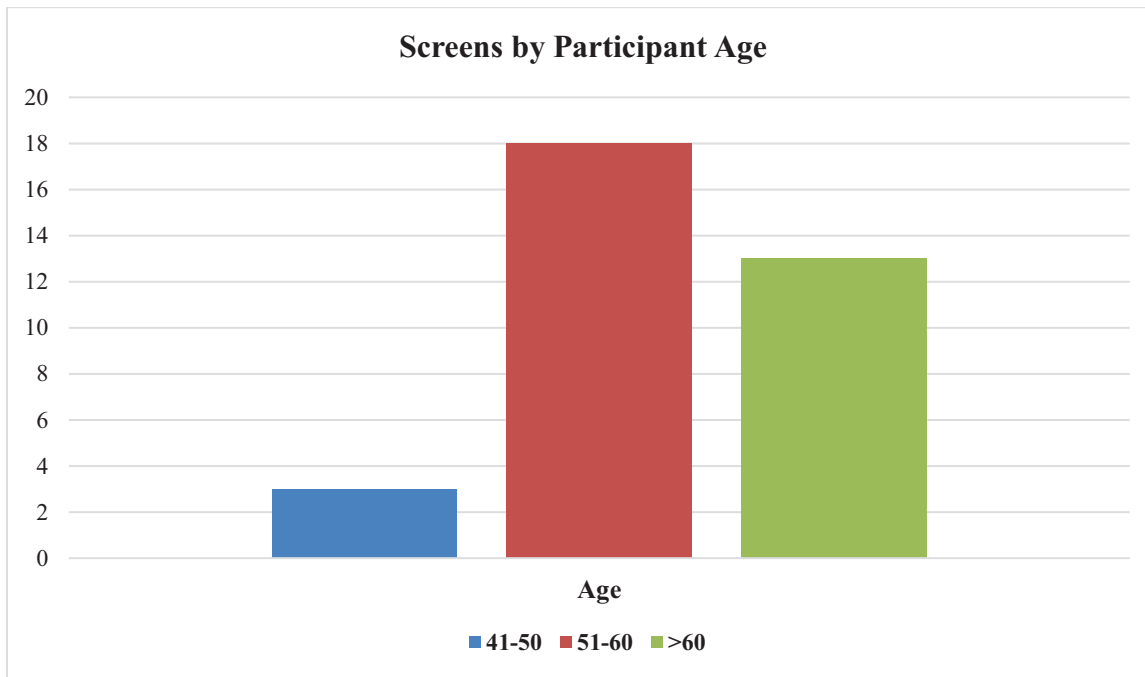


Table 14

Screens by Participant Age Summary

Independent-Samples Kruskal-Wallis Test Summary	
Total N	34
Test Statistic	7.194
Degree of Freedom	2
Asymptomatic Sig. (2-sided test)	.027

Table 15

Screens by Participant Age Pairwise Comparison

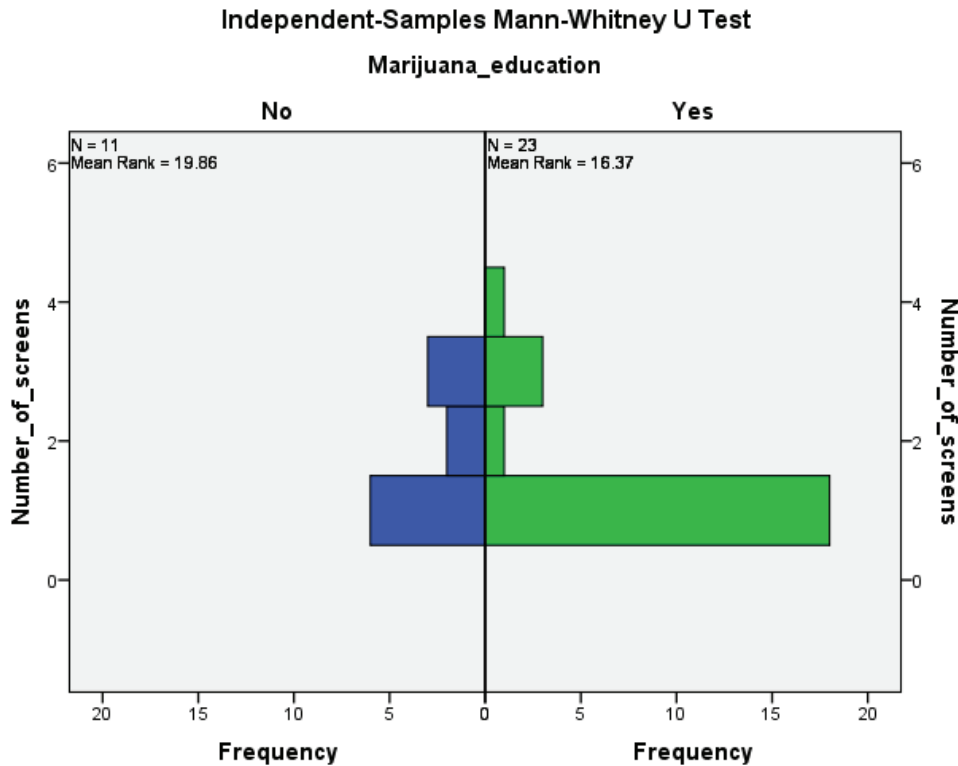
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.
41-60	-1.385	5.113	-.271	.787	1.000
41-51	-8.444	4.978	-1.696	.090	.270
61-51	7.060	2.906	2.430	0.15	.045

Provider History of Marijuana Education

The demographic questionnaire included a question posed to the participants asking whether they had received education about marijuana in the past. Fifty percent of the participants responded affirmatively. A non-parametric independent samples Mann-Whitney U test was performed to test the null hypothesis that the distribution of the number of screens is the same across categories of marijuana education. The results, as displayed in Figure 6, are insignificant, with a p-value of 0.232.

Figure 6

Screens and Provider History of Marijuana Education



Provider Survey About Recreational Marijuana

Though not the focus of the research questions, additional data was collected during the SPP to survey the providers about their self-assessment of knowledge about recreational marijuana and adolescent recreational marijuana use. The providers completed the survey before and after the education session to evaluate whether the education session addressed the providers desired information about marijuana. A copy of the tool is provided in Appendices G & H.

