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An Educational Intervention for Pediatric Primary Health Care Providers to Increase Their Knowledge, Attitudes, and Behaviors Related to E-Cigarette Usage and Screening Among Adolescents: A Quality Improvement Project

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For the Degree of Doctor of Nursing Practice

By

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Abstract

Background: Health care providers can play an important role in preventing adolescent risk behaviors. Many primary care providers are not informed about e-cigarettes, the health consequences with use, nor how to screen for electronic cigarette use in adolescents.

Purpose: This DNP Project will assess health care providers' knowledge, attitudes, and behaviors related to the use of e-cigarettes in the adolescent population and appropriate screening tools prior to and following a related educational intervention.

Design: A pre- and posttest study design.

Sample: Ten participants (n = 2 nurse practitioners, n = 3 physicians, n = 2 registered nurses, and n = 3 medical assistants).

Setting: An outpatient pediatric primary care setting in Hialeah, FL.

Intervention: An educational intervention regarding the use of e-cigarettes in the adolescent population, health risks, and screening for e-cigarette use.

Instruments: Demographic and Professional Data Form and Knowledge, Attitudes, and Behaviors regarding E-Cigarette Use and Screening in the Adolescent Population Questionnaire

Results: Results from the project indicate that there was an average of 31.5% increase knowledge after the educational intervention, as well as increase attitude and behaviors compared to the baseline pre-education results.

Discussion: The results demonstrate that current evidence is correct and health care providers are not knowledgeable on these products and do not actively screen or counsel these patients nor feel comfortable doing so.

Implications: The implication of this project is to a create a guided education to help providers learn to properly screen adolescents, counsel patients and their parents who may be e-cigarette users, and provide the knowledge and tools to help e-cigarette users among the adolescent population to quit.

Key words: electronic cigarette, vape, JUUL, Pediatric Primary Care, healthcare providers, and adolescent

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Introduction

Problem Statement

Tobacco, the main product in regular cigarettes, is known as the leading cause of death related to lung and heart conditions, as well as neurodegenerative disorders (Kaisar et al., 2016). The tobacco industry has created other variations of these products that are worsening patient outcomes at a global level. The most popular tobacco related product among the youth is the electronic cigarettes. These products can lead to long term harmful health effects and are considered a gateway to nicotine use and addiction in the future (Walley et al., 2019).

The three organs that are most affected by usage of e-cigarettes in adolescents are the brain, heart, and the lungs. The heart and lungs are at risk for injury and infection after utilization of these products (Gaiha & Hlapern-Felsher, 2020). The brain has not fully matured during adolescence, specifically the pre-frontal cortex, and for this reason is vulnerable particularly when exposed to carcinogenic products within electronic cigarettes. Damage to the brain may lead to poor impulse control, impaired judgement, and limited function in relation to decision-making (Inman et al., 2020). It has been found that most providers do not screen nor educate their adolescent patients on electronic cigarettes and the detrimental effects of utilizing the product (Gaiha & Hlapern-Felsher, 2020).

Although the current CRAFFT survey screens a patient for substance use, it does not ask about the use of electronic cigarettes which would result in further discussion of the health risks (Inman et al., 2020). There are other screening tools, along with a variation to the current CRAFFT screening tool, that can lead to more accurate electronic cigarette screening amongst the adolescent population. Particularly, the CRAFFT 2.1 + Interview properly screens for

electronic cigarette use in Part C, which would be a valuable screening tool for use with the Pediatric Adolescent Population (Inman et al., 2020).

For this reason, it is vital that Pediatric Primary Care providers are made aware that these products are being falsely advertised to the population, poorly regulated, and are easily accessible to the pediatric population. There is also a lack of established regulatory guidelines for manufacturing electronic cigarettes and the content of these products (Inman et al., 2020). It is the responsibility of Pediatric Primary Care Providers to properly educate their patients regarding the health risks associated with e-cigarettes and screen for their use in adolescent populations.

Scope of the Problem

Combustible cigarettes such as Camel carry 15.8mg of nicotine (Schneller, et al. 2020), while the average e-cigarette holds 59mg/ml of nicotine with each pod carrying 0.7-1ml of liquid per pod (AAP, 2019). According to the CDC and the Center of Tobacco Products of the Food and Drug Administration (FDA), the National Youth Tobacco Survey in 2014 found that electronic cigarette usage among the high school students increased from 660,000 to 2 million, with an increase from 120,000 to 450,000 in middle school students (Kaiser et al., 2016). The survey also found that adolescent users outnumbered users in the adult population. From 2017 to 2018, it was found that electronic cigarette use among high school students rose to 78%, which is the highest of any product within the last forty-four years (Kaiser et al., 2016). According to the CDC from January 2020 to December 2022, sales of electronic cigarettes in the United States rose 46.6%, that does not include the sales of unregulated products as well.