Due to researcher error, participants who answered “No” to receiving any formal training about marijuana on the Demographic Questionnaire were not directed via the Qualtrics survey to complete the pre-education survey. As a result, only two of the four participants completed the

pre-education session survey electronically, and one participant completed the pre-survey via paper copy. This error in the distribution of the survey and its implications to data analysis are discussed further in Chapter V.

Data Analysis

Provider Self-Assessment of Knowledge About Recreational Marijuana surveys were matched by the researcher assigned code, and any unmatched surveys were eliminated. As shown in Table 16, Likert ordinal scales were converted to interval scales for pre-post analysis. Paired t-tests were calculated to compare pre and post-education provider self-assessment scores to assess the mean and standard deviation.

Table 16

Likert Scoring

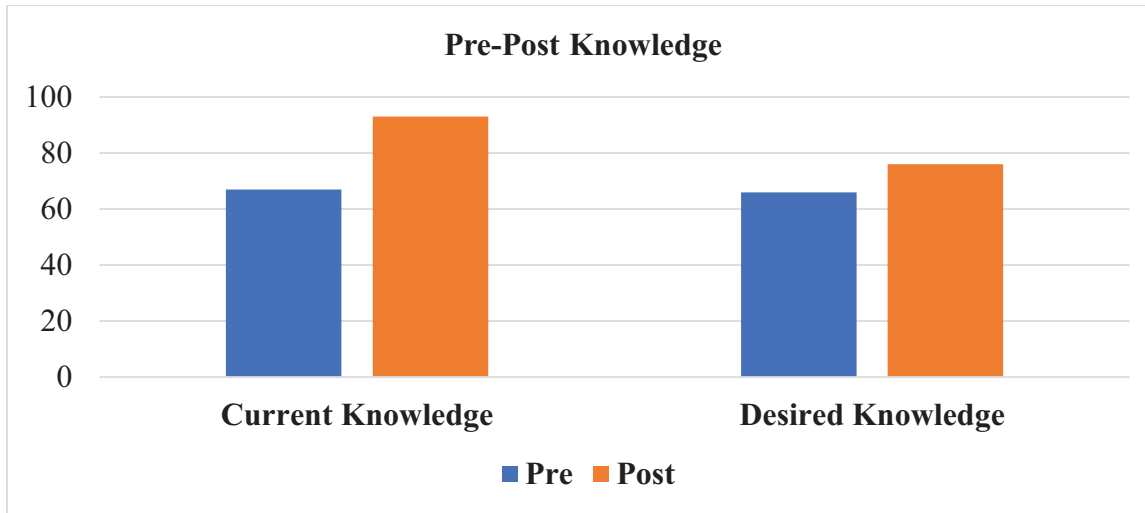
Likert Scoring	
Label	Score
Very Poor	1
Poor	2
Fair	3
Good	4
Very Good	5

Provider Current and Desired Knowledge About Recreational Marijuana

There were nine subtopic questions on the provider self-assessment of knowledge survey. The participants were asked to assess their level of current and desired level of knowledge using a Likert scale. The data analysis for each question is displayed in Table 23 and 24 in Appendix J. As shown in Figure 7, there is an increase in both current and desired knowledge after the education session. However, the results are insignificant as there were only two complete surveys to complete the chi-square analysis with a p-value of 0.157.

Figure 7

Provider Knowledge About Recreational Marijuana



n=2

p-value from chi-square test 0.157

p-value from Fisher’s exact test (2-sided) 1.000

Additional Survey Questions

Each provider self-assessment survey question was analyzed using descriptive statistics comparing pre(n=3) and post (n=4) education session using frequencies and percentiles, as shown in Tables 17-22.

Pre-Post Need for More Education in Healthcare

Providers were asked how strongly they felt they needed education on marijuana in healthcare. Before the education session, one participant did not feel strongly while the remaining two participants felt strongly that they needed more education on marijuana in healthcare. As illustrated in Table 17, after the education session, one participant did not feel strongly, one participant felt strongly, and two felt very strongly that they needed more education on marijuana in healthcare.

Table 17*Pre-Post Need for More Education in Healthcare*

How strongly do you feel you need education on marijuana in healthcare?

Pre n=3			Post n=4		
Answer	%	Count	Answer	%	Count
Not at all	0.00%	0	Not at all	0.00%	0
Not very strongly	33.33%	1	Not very strongly	25.00%	1
Neutral	0.00%	0	Neutral	0.00%	0
Strongly	66.67%	2	Strongly	25.00%	1
Very Strongly	0.00%	0	Very Strongly	50.00%	2
Total	100%	3	Total	100%	4

Pre-Post Approached by Patient or Family

Participants were asked if they have been approached by a patient age 13-19 and/or his/her family to discuss the use of marijuana for recreational purposes. The results displayed in Table 18, indicate that prior to the education session, two out of three providers were approached. After the session, all four providers had been approached to discuss recreational marijuana.

Table 18*Pre-Post Approached by Patient or Family*

Question

Have you ever been approached by a patient ages 13-19 and/or his/her family to discuss the use of marijuana for recreational purposes?					
Pre			Post		
Answer	%	Count	Answer	%	Count
Yes	66.67%	2	Yes	100.00%	4
No	33.33%	1	No	0.00%	0
Total	100%	3	Total	100%	4

Pre-Post Initiated Discussion

Table 19 shows that prior to the education session, two of three participants (67%) had initiated a discussion with a patient age 13-19 and/or his/her family on the use of marijuana for recreational purposes. After the education session, 100% (n=4) of participants had initiated a discussion, an increase of 33%.

Table 19

Pre-Post Initiated Discussion

Question					
Have you ever initiated a discussion with a patient ages 13-19 and/or his/her family on the use of marijuana for recreational purposes?					
Pre			Post		
Answer	%	Count	Answer	%	Count
Yes	66.67%	2	Yes	100.00%	4
No	33.33%	1	No	0.00%	0
Total	100%	3	Total	100%	4

Pre-Post Patients Using Recreational Marijuana

All participants pre (n=3) and post (n=4) education session reported having patients that use recreational marijuana, as shown in Table 20.