In addition, the exposure to the vapors of e-cigarette extends beyond the user to other individuals in proximity, such as the case of “secondhand smoke” and the health risks to those inadvertently exposed (Kaiser et al., 2016). The US Surgeon General declared electronic

cigarette usage among the youth an epidemic as of 2018. This was based on a report that 27.5% of high school students in the United States have utilized this product within the last 30 days (Kaiser et al., 2016). Given that the rates of usage continue to rise, the long-term quality of life of these adolescents may be compromised. According to American Academy of Pediatrics, there are no current guidelines regarding the use of electronic cigarettes within the pediatric population (Gaiha & Hlapern-Felsher, 2020).

The use of electronic cigarettes promotes oncogenic effects and contributes to tumor development after use. Nicotine, which is a common ingredient in these products, is a key factor in promoting tumor growth. Unfortunately, the cancerous effects may not present for up to twenty years after use (Snorderly et al., 2021). For this reason, adolescents and providers must be informed about the negative impact this product will have on adolescents in the long-term.

In addition, these products are linked to future substance abuse. Studies have reported that electronic cigarette use by adolescents have been associated with lower high school graduation rates and college attendance (Mosa et al., 2020). This will impact the future of the next generation providing a vast difference in education, financial stability, and preventable risk factors associated with death among adolescent e-cigarette users. Not only will this be a risk for personal financial instability for users of e-cigarettes, but potentially may increase the rates of hospitalizations and incurred health associated costs related to treatment for the detrimental health effects on these adolescent users in the future.

Significance to Nursing

Healthcare providers, including Advance Practice Registered Nurses (APRNs), physicians, and medical assistants, play an important role in providing quality care for adolescents with up-to-date assessment, diagnosis, treatment, and communicating information to

the adolescent population which may influence their current choices and impact the future. It is important that providers recognize the different terminologies that adolescents use to refer to these products. This quality improvement project can help serve as a model to bridge the gaps of knowledge of health professionals to identify the use of e-cigarettes through health screening, and provide appropriate health education, counseling, and treatment.

Knowledge Gaps

There is a large knowledge gap and lack of research regarding the use of e-cigarettes in the adolescent population, and the positive outcomes of educational interventions and treatment modalities regarding their use. It is very challenging for providers to address the use of e-cigarettes during a visit if an adolescent is not willing to share that they use these products. It is even more challenging because there are no standard abnormal physical exam findings that indicate usage of these products (Burt & Li, 2020). Furthermore, there is a lack of education for providers regarding the use of e-cigarettes, the negative health risks, and tools to screen usage in the adolescent population.

II. Summary of Literature

The purpose of this quality improvement project is to increase awareness of health professionals regarding the use of electronic cigarettes and screening tools to identify adolescent users. The goal is to increase their confidence in addressing this issue with adolescents and decrease the use and adverse health effects of electronic cigarettes among the adolescent population. A literature review was conducted to identify the gaps of knowledge related to the PICO question utilizing Florida International University's Library's Database, advanced search. Key search terms included: "electronic cigarettes," "e-cigarettes," "vape," "JUUL," "Pediatric Primary Care Providers," "healthcare providers," "adolescent," "youth." The inclusion criteria

included full text English articles published after 2018. Articles addressed electronic cigarette use in adolescents, substance use screening, vaping in pediatrics, health care provider education and screening toolkits. Nine articles addressed the purpose of this project and the PICO question, "Will an educational intervention (I) regarding effects of electronic cigarette usage and screening tools for adolescents, increase Pediatric Primary Health Care Providers (P) knowledge, attitudes, and behaviors (O) related to electronic cigarette use and screening pre and post intervention (C)?". After reviewing the literature, the articles were separated into three different content categories, including increased electronic cigarette use in adolescence, lack of electronic cigarette use screening among adolescence, and knowledge deficit of health care providers regarding electronic cigarette use by adolescents.

Increased Electronic Cigarette Use in Adolescence

Electronic cigarettes are very popular within the adolescent population. As of 2014, there were over 466 brands and 7,764 different flavors with an average of over 200 more being added monthly (Bhatnagar et al., 2014). The variation in brands and flavors is a marketing strategy to reach the public and attract adolescents to utilize these unregulated products. According to Huey and Grannitto (2020), it has been found that the use of electronic cigarettes is now a national epidemic according to the United States Surgeon General.