Table 20***Pre-Post Patients Using Recreational Marijuana***

Question					
Do you have patients ages 13-19 using marijuana for recreational purposes?					
Pre			Post		
Answer	%	Count	Answer	%	Count
Yes	100.00%	3	Yes	100.00%	4
No	0.00%	0	No	0.00%	0
Total	100%	3	Total	100%	4

Pre-Post Need for More Education

As shown in tables 21 and 22, participants were asked to indicate, using a Likert scale, the degree to which they agreed or disagreed with two statements: they would feel more comfortable discussing the recreational use of marijuana with patients/patient family members if they had more education about it; they feel that with more education they would be better able to treat patients using recreational marijuana. The results revealed that pre-education session, 67% of participants (n=3) strongly agreed and 33% neutral that they would feel more comfortable discussing recreational use of marijuana with patients/patient family members if they had more education. They also strongly agreed (33%) or agreed (67%) that they would be better able to treat patients using recreational marijuana with more education.

Post education session, all participants (n=4) disagreed (75%) and strongly disagreed (25%) they would feel more comfortable discussing the recreational use of marijuana with patients/patient family members if they had more education. They also disagreed (50%) and strongly disagreed (50%) that they would be better able to treat patients using recreational marijuana with more education. The results indicate that after the education session, providers were less likely to feel that more education would help them feel more comfortable discussing recreational marijuana or better able to treat adolescents using recreational marijuana.

Table 21*Pre-Post Need for More Education Central Tendency*

Please indicate the degree to which you agree or disagree with the following statements.

Question											
I would feel more comfortable discussing the recreational use of marijuana with patients/patient family members if I had more education about it											
Pre						Post					
Minimum	Maximum	Mean	Std Deviation	Variance	n	Minimum	Maximum	Mean	Std Deviation	Variance	n
1.00	3.00	1.67	0.94	0.89	3	4.00	5.00	4.25	0.43	0.19	4

Question											
I feel that with more education I would be better able to treat patients using recreational marijuana											
Pre						Post					
Minimum	Maximum	Mean	Std Deviation	Variance	n	Minimum	Maximum	Mean	Std Deviation	Variance	n
1.00	2.00	1.67	0.47	0.22	3	4.00	5.00	4.50	0.50	0.25	4

Table 22

Pre-Post Need for Education Frequency and Percentile

Please indicate the degree to which you agree or disagree with the following statements.

Question											
I would feel more comfortable discussing the recreational use of marijuana with patients/patient family members if I had more education about it											
Pre (n/%)						Post (n/%)					
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	n	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	n
2	0	1	0	0	3	0	0	0	3	1	4
(66.67)	(0.00)	(33.33)	(0.00)	(0.00)		(0.00)	(0.00)	(0.00)	(75.00)	(25.00)	

Question											
I feel that with more education I would be better able to treat patients using recreational marijuana											
Pre (n/%)						Post (n/%)					
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	n	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	n
1	2	0	0	0	3	0	0	0	2	2	4
(33.33)	(66.67)	(0.00)	(0.00)	(0.00)		(0.00)	(0.00)	(0.00)	(50.00)	(50.00)	

Conclusion

Chapter IV presented the results of the Scholarly Practice Project (SPP) data analysis.

Chapter V will discuss the interpretation of the results.

Chapter V: Conclusions and Discussion

The purpose of the Scholarly Practice Project (SPP) was to evaluate whether an education session presented to pediatric primary care providers about adolescent substance use would result in a practice change. The education session disseminated information about adolescent recreational marijuana use and the evidenced-based SBIRT method, and the validated the S2BI screening tool. The practice change was measured by substance use related screenings and referrals. Chapter V will discuss the study findings through the interpretation of the results. It will also address the limitations of the study and recommendations.

Interpretation of Results

Screening

The substance use screening rate increased by 10% after the education session intervention. Further analysis deemed the results statistically insignificant, which may be related to the small sample pilot design. It is difficult to show a significant change in practice when the practice is already being performed 90% of the time. A more reliable result is the increase in screenings utilizing the validated S2BI tool introduced during the education session. Although this was a significant practice change, we must be cautious in our interpretation, again, due to the small sample size. However, the findings of this study correlate with the findings of larger studies that found 84-88% of pediatric providers screen adolescents for substance use, but only 23-46% use a validated tool (AAP, 2014 as cited in AAP, n.d.; Harris et al., 2012, Palmer et al., 2019). The use of a validated tool may result in more consistency in the list of substances included in the screen. The difference in the number of substances included in the pre and post screenings may indicate that screening practices vary among participants.

There are several possible reasons for the lack of using a validated screening tool or recommended intervention. During the education session, three out of four providers confirmed that they are familiar with the validated CRAFFT screening tool, but they do not use it consistently for every adolescent. Participants expressed several barriers to implementing a validated screening tool: time constraints, patient confidentiality concerns and sensitivity of whether to involve parents, lack of truthful screening responses by the adolescent, lack of resources for referrals, and concerns with using a “cookie-cutter” approach.

The concerns of the participants are similar to other studies. Sterling et al. (2012) examined barriers and facilitators for screening for alcohol and illicit drug use in pediatric primary care. The researchers used qualitative data analysis to identify the barriers to screening adolescents for substance use per practice guideline: lack of time, lack of training, lack of familiarity of the screening tool, need to triage other more pressing medical problems, and confidentiality (Sterling et al., 2012). A study by Palmer et al. (2019) used the KTA framework to guide a mixed-methods approach to examine current primary care physician practices related to SBIRT. The barriers expressed by the participants (n=75) included lack of time and resources, difficulties with parents, and reimbursement. The KTA framework was also used to guide this SPP. Several of the barriers expressed by the participants were addressed during the education session presentation. The researcher made several site visits during the post-intervention data collection period. Still, there was little feedback from the participants, most likely due to the busy practice and limited participant availability to meet with the researcher. The short duration of the study may have interfered with the successful identification of barriers and facilitators. The one-hour education session did not allow for an in-depth discussion of addressing confidentiality, reimbursement, or referral concerns. As an alternative, the researcher provided

resources that the providers could access on their own, which may add additional burden to time constraints. The researcher had no control over addressing system barriers such as reimbursement, changing workflow such as adding SBIRT and S2BI to the EMR or training and delegating screening to nurses or medical assistants, or changing the delivery format of the screening. Adolescent concerns around confidentiality may be addressed by changing the screening process to an electronic format, which may result in more truthful responses and address provider resource and time constraints. Several studies have shown that electronic format of screening and brief intervention has been efficient and effective (Harris et al., 2012; Harris et al., 2016; Shrier et al., 2014).