A cross-sectional study, completed by Harlow et al. (2022), calculated the use over a six-month period of electronic cigarettes, tobacco, other non-tobacco products, oral nicotine products, hookah, cigars, cigarettes, cigarillos, and snus also known as powdered tobacco by high school students. It was found that among the 3,516 adolescent high school students, electronic cigarettes were of the highest prevalence and flavored non-tobacco oral nicotine products came in second. Of the students studied, it was found that Hispanics, females, and

homosexuals were the most common users of the product. The researchers found that the limitations to this study were that it was completed only in California and that the research took place during Fall 2020 to Fall 2021, admid the COVID 19 pandemic. Another limitation was a small percentage of students who did not provide signed parental consent to participate. Despite these limitations, the authors recommended continuing to monitor the prevalence of these products, as they will continue to impact the health of adolescents.

Foxon and Selya (2020) completed an observational study to identify the prevalence of electronic cigarette use among 12–17 year-olds from 1994 to 2018. They reported that the use of regular cigarettes declined to a minimum of 1% of adolescents with a rapid increase of e-cigarette usage since their introduction in 2009. The study found that these products are diverting adolescents from beginning cigarette use; however, these products can be more harmful. Some of the limitations of this study were the lack of research of long-term effects of exposure to e-cigarettes and the lack of research on the new JUUL, which grew in popularity in 2018. There were several limitations to this study including change in prevalence of electronic cigarette usage, and the modes of collecting data varied from counterfactual models dispensed before the creation of electronic cigarettes based on 1999 to 2009 data in comparison to the data collected until 2018. Another limitation is the fact that JUULs were not included within the category of electronic cigarettes even though they are utilized the same way and pose the same health risks. The literature can be supplemented with further studies on vape, JUULs, and other current marketing terminology of electronic cigarettes products for more accurate reporting.

McKeganey and Russell (2020) completed a cross-sectional, self-report online survey to determine the prevalence of electronic cigarette awareness and use among adolescents in the United States over the course of 30 days. It was found that 4% of adolescents, aged 15-17

utilized the electronic cigarettes, whereas those 13-14 years old were only 0.8% of users. However, this is a red flag calling for a need to regulate these products most especially for young vulnerable users like adolescents. The researchers note that self-reporting by youth is a limitation to this study as the results are reliant on their honesty in responding. The findings strengthen the public health argument of the importance of addressing adolescent use of these products and the need to monitor their use.

Screening of Electronic Cigarette Use Among Adolescents

There is no standard guideline to screen adolescents for electronic cigarette use. For this reason, it is extremely concerning as the usage continues to grow and these patients are not given the opportunity to receive counseling and treatment given that their use of e-cigarettes has not been identified. Therefore, a screening tool is used to assist primary care healthcare providers identify these adolescents and provide counseling and treatment as needed.

Schrader et al. (2021) conducted a randomized controlled pilot study to assess the reporting of electronic cigarette use by adolescents after having adolescents watch an educational video on electronic cigarettes. Based on a sample of 79 participants, the results indicated that those who watched the video were more likely to report use of electronic cigarettes to their provider leading to an opportunity for provider/patient conversation about electronic cigarettes. The limitation of this study was that the educational video intervention did not demonstrate an increase in adolescents' knowledge of the risk perception of utilizing these products. To ensure adolescents are screened properly, the researcher recommended providing this educational video during a visit to potentially increase the lack of electronic cigarette reporting.

Lui et al. (2021) addressed the concern of the lack of ability to identify electronic cigarette use. The researchers conducted a secondary analysis of data from a pilot randomized

trial regarding computer facilitated adolescent substance use screening and brief intervention in five different pediatric primary care offices in Massachusetts, involving adolescents aged 12-18. By providing a Brief Screener for tobacco, alcohol, and other drugs and providing a confidential baseline assessment battery, the screening tool was modified to include an electronic cigarette option. Lui et al. noted the study limitations as being a small sample in Massachusetts and solely from Pediatric Primary Care settings, as well as only using the word e-cigarette and not listing the cords JUUL or other common terms utilized among youth to describe this product.

According to Hein et al. (2020), it was found that 27.5% of high school students use electronic cigarettes, but of those only 37% recognized that nicotine was in these products. Results indicated that many providers report that there was no option on the Electronic Medical Records (EMR) to record electronic cigarette use. The quality improvement project implemented by these researchers was to improve screening of adolescents seen in school-based clinics, by utilizing an option tab on the providers EMR system to screen for e-cigarettes. There was a 32% increase in screening adolescents for these products after implementation of this intervention. As providers within this study reported a barrier to finding this tab in the EMR system, the researchers recommended providing step-by-step directions for providers to help increase the rates of screening for electronic cigarettes among adolescents.

Knowledge Deficit of Health Care Providers Regarding E-Cigarette Use by Adolescents

The findings of the three articles below indicate that health care providers of the adolescent population require an educational intervention to help guide their care by informing adolescents regarding e-cigarettes, the language, users, and long-term outcomes.