Intervention

There was a decrease in interventions to address substance use after the education session. These results may indicate a need for additional education about brief interventions using the SBIRT method. The researcher made several follow-up visits during the data collection period to answer questions and encourage the implementation of the SBIRT method and the S2BI screening tool. During one of these visits, a participant asked if advising an adolescent to stop using a substance counts as motivational interviewing. According to Levy and Shrier (2015), the authors of the *Adolescent SBIRT Toolkit for Providers*, provider advice to stop using a substance and discussion of the negative effects of use may help discourage future use among adolescents using a substance once or twice during the past year (p. 15). For adolescents who have never used any substances, positive reinforcement is still warranted (Levy, & Shrier, 2015, p.15). Perhaps, the lack of documentation of intervention was due to a lack of understanding that interventions include positive reinforcement, advice, motivational intervention, counseling, or referral.

There were no documented substance use referrals among the data samples before and after the education intervention. This result does not correlate with the prevalence of substance use among adolescents in the United States. The SBIRT method using the S2BI tool recommends a referral be made if the adolescent uses an illicit drug weekly (Levy, & Shrier, 2015, p. 14). The reason for the lack of referrals needs further investigation. Still, it may be related to lack of truthful responses by the adolescent or lack of use of a validated tool that could guide provider decision making for warranted referrals in the case of non-emergent signs of misuse. It is important to note that the results of the post-intervention screenings were not available. Therefore, referrals may not have been indicated for the adolescents who were seen for well visits during the implementation period. There were a few records in the retrospective medical record review that included mention of substance use on the adolescent questionnaire, but use was not quantified.

The lack of referrals may also be due to a lack of resources. Lack of referral resources might inhibit screening and referral practices (McNeely et al., 2018; Palmer et al., 2019). Millstein & Marcell (2003) used quantitative survey analysis (n=1842) to examine alcohol screening and counseling practices among primary care physicians. The researchers found that physicians who felt there were adequate referral resources were more likely to screen and counsel adolescents about alcohol use (Millstein, & Marcell, 2003).

Recreational Marijuana

Participant knowledge about recreational marijuana use increased after the education session. However, the results are insignificant as there were only two complete surveys. Participants were receptive to the education session and showed a strong interest in adolescent recreational marijuana use. Some participants shared articles and engaged in conversation with

the researcher about the topic after the education session. The main concern expressed by the participants is the lack of longitudinal research or strong evidence about marijuana use and the challenge of educating parents and adolescents based on limited evidence. Several resources were provided during the education session, including national organizations with ongoing research projects pertaining to adolescent marijuana.

Strengths and Limitations

A strength of the SPP was that the novice researcher was supported and guided by experts with extensive backgrounds in academia and research and who are currently practicing nurse practitioners in pediatric primary care and mental health settings. An expert in research methods and statistics assisted the researcher with data analysis. A strength of the small project was the short length of time spent on recruitment and completion of consent forms and questionnaires. The convenience single-site sample allowed for frequent in-person site visits during the implementation of the project.

Data analysis and researcher reflection exposed several limitations. The first limitation was the design of the project. The pilot single site design with a small convenience sample creates challenges for testing hypotheses. The results, whether statistically significant or not, should be interpreted with caution (Polit, & Beck, 2017). The short time allotted to conduct the project was not sufficient to promote knowledge of the barriers and facilitators to implementation of the practice recommendation.

There were limitations pertaining to data collection. The data collection methods were inconsistent: retrospective medical review and a tracking tool created by the researcher. The difference in the data collection method may have influenced the results of the data analysis. All records were accessible during the medical record review, but only the tracking forms that were

completed by participants were used for the post data collection. Therefore, it is unknown whether there was a completed tracking form for all adolescent visits during the post-data collection period. The materials used for the education session were evidence-based, but there was no tool to measure participant understanding of the materials. The provider self-assessment survey about adolescent recreational marijuana use was significantly modified.

Another limitation was the lack of participant buy-in. All participants were Pediatricians who appeared unfamiliar with the Doctor of Nursing Practice and Nurse Practitioner role. There were no mid-level providers at the site, and participants posed questions to the researcher about education, training, and degree requirements. The researcher's credibility may have been limited as they did not work at the site and was unknown to the participants until the project implementation. The researcher was a student and a novice in conducting scholarly practice projects. The researcher was also a novice with using Qualtrics software and sought technical support for challenges with the distribution of the study materials.

Participant availability was limited due to the busy practice site, which created a challenge for in-person follow-up meetings during the project implementation. Email communication was limited to personal email, and responses were often delayed.

Generalizability

The study may have limited generalizability due to the small sample size at a single site. The study might be replicable at similar practice sites.

Implications for Evidence-based Practice and Research:

The outcome of the SPP was an increase in participant implementation of adolescent substance use screenings using a validated screening tool. There was no practice change in substance use-related referrals. Study limitations should be considered in clinical implications

and recommendations. Replication of the project with recommended edits should be conducted at a larger practice site with mid-level providers and pediatricians to allow for greater variability in participant demographics and add power to the study results. The education and training session should be longer or optimally delivered in several sessions. A pre and posttest may assist in evaluating the effectiveness of content delivery. The SBIRT documentation and S2BI screening tool should be added to the EHR for consistency in pre and post data collection. The results of the screening should be reviewed to evaluate any interventions and whether the referral was warranted. Data should be collected from all adolescent visits, not only well visits to strengthen the reliability of data pertaining to whether screening was completed or not. A validated tool should be created to measuring knowledge about recreational marijuana.

Dissemination of Findings

The SPP results were disseminated via dissertation defense presentation and poster presentation to colleagues. A poster abstract was submitted to a national conference, and a presentation may be made to family practice and psychiatric nurse practitioner students.

Conclusion

The purpose of this Scholarly Practice Project was to increase Pediatric Primary Care Provider (PPCP) knowledge about caring for adolescent patients who use recreational marijuana or other illicit drugs and to recommend evidence-based practice methodologies. An education session about adolescent recreational marijuana use and the evidence-based Screening Brief Intervention and Referral to Treatment (SBIRT) method and validated S2BI screening tool was presented. Although the small pilot study findings are not statistically significant, the results show an increase in the number of validated substance use screenings and may contribute to future larger studies.