Halpern-Flescher et al. (2022) conducted a community-based participant research to examine providers' knowledge regarding tools needed to prevent youth from utilizing electronic

cigarettes. Based on two groups of 15 healthcare providers, there was recognition of the need to create Vaping Information, Solutions, and Interventions (VISIT) Tool Kit for Healthcare Providers. It was found that the most common barriers reported by the health care providers was screening adolescents for e-cigarette use and better understanding on how to effectively assist adolescent users. The Visit Tool Kit gave providers the most up-to-date information on vaping, screening, and counseling for adolescents, as well as information to provide to patients and offer print outs at outpatient offices. Halpern-Flescher et al. (2022) identified that the limitations to this study included the novelty of this new tool kit, as well as lack of recommendations for treatment of nicotine dependance, referral support and continuing medical education for providers.

Peterson et al. (2018) completed a qualitative study by interviewing twenty-five Pediatric Primary Care Providers who regularly treat adolescents on topics related to electronic cigarette use. The researchers found that most providers reported barriers, such as lack of knowledge of effects of these products on adolescent health resulting in a lack of confidence in counseling and screening these patients. Other barriers were unfamiliarity with adolescent's vaping motivations and age-appropriate language related to the products. Ultimately the researchers found that Pediatric Primary Care Providers have the potential to provide early prevention and screening of e-cigarette use among adolescents. The study limitation was a sample that was mostly White and located in the Northeast.

McGee et al. (2021) assessed the knowledge, attitudes, and behaviors toward electronic cigarette usage in the adolescent population among 169 clinical staff. The researchers found that most staff were eager to learn about the 5As and 5 Rs model for tobacco counseling, including how much tobacco and other chemicals are in these products, as well as symptoms of electronic-

cigarette or vaping product use, specifically lung associated injury (EVALI). This study indicated that providers lacked knowledge in how to treat these adolescents and appropriate referral. Limitations to this study were that providers were from one institution and the possibility of social desirability bias. Based on the study results, the implication was the need to provide a guideline for an educational intervention for clinical staff in primary care settings to address the rapid rates of electronic cigarette users.

III. Purpose, PICO Clinical Question, and SMART GOALS

The purpose of this DNP Project is to assess health care provider's knowledge, attitudes, and behaviors related to the use of e-cigarettes in the adolescent population and appropriate screening tools, prior to and following a related educational intervention. This is important as there is no screening tool in place to assess use of electronic cigarettes by adolescents at the facility which is the setting for this quality improvement project. Furthermore, many providers are not knowledgeable about electronic cigarettes and the health risks and are not only unable to accurately screen for the use of these products but also are unable to educate adolescents regarding the risks of e-cigarettes.

Population, Intervention, Comparison, and Outcome (PICO) Clinical Question

A PICO clinical question identifies a population of interest, a proposed intervention to address the clinical question, comparison intervention or change from a pre-test to post-test scores, and a outcome variable of interest. The PICO question for this project is "Will an educational intervention (I) regarding effects of electronic cigarette usage and screening tools for adolescents, increase Pediatric Primary Health Care Providers (P) knowledge, attitudes, and behaviors (O) related to electronic cigarette use and screening pre and post intervention (C)?"

SMART Goal

The SMART Goal of this project is to implement an educational intervention regarding use of e-cigarettes in the adolescent population and related screening tools to improve health care professionals' knowledge, attitudes, and behaviors regarding the use of e-cigarettes and related screening tools.

IV. Organizational Assessment

Citrus Health Network was founded in 1979, originally serving as a non-for-profit community mental health center. It is one of the largest mental health centers in Hialeah, FL for adults and children. Citrus provides comprehensive outpatient and inpatient services to diagnose and treat clients with mental and behavioral health conditions. Citrus Health employs over 20 psychiatrists, more than 20 psychologists, more than 20 Licensed Clinical Social Workers, and more than 25 Licensed Mental Health Counselors among its clinical staff.

As of 2004, Citrus Health Network expanded to provide primary care with the assistance of a Section 330 (e) grant from Health Resources and Services Administration. At this time, the facility became a Federally Qualified Health Center. Citrus Health Network is a Level 3 patient Centered Medical Home. The project will be implemented specifically at the Pediatric Primary Care site. This site serves infants until adulthood providing regular physical exams, immunizations, treatment of childhood diseases, and preventative screenings to promote health. The facility is committed to find specialists and arrange patient care as needed, review test results assisting in diagnosis and treatment, assess children on sick visits via same-day appointments, as well as provide a 24 hour on-call service to respond to any questions regarding patient care.

There are about 20 employees at Citrus Health Primary Care facility which includes three nurse practitioners and three physicians ranging in age from 36 to 75 years old. Also, there are five medical assistants, one phlebotomist, four front desk staff, one referral coordinator, one on site administrator, and two-house keeping staff. There is an average of 75 patients seen daily depending on the providers working that day and same day walk-in visits. The electronic medical record system used at this facility is Citrix Intergy.

SWOT Analysis

A SWOT analysis offers an opportunity to complete a situational analysis of Citrus Health, analyzing its strengths, weaknesses, opportunities, and threats.

Strengths

Citrus Health Pediatric Primary care has been well-known and established for eighteen years and continues to grow. The strengths of Citrus Health are identified below:

- Citrus Health provides care that includes substance abuse and mental health clinics for easy referrals for avid electronic cigarette users among adolescents.
- Medical assistants assist in screening patients prior to a patient visit, which provides an initial assessment through use of the CRAFFT survey.
- Citrus Health organization has a large patient base population of Miami-Dade County to serve and educate on electronic cigarette use.

Weaknesses

A lack of up-to-date practice and screening within a primary care facility can be detrimental to the health of adolescents. For a facility to stay-up-to date, it is vital to recognize the deficiencies. The weaknesses of Citrus Health have been identified below:

- Lack of flexibility within the EMR system to add a new screening system. Currently there is use of the CRAFFT survey which does not specify electronic cigarette use.
- Lack of funding to implement a new screening system.
- Lack of time to complete a full assessment, diagnose, treat, and educate on electronic cigarettes.

Opportunities

In large facilities there is always room for growth to continue to be the most up-to-date on evidence-based practice and adapt to employee's satisfaction and feedback. Listed below are the opportunities for Citrus Health:

- Employee funding and support for research and personal education on current practice.
- Education on new screening tools and how to provide education and treatment for patients.
- Opportunities for providers to provide feedback on how the facility can move efficiently to allow providers time to assess, diagnose, treat, and educate each patient on the use of e-cigarettes.

Threats

The threats to this pediatric primary care facility should be identified to avert barriers and threats. Some of the current threats include but are not limited to:

- Time restraints to allow providers the opportunity to learn or advance their education regarding up-to-date information regarding use of electronic cigarettes.
- Negative attitudes toward learning something new and lack of motivation towards practice change.

V. Definition of Terms

The key terms of this project are electronic cigarette, vape, JUUL, Pediatric Primary Care, healthcare providers, and adolescent. These terms are defined below.

Electronic cigarette

This term describes a cigarette-shaped device containing a nicotine-based liquid that is vaporized and inhaled, used to simulate the experience of smoking tobacco (Oxford Languages).

Vape

As a noun, the term vape is used to describe a device used for inhaling vapor containing nicotine and flavoring. The term used in the form as a verb can be described as the act to inhale and exhale vapor containing nicotine and flavoring produced by a device designed for this purpose (Oxford Languages).

JUUL

This term can be described as a form of e-cigarette that delivers nicotine to the lungs without using fire and smoke; the device is long and slender, looking somewhat like a pen or USB flash drive (Dasgupta & Johnson, 2020).

Pediatric Primary Care

This term encompasses health supervision and anticipatory guidance, monitoring physical and psychosocial growth and development, age-appropriate screening, diagnosis and treatment of acute and chronic disorders; management of serious and life-threatening illness, when appropriate, referral of more complex conditions, and provision of first contact care as well as coordinated management of health problems requiring multiple professional services (American Academy of Pediatrics, 2011).

Healthcare Provider

This term is also known as an individual health professional, or a health facility organization licensed to provide health care diagnosis and or treatment services (Oxford Languages).

Adolescent

This term describes a young person in the process of developing from a child into an adult (Oxford Languages). They are also known as someone who has reached puberty but is not yet known as an adult, commonly associated with teenage years.

Knowledge

This term embodies all information that a person possesses or accrues related to a particular field of study; can be defined as declarative knowing what, procedural knowing how, or conditional knowing when or why (Schrader & Lawless, 2004).

Attitude

This term can be defined in behavioral meaning as a mental and neural state of readiness conditioned by stimuli directing an individual's response to all objects with which it is related or as a cognitive sense expressed as the affect for or against a psychological object (Schrader & Lawless, 2004).