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From: Mark A. Ware, Dr. <mark.ware@mcgill.ca>
Sent: Tuesday, July 17, 2018 10:54 PM
To: Laurent Bonnie
Cc: Daniel Ziemianski
Subject: Re: permission request

Thanks Laurent

Thanks for your interest. Attached is the survey protocol and instrument.

We recently published a Needs Assessment of nurse practitioners using a similar tool:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5868330/>

Good luck with your project!

Regards
Mark

From: Lynda Balneaves
Sent: Thursday, July 12, 2018 12:30 PM
To: Laurent Bonnie
Cc: Abeer Alraja
Subject: Re: Nurse Practitioner Cannabis Survey

Hello Bonnie,

Thanks for your interest in our instrument. I have no issues with you modifying our tool for your study – as you mention, it will require significant revision to shift it from the focus on medical cannabis to that of recreational cannabis. It will be interesting to see if there is any difference based on the type of cannabis!

I would appreciate being kept in the loop regarding your findings and any publications that arise from your work.

Please take this email as permission to utilize our tool, which I have attached. If you have any questions, please let me know.

Kind regards,
Lynda

Lynda G. Balneaves, RN, PhD
Associate Professor, College of Nursing
Rady Faculty of Health Sciences
University of Manitoba

89 Curry Place, Helen Glass Centre for Nursing
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P:1-204-474-6353
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235 Wellesley St. Weston, MA 02493
<http://www.regiscollege.edu/academics/institutional-review-board.cfm>



8/22/19
Bonnie Laurent
Regis College
Weston, MA 02493

RE: Your application date 8/7/19 regarding study number 20182019-71: Implementing an Evidence-Based Practice Primary Care Approach to Caring for the Adolescent Using Recreational Marijuana in a Post-Legalization Climate

Dear Bonnie Laurent:

I have reviewed your request for approval of the new study listed above. Your study is eligible for review under the DHHS (OHRP) designation 45 CFR 46.

This is to confirm that I have approved your application. The protocol is approved through your protocol date 8/22/19. You are granted permission to conduct your study as described in your application effective immediately. The study is subject to continuing review on or before 8/22/20, unless closed before that date.

Please note that any changes to the study as approved must be promptly reported and approved. Some changes may be approved by expedited review; others require full board review. Contact Dr. Colleen Malachowski; email: colleen.malachowski@regiscollege.edu and irb@regiscollege.edu if you have any questions or require further information.

Sincerely,

A handwritten signature in cursive script that reads "Colleen Malachowski".

Colleen C. Malachowski, Ph.D.
Chair, Institutional Review Board



Institutional Review Board (IRB) Authorization Agreement

Institution or Organization Providing IRB Review:

Name (Institution A): Regis College__
 IRB Registration #: IRB00009384__
 Federalwide Assurance (FWA)#, if any: FWA00020359__

Institution Relying on the Designated IRB:

Name (Institution B): __[Name of Institution]__
 Federalwide Assurance (FWA)#, if any: __N/A__

The Officials signing below agree that Institution B may rely on the designated IRB of Institution A for review and continuing oversight of its human subjects research described below: (check one):

- This agreement applies to all human subjects research covered by Institution B’s FWA.
- This agreement is limited to the following specific protocol(s):

Name of Research Project: Implementing an Evidence-Based Practice Primary Care Approach to Caring for the Adolescent Using Recreational Marijuana in a Post-Legalization Climate__
 Name of Principal Investigator: __Bonnie Laurent, MSN, RN, CPNP-PC__
 Sponsor or Funding Agency: __N/A__
 Award Number, if any: __N/A__
 Other (describe): __N/A__

Institution A’s IRB review will meet the human subject protection requirements of Institution B’s OHRP-approved FWA. Institution A’s IRB will follow written procedures for reporting its findings and actions to appropriate officials at Institution B. Relevant minutes of Institution A’s IRB meetings will be made available to Institution B upon request. Institution B remains responsible for ensuring compliance with the Institutions A’s IRB’s determinations and with the Terms of Institution B’s OHRP-approved FWA. This document must be kept on file by both parties and provided to OHRP upon request.

Signature of Signatory Official (Institution/Organization A):

 Date: _____
 Print Full Name: _____
 Institutional Title: _____

Signature of Signatory Official (Institution B):



Date: _____
Print Full Name: _____
Institutional Title: _____

Fall 2019

Dear Colleague,

My name is Bonnie Laurent, MSN, RN, CNP-PC, and I am a Doctorate of Nursing Practice Candidate completing my degree at Regis College, Weston, Massachusetts. The purpose of this scholarly project is to evaluate the effect of an education session on the Pediatric Primary Care Provider's knowledge related to adolescent recreational marijuana use and to introduce evidence-based practice methodologies to care for this at-risk population. This research is part of my scholarly project to finish my doctoral studies. I am inviting you to participate in this research because you are a respected member of the pediatric primary care provider community. Your input regarding your experience as a pediatric healthcare provider is highly valued.

This DNP scholarly project will focus on a pilot study to increase knowledge about marijuana and implement practice recommendations. The goal of the study is to provide Pediatric Primary Care Providers with the knowledge about recreational marijuana use by the adolescent (ages 13-19) that will be useful in utilizing tools to identify risk for use, counsel, assess the impact of use on the patient's health and wellness, recognize signs of misuse and abuse, and treat and evaluate the late adolescent patient.

The implementation portion of this scholarly project will include participation in a brief demographic questionnaire, pre provider self-assessment of knowledge about recreational marijuana survey, a one-hour in-person on-site education session, and a post provider self-assessment of knowledge about recreational marijuana survey. This demographic survey usually takes fewer than 10 minutes to complete. The pretest and posttest surveys take approximately 15 minutes to complete. The in-person education session will be held on-site and will last for one hour. You will also be asked to complete an adolescent well visit checklist during or after each adolescent well visit for a two-month data collection period. This checklist takes approximately 2 minutes to complete. Your participation is voluntary. If you choose to participate, you will be directed to the link below.

Please go to the provided link to access the informed consent form on the *Qualtrics* site. This survey may be taken on a computer, tablet, or a smart device.

[add link]

Please be assured of the confidentiality of your answers; you will not be identified in any of the reports developed from this research. There is minimal to no risk involved in participating in this research. All data will be reported in aggregate form and no identifiable information will be stored with the data. Participation will be voluntary and anonymous.

If you choose to opt-in, the researcher will assign a code to de-identify your information. The researcher will be the only person aware of the assigned code and participation is in no way linked to job performance. Your supervisor will not know which provider is assigned to which code and only de-identified demographic data will be used in the study.

This research has been approved by the Institutional Review Board of Regis College. If you have any concerns or comments about this study, please feel free to contact me at [cell phone] or blaur094@regiscollege.edu. Thank you so much for your participation in this study. Your feedback is very much appreciated.

Sincerely,

Bonnie Laurent, MSN, RN, CPNP-PC, DNPc
Doctoral of Nursing Practice Candidate

Default Question Block



Regis College School of Nursing
Informed Consent to participate in the project titled,
Implementing an Evidence-based Practice Primary Care Approach to
Care for the Adolescent Using Recreational Marijuana in a Post
Legalization Climate

Researcher: Bonnie Laurent, MSN, RN, CPNP-PC, DNPc

Introduction

Please read this form carefully. You are being asked to be in a research study to evaluate the effect of an education session on the Pediatric Primary Care Provider's knowledge related to the adolescent and recreational marijuana. The session will also include evidence-based practice recommendations. You were selected to be in this study because you fit the inclusion criteria. The inclusion criteria included being a Pediatric Primary Care Provider in [State]. For the purpose of this study, a Pediatric Primary Care Provider is defined as a board-certified pediatrician or board-certified pediatric nurse practitioner currently working at a primary care site in [State] and caring for patients ages 13-19.

Additional inclusion criteria that must be met in order to participate in this study is that you must complete the informed consent form, and you must complete the entire data collection package including completion of the demographic questionnaire and pre-post surveys, attending the education session and completing the adolescent visit tracking forms.

You are not eligible to participate if you do not meet the inclusion criteria, those who do not complete the informed consent form, and those who choose to opt-out. Additional exclusion criteria will be those who do not complete the

entire collection package including completion of the demographic questionnaire and pre-post surveys, attending the education session and completing the adolescent visit tracking forms. Please ask any questions you may have before you agree to participate in the study. You will receive a copy of this consent form.

Purpose of the Study

The purpose of this study is to conduct a pilot project to increase knowledge about adolescent use of recreational marijuana and evidence-based practice recommendations. The goal of the study is to provide Pediatric Primary Care Providers with the knowledge about recreational marijuana use by the adolescent (ages 13-19) that will be useful in utilizing tools to identify risk for use, counsel, assess the impact of use on the patient's health and wellness, recognize signs of misuse and abuse, and treat and evaluate the late adolescent patient.

What Will Happen in the Study

If you agree to be in this study, we would ask you to complete a web-based demographic questionnaire, pre and post educational session provider self-assessment of knowledge, attend an educational session, and complete adolescent visit tracking forms during or after well-visits for ages 13-19. The demographic questionnaire takes approximately 10 minutes to complete. The pre and post surveys take approximately 15 minutes each to complete. The in-person educational session will last one hour. The adolescent visit tracking form takes less than 2 minutes to complete. All four parts of the study should take each participant approximately 1 ³/₄ - 2 hours to complete.

Benefits of Being in this Study

Your participation in this research may produce many benefits. The legalization of recreational marijuana may decrease the adolescent's perception of adverse health outcomes associated with marijuana use. This may result in an increased likelihood of initiating or increasing use and calls for educational interventions. The development of an educational program that increases the Pediatric Primary Care Provider knowledge and awareness about recreational marijuana use by the adolescent will be useful in implementing evidence based practice methodologies to identify risk for use,

counsel, assess the impact of use on the patient's health and wellness, recognize signs of misuse and abuse, and treat and evaluate the adolescent patient. This increased knowledge may be vital to the health and well-being of adolescents across the United States.

Risks and Discomforts of Being in this Study

This study presents few minimal risks. Risks include a breach of privacy, and social or emotional stress. Every effort will be made to protect all information and maintain confidentiality and privacy. No published reports will include any information that will make it possible to identify you. All electronic information will be kept on a secure server, password protected, and destroyed after completion of the study.

Payments

You will receive the following payment for being in the study: Participants who meet the inclusion criteria and complete the demographic questionnaire, pre and post self-assessment surveys, educational intervention, and complete the adolescent visit tracking forms will be entered into a drawing to receive a \$100.00 Amazon gift card.

Cost

There is no cost to you for being in this research study.

Choosing to Be in the Study and Choosing to Quit the Study

It is your choice to be in this study. If you choose not to be in this study, it will not affect your current or future relations with Regis College. You are free to decline to answer questions or quit at any time, for any reason. There is no penalty for not taking part or for quitting. Participating or not participating in the study will have no impact on your grades or academic status.

Getting Dismissed from the Study

The researcher may dismiss you from the study at any time for the following reasons: (1) it is in your best interests (e.g., side effects or distress), (2) you have not followed the study rules, or (3) the study sponsor decided to end the study.

Privacy and Confidentiality

The records of this study will be kept private. Research records will be kept on the survey Qualtrics website accessible only to the researcher and password protected. Any additional paperwork/printed materials will be kept in a locked file in the researcher's home office. Any electronic information will be coded and secured using a password-protected file. All records will be destroyed within 1 year of study completion. Your responses will be combined with other participants' data and are not meant to gather information about specific individuals. No published reports will include any information that will make it possible to identify you.

If you choose to participate, the researcher will assign a code to de-identify their information. The researcher will be the only person aware of the assigned code and participation is in no way linked to job performance, their supervisor will not know which provider is assigned to which code and only de-identified demographic data will be used in the study.