Behavior

This term can be simply described as the way in which a person, organism, or group responds to a certain set of conditions (Schrader & Lawless, 2004)

VI. Conceptual Underpinning and Theoretical Framework of the Project

The KAP Model, also known as the Knowledge, Attitude, and Practice Model, is used in this project to examine the knowledge of pediatric health care providers regarding electronic cigarette use and screening among the adolescent population. Bloom initially created this model

in 1956 describing three components: cognitive, affective, and psychomotor (Schrader & Lawless, 2004). The cognitive components focus on what one knows, understands, and can apply, analyze, and evaluate. The affective component focuses on the attitudes, values, and interests. The psychomotor component ultimately encompasses the ability to accomplish a task at hand. The KAP Model has been applied to understanding health-related behaviors and health-seeking habits (Andrade et al., 2020). Future modifications of the model addressed not only knowledge, but learner attitudes and their impact on behavior.

In the case of this quality improvement project, the framework of this project will be the KAP model to help identify knowledge gaps, attitudes, and behaviors of Pediatric Primary Care Healthcare providers related to adolescent electronic cigarette usage and related screening.

VII. Methodology

Introduction of Quality Improvement I Methodology

The quality improvement methodology of Plan Do Study Act (PDSA) began with completing a needs and organizational assessment of the site of research. The "Plan" phase includes development of the Quality Improvement Project Proposal and obtaining approval of the proposal by the FIU Institutional Review Board (IRB) with a letter of support to conduct the project from Citrus Health Organization. The "Do" phase will involve implementation of the project, including administration of the written informed consent, and pre-test measures, educational intervention, and administration of post-test measures. The "Study" phase involves analyzing study data, while the "Act" phase evaluates the value of the project in achieving the study outcomes and making modifications to the project during a subsequent PDSA cycle (Christoff, 2018).

Plan

Study Design

The project involves a pre- and posttest study design. According to Dang and Dearholt (2018), a quasi-experimental one group pre-test-post-test design is used to evaluate the effectiveness of an intervention based on the same participants. For this QI project, the intervention will be an educational intervention and the change difference is the scores from the pre to post intervention regarding healthcare providers' knowledge, attitude, and behaviors regarding the use of electronic cigarette and related screening.

Setting

This quality improvement project will be conducted in an outpatient Pediatric Primary Care facility in Hialeah, FL.

Sample

The participants of this project will include the physicians, nurse practitioners, registered nurses and medical assistants employed at the Pediatric Primary Care facility of Citrus Health with active roles in assessing, diagnosing, or treating adolescent patients. The sample size will be eleven participants (3 nurse practitioners, 3 physicians, 2 registered nurses, and 3 medical assistants). Inclusion criteria are health care professionals who provide direct care to the adolescent population that are English speaking. Exclusion criteria are health care professionals who do not provide direct patient care.

Do

Intervention

The DNP Candidate will conduct a 30-minute educational presentation regarding E-Cigarette use and screening in the adolescent population. The presentation topics will include defining electronic cigarettes, common terms, CDC National Youth Tobacco Survey statistics, locations of sold and advertised products, ways to talk to adolescents in the pediatric setting, screening tools, defining EVALI, ways to help users quit, ways to anticipate challenges, resources, referrals, follow-ups, and billing codes with a case study on how to utilize the codes. The importance is that education and counseling by pediatric providers of adolescent's patients may reduce the incidence of the use of E-Cigarettes and negative health outcomes.

Instruments

The Demographic and Professional Data Form will include questions related to age, gender, ethnicity, level of education, professional role, and years of working at the facility. The pre and post-test of this project will be administered via a hard copy to assess the health care providers' Knowledge, Attitudes, and Behaviors regarding E-Cigarette Use and Screening in the Adolescent Population Questionnaire. The questionnaire was developed to address health care providers knowledge, attitudes, and behaviors towards electronic cigarette identification of products, increased adolescent usage rates, screening, recommendations on how to talk to adolescents and parents, risks associated with usage and secondhand exposure, how to treat/counsel patients, proper follow up timing, referrals, and billing codes for treatment and counseling. The tools were developed in tandem with the most up to date recommendations of the American Academy of Pediatrics to improve health care providers' Knowledge, Attitudes, and Behaviors toward electronic cigarette use and screening in the adolescent population.

Data Collection Procedures

After receiving IRB approval from FIU and approval to implement the quality improvement project at this Pediatric Primary Care Facility in Miami, a flyer was distributed in the facility to introduce the study, including contact information of the DNP Candidate. Health care professionals interested in participation were asked to call the DNP Candidate to discuss the purpose of the study, inclusion criteria, and expectations regarding participation. Interested individuals were given a written informed consent form to be signed and returned to the DNP Candidate. Following signing of the informed consent, the Demographic and Professional Data Form and the Knowledge, Attitudes, and Behavior Questionnaire was administered as a pre-test to participants to complete before the educational intervention. The healthcare providers' Knowledge, Attitudes and Behavior Questionnaire was administered as a post-test following the intervention.

Data Management

All the hard copies of study materials, Informed Consent, Demographic and Professional Data Form, pre-test, and post-test, were kept in a locked cabinet in the locked office of the DNP Candidate.