Contacts and Questions

The researcher conducting this study is: Bonnie Laurent, MSN, RN, CPNP-PC, DNPc. The researcher will be available to answer any questions about the study at: [cell phone] and blaur094@regiscollege.edu. If you have questions or concerns about your rights, you may contact the Regis Institutional Review Board Chair:
Dr. Colleen Malachowski, PhD, MA
781-768-7363
Colleen.malachowski@regiscollege.edu

Statement of Consent

For those 18 years or older:

I have read this form (or have had it read to me). I have been encouraged to ask questions. I have received answers to my questions. I give my consent to be in this study. I have received (or will receive) a copy of this form. I understand the risks and discomforts associated with the above study and understand that I may quit the study at any time without penalty.

Signature(s)/Date

Adult Participant Informed Consent

Participant Printed Name: _____

Participant Signature: _____ Date: _____

Interpreter for Non-English-Speaking Participants:

Interpreter Printed Name: _____

Interpreter Signature: _____ Date: _____

- Yes, I consent
- No, I do not consent

October 17, 2019

Dear Colleague,

Thank you for completing the informed consent form and for your interest in participating in the study titled, "Implementing an evidence-based practice primary care approach to care for the adolescent using recreational marijuana in a post legalization climate". This research is part of my scholarly project to finish my doctoral studies. I am inviting you to participate in the **demographic questionnaire** portion of the study. Your input regarding your experience as a pediatric healthcare provider is highly valued.

As a reminder, this DNP scholarly project will focus on a pilot study to increase knowledge about marijuana and implement practice recommendations. The goal of the study is to provide Pediatric Primary Care Providers with the knowledge about recreational marijuana use by the adolescent (ages 13-19) that will be useful in utilizing tools to identify risk for use, counsel, assess the impact of use on the patient's health and wellness, recognize signs of misuse and abuse, and treat and evaluate the late adolescent patient.

The implementation portion of this scholarly project will include participation in a brief demographic questionnaire, pre and post self-assessment surveys, and completion of adolescent well visit forms. This demographic questionnaire usually takes fewer than 10 minutes to complete, and your participation is voluntary. If you choose to participate, you will be directed to the link below.

Please click on option "Yes" below to access the demographic questionnaire on *Qualtrics*. This survey may be taken on a computer, tablet, or a smart device.

Please be assured of the confidentiality of your answers; you will not be identified in any of the reports developed from this research. There is minimal to no risk involved in participating in this research. All data will be reported in aggregate form and no identifiable information will be stored with the data. Participation will be voluntary and anonymous.

To maintain confidentiality, those participants who opt into the study will be assigned a code by the researcher to de-identify their information. The researcher will be the only person aware of the assigned code and participation is in no way linked to job performance, their supervisor would not know which provider was assigned which code and only de-identified demographic data will be used in the study.

This research has been approved by the Institutional Review Board of Regis College. If you have any concerns or comments about this study, please feel free to contact me at [cell phone] or blaur094@regiscollege.edu. Thank you so much for your participation in this study. Your feedback is very much appreciated.

Sincerely,

Bonnie Laurent, MSN, RN, CNP-PC, DNPc
Doctoral of Nursing Practice Candidate

- Yes, I will complete the demographic questionnaire
- No, I wish to opt out of the study

Demographic Questionnaire

This questionnaire is intended to explore awareness and learning needs of Pediatric Primary Care Providers concerning the adolescent and recreational marijuana. In addition, your feedback will help determine the effectiveness of the provided Pediatric Primary Care Provider education session about the adolescent and recreational marijuana.

This is not a test, and there are no correct or incorrect answers. All information you provide will be kept confidential and will not be shared.

Please do not include your name on this survey.

Today's Date

How old are you?

- 21-30
 31-40
 41-50
 51-60
 Over 60

What gender do you identify with?

- Male
 Female
 Other

Race/Ethnicity

- White
 Black or African American
 Asian
 Native American Indian/Alaskan
 Hispanic, Latino, or Spanish
 Middle Eastern or North African
 Native Hawaiian or Other Pacific Islander
 Other _____

What state do you reside in?

- [State]
 Other, please specify

Are you a Pediatric Primary Care Provider?

- Yes
 No

Are you currently working as a Pediatric Primary Care Provider?

- Yes
 No

Do you care for adolescent patients ages 13-19 in your practice?

- Yes
 No

What is your specialization and/or focus of your practice?

- Family Practice
 Pediatrics
 Other, please specify

How many years have you been practicing in the Pediatric Primary Care Provider role?

- 0-5
 6-10
 11-15
 16-20
 21 years or more

Do you practice in a rural or urban area?

- Rural only (less than 10,000 inhabitants)
 Urban only
 Rural and Urban

In what region of [State] do you practice?

- Northwest
 Southwest
 Central
 Northeast
 Southeast

Is medicinal marijuana legal in the state you **reside** in?

- Yes
 No

Is recreational marijuana legal in the state you **reside** in?

- Yes
 No

What State(s) do you **work** in?

- Click to write in name of state

Is medicinal marijuana legal in the state you **work** in?

- Yes
 No

Is recreational marijuana legal in the state you **work** in?

- Yes
 No

Do you prescribe/recommend medicinal marijuana to pediatric patients in your practice?

- Yes
 No

Have you received professional education about marijuana?

- Yes
 No

Did you receive education on medicinal marijuana, recreational marijuana, or both?

- Medicinal
 Recreational
 Both

What venue did you receive marijuana education?

- Self-taught
 Continuing Educational Credit (CEU)
 Employer-based
 Professional Organization
 State Regulating Body
 Other

Tool adapted and modified with permission from:

Balneaves, L.G., Alraja, A., Ziemanski, D., McCuaig, F., & Ware, M. (2018). A national needs assessment of Canadian nurse practitioners regarding cannabis for therapeutic purposes. *Cannabis and Cannaboid Research*, 3(1), 66-73. doi:10.1089/can.2018.002

Knowledge about the recreational use of marijuana

1. Please circle the number that you feel best indicates your current level of knowledge and the level of knowledge you desire for the following topics:

(1=very poor, 2=poor, 3=fair, 4= good, 5=very good)