Study

Data Analysis

Descriptive statistics were used to analyze the Demographic and Professional Data Form. A paired T-Test was used to compare the pre and post test scores regarding health care providers' Knowledge, Attitudes, and Behaviors regarding E-Cigarette Usage and Screening Among Adolescents Questionnaire.

Protection of Human Subjects

To ensure protection of human subjects, IRB approval was obtained from FIU. The DNP candidate also completed the Collaborative Institutional Training Initiative (CITI) certification for human subject protection. Preceding the commencement of this project, potential participants were informed that participation in the study was voluntary with the right to withdraw from the study at any time without consequences. Confidentiality was maintained by use of code number on study instruments rather than any personally identifiable information. Only the DNP candidate had the master list of names and corresponding code numbers. Study data was stored in the locked file cabinet in the locked office of DNP student. The DNP Candidate is the only individual with access to the study data. Study data was destroyed after the completion of the project.

Act

IX. Results

Demographic and Professional Data Form Results

The last step of the PDSA cycle is "Act" in which the primary investigator of this study decides whether the study should be piloted at a larger scale or if changes should be made for the next PDSA cycle. This quality improvement project studied the effect of an evidence-based educational intervention on pediatric primary care health care providers' knowledge, attitudes, and behaviors toward electronic cigarette screening and usage in the adolescent population. The results of the Demographic and Professional Data Form as well as pretest and posttest scores are reported in the following sections.

A total of ten out of eleven pediatric health care providers at the site participated in this project. Frequency counts were utilized to categorize the Demographic and Professional Data

Form results of all participants. As displayed in Table 1, the participants age varied from 25 to 64 years old; only one participant (10%) was between 25 to 34 years old, four (40%) were between 35 to 44 years old, three (30%) were between 45 to 54 years old, and two (20%) were 55 to 64 years old. The participants education level varied as displayed in Table 2 demonstrating six (60%) of participants holding a graduate degree, three (30%) have a bachelor's degree, and zero (0%) held an associate degree, and 10% marked other. The provider tenure at the practice varied from 0-20 plus years working at the site. As demonstrated in Table 3, three (30%) participants have worked at the facility for 0 to 2 years, two (20%) have worked at the facility for 3 to 5 years, one (10%) have worked at the facility for 6 to 9 years, and three (30%) have worked at the facility for 10 to 15 years, and one (10%) has worked at the facility for 20 plus years. The participant's role varied as displayed in Table 4, three (30%) are physicians, two (20%) are nurse practitioners, two (20%) are registered nurses and three (30%) were medical assistants. Table 5 identified that nine (90%) participants identified as Hispanic/Latino as their ethnicity and one (10%) participant selected the option other, while Table 6 identifies that all participants (n=10) were female.

Table 1:

Provider Age		
	Count	%
25-34 yo	1.0	*10.0%*
35-44 yo	4.0	*40.0%*
45-54 yo	3.0	*30.0%*
55-64 yo	2.0	*20.0%*
Total	10.0	*100.0%*

Table 2:

Provider Education		
	Count	%
Graduate	6.0	*60.0%*
Bachelor's	3.0	*30.0%*
Other	1.0	*10.0%*
Total	10.0	*100.0%*

Table 3:

Provider Tenure at Practice		
	Count	%
0-2 yrs	3.0	*30.0%*
3-5 yrs	2.0	*20.0%*
6-9 yrs	1.0	*10.0%*
10-15 yrs	3.0	*30.0%*
20+ yrs	1.0	*10.0%*
Total	10.0	*100.0%*

Table 4:

Provider Role		
	Count	%
Physician	2.0	*20.0%*
Resident	1.0	*10.0%*
NP	2.0	*20.0%*
RN	2.0	*20.0%*
MA	3.0	*30.0%*
Total	10.0	*100.0%*

Table 5:

Provider Ethnicity		
	Count	%
Hispanic/Latino	9.0	*90.0%*
Other	1.0	*10.0%*
Total	10.0	*100.0%*

Table 6:

Provider Gender		
	Count	%
Female	10.0	*100.0%*
Male	-	-
Non-Binary	-	-
Prefer Not to Say	-	-
Total	10.0	*100.0%*

Paired T Test and Wilcoxon Signed Rank Test Results

The distribution of pretest and posttest scores were evaluated prior to analyses and were determined to not meet the assumption of normality as the pre-test mean, median, and mode and post-test mean, median and mode were all different. There was a significant change found in the pediatric health care provider's knowledge, attitudes, and behaviors toward electronic cigarette usage and screening in adolescents as displayed in Table 1 in the paired sample t-test. The Wilcoxon Signed Rank test was used to determine whether scores regarding knowledge, attitudes, and behaviors changed significantly from pre- to post-intervention. The null hypothesis is that there is no difference in test scores from pre- and post- education tests. The Test Statistic

is less than the Critical Value, so this study rejects the Null Hypothesis. There is sufficient evidence to suggest that there is a difference between pre- and post- test scores as a result this quality improvement project.