Current Knowledge Level 1=very poor, 5=very good	Topic	Desired Knowledge Level 1=very poor, 5=very good
1 2 3 4 5	Identifying adolescents (ages 13-18) at risk for marijuana use	1 2 3 4 5
1 2 3 4 5	Potential health and wellness risks of the adolescent (ages 13-18) using marijuana for recreational purposes	1 2 3 4 5
1 2 3 4 5	Counseling adolescents (ages 13-18) regarding recreational marijuana use	1 2 3 4 5
1 2 3 4 5	Recognizing signs of misuse or abuse of recreational marijuana	1 2 3 4 5
1 2 3 4 5	Treating and evaluating the adolescent (ages 13-18) using recreational marijuana	1 2 3 4 5
1 2 3 4 5	Alternative routes of administration of recreational marijuana	1 2 3 4 5
1 2 3 4 5	Similarities and differences between dried marijuana, and other forms of marijuana products	1 2 3 4 5
1 2 3 4 5	Mechanism of action of marijuana	1 2 3 4 5

	(endocannabinoid system)	
1 2 3 4 5	Laws and regulations surrounding the recreational use of marijuana in the state of [State]	1 2 3 4 5

2. How strongly do you feel you need education on marijuana in health care?

Not at all Not very strongly Neutral Strongly Very strongly

Experiences

3. Have you ever been approached by a patient ages 13-18 and/or his/her family to discuss the use of marijuana for recreational purposes? Yes No

4. Have you ever initiated a discussion with a patient ages 13-18 and/or his/her family on the use of marijuana for recreational purposes? Yes No

5. Do you have patients ages 13-18 using marijuana for recreational purposes?

Yes No

6. Please indicate the degree to which you agree or disagree with these statements

(1=Strongly agree, 2=Agree, 3=Neutral, 4=Disagree, 5=Strongly disagree)

Statement	1=Strongly agree, 5=Strongly disagree				
I would feel more comfortable discussing the recreational use of marijuana with patients/patient family members if I had more education about it	1	2	3	4	5
I feel that with more education I would be better able to treat patients using recreational marijuana	1	2	3	4	5

Adolescent Well Visit Tracking Form (Ages 13-19)

Instructions: Please complete this form for all adolescent well visit (annual physical exam) appointments between 11/27/2019 and 01/27/2020. The researcher will assign a code to de-identify provider information. Patient data will also be de-identified using a numerical system. The researcher is the only person aware of the assigned codes and your participation is not linked to your job performance. Your supervisor will not know which provider is assigned which code and only de-identified demographic data will be used in the study.

Date: _____

Provider: _____

Patient Age: _____

Was patient screened for use of the following:

- Marijuana
- Alcohol
- Tobacco
- Other: _____
- All of the above

If yes, which screening tool was used?

- S2BI
- Used results from [site form filled out in waiting room]
- Other: _____

Did you provide an intervention?

- Yes
- No

If yes, was the intervention motivational interviewing or something else?

- Motivational Interviewing
- Something else: _____

Did you refer the patient for further substance use treatment/support?

- Yes
- No

4/22/2020

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Apr 22, 2020

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Table 23: Pre-Current Knowledge About Recreational Marijuana

Question	Very Poor	Poor	Fair	Good	Very Good	n
Identifying adolescents (ages 13-19) at risk for marijuana use	0 (0.00%)	1 (33.33%)	1 (33.33%)	1 (33.33%)	0 (0.00%)	3
Potential health and wellness risks of the adolescent (ages 13-19) using marijuana for recreational purposes	0 (0.00%)	0 (0.00%)	2 (66.67%)	1 (33.33%)	0 (0.00%)	3
Counseling adolescents (ages 13-19) regarding recreational marijuana use	0 (0.00%)	1 (33.33%)	1 (33.33%)	1 (33.33%)	0 (0.00%)	3
Recognizing signs of misuse or abuse of recreational marijuana	0 (90.00%)	1 (33.33%)	1 (33.33%)	1 (33.33%)	0 (0.00%)	3
Treating and evaluating the adolescent (ages 13-19) using recreational marijuana	0 (0.00%)	0 (0.00%)	2 (66.67%)	1 (33.33%)	0 (0.00%)	3
Alternative routes for administration of recreational marijuana	1 (33.33%)	1 (33.33%)	1 (33.33%)	0 (0.00%)	0 (0.00%)	3
Similarities and differences between dried marijuana, and other forms of marijuana	2 (66.67%)	0 (0.00%)	0 (0.00%)	1 (33.33%)	0 (0.00%)	3

products						
Mechanism of action of marijuana (endocannabinoid system)	1 (33.33%)	0 (0.00%)	2 (66.67%)	0 (0.00%)	0 (0.00%)	3
Laws and regulations surrounding the recreational use of marijuana in the state of (study site)	0 (0.00%)	0 (0.00%)	1 (33.33%)	2 (66.67%)	0 (0.00%)	3

Table 24

Post-Current Knowledge About Recreational Marijuana

Question	Very Poor	Poor	Fair	Good	Very Good	<i>n</i>
Identifying adolescents (ages 13-19) at risk for marijuana use	0 (0.00%)	0 (0.00%)	2 (50.00%)	1 (25.00%)	1 (25.00%)	4
Potential health and wellness risks of the adolescent (ages 13-19) using marijuana for recreational purposes	0 (0.00%)	0 (0.00%)	1 (25.00%)	3 (75.00%)	0 (0.00%)	4
Counseling adolescents (ages 13-19) regarding recreational marijuana use	0 (0.00%)	0 (0.00%)	2 (50.00%)	0 (0.00%)	2 (50.00%)	4
Recognizing signs of misuse or abuse of recreational marijuana	0 (0.00%)	0 (0.00%)	1 (25.00%)	3 (75.00%)	0 (0.00%)	4

Treating and evaluating the adolescent (ages 13-19) using recreational marijuana	0 (0.00%)	1(25.00%)	2 (50.00%)	1 (25.00%)	0 (0.00%)	4
Alternative routes for administration of recreational marijuana	0 (0.00%)	0 (0.00%)	1 (25.00%)	1 (25.00%)	2 (50.00%)	4
Similarities and differences between dried marijuana, and other forms of marijuana products	0 (0.00%)	1(25.00%)	0 (0.00%)	3 (75.00%)	0 (0.00%)	4
Mechanism of action of marijuana (endocannabinoid system)	(25.00%)	0 (0.00%)	1 (25.00%)	2 (50.00%)	0 (0.00%)	4
Laws and regulations surrounding the recreational use of marijuana in the state of (study site)	0 (0.00%)	0 (0.00%)	2 (50.00%)	2 (50.00%)	0 (0.00%)	4