Table 1: Paired Sample T Test and Descriptive

			Statistic	p
Knowledge Pre	Knowledge Post	Wilcoxon W	0.00	0.006
Attitudes pre	Attitudes Post	Wilcoxon W	1.50 [a]	0.014
Behavior Pre	Behavior post	Wilcoxon W	6.00	0.032

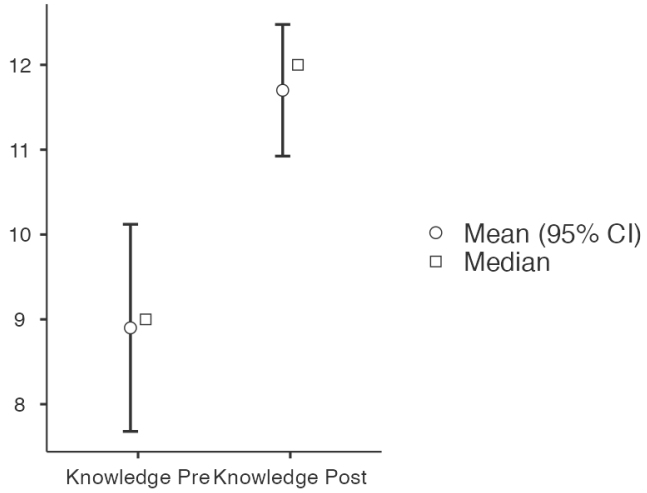
[a] 1 pair(s) of values were tied

	N	Mean	Median	SD	SE
Knowledge Pre	10	8.90	9.00	1.97	0.623
Knowledge Post	10	11.70	12.00	1.25	0.396
Attitudes pre	10	18.90	19.00	1.52	0.482
Attitudes Post	10	20.70	21.00	1.49	0.473
Behavior Pre	10	12.40	13.50	5.89	1.863
Behavior post	10	17.10	17.00	5.30	1.676

Knowledge Change

The educational intervention significantly improved participants knowledge regarding electronic cigarette usage and screening in the adolescent population. Knowledge was found to change in the paired sample t-test from (M=8.9.) to posttest (M=11.7), p=-.006 as displayed in Table 1. As a result of the quality improvement project, Figure 1 demonstrates a 95% confidence interval of the expected change in knowledge from the pre-test and post-test.

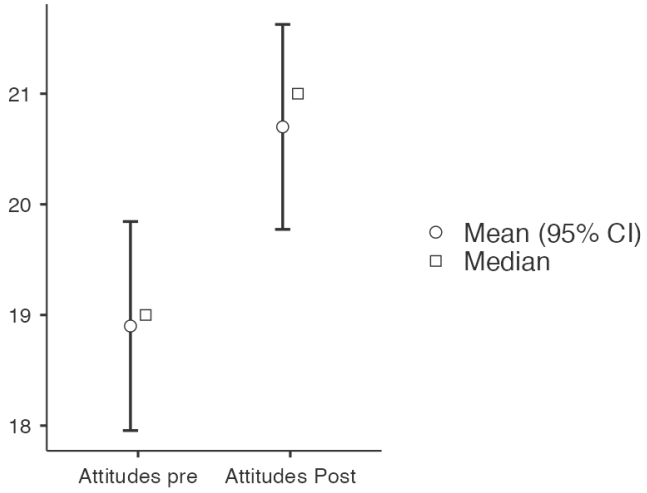
Figure 1. Plots: Knowledge Pre - Knowledge Post



Attitudes Change

The educational intervention significantly improved participants attitude regarding electronic cigarette usage and screening in the adolescent population. Attitudes were initially scored using a Likert scale and then applied to the Wilcoxon Signed Rank as the results were not normative. Attitudes were found to change in the paired sample t-test from (M=18.9) to posttest (M=20.70), p=0.014 as displayed in Table 1. As a result of the quality improvement project, Figure 2 demonstrates a 95% confidence interval of the expected change in attitudes from the pre-test and post-test.

Figure 2: Plot: Attitude Pre – Attitude Post



Behavior Change

The educational intervention significantly improved participants behavior regarding electronic cigarette usage and screening in the adolescent population. Behaviors were initially scored using a Likert scale and then applied to the Wilcoxon Signed Rank as the results were not normative. Behaviors were found to change in the paired sample t test as from (M=12.40) to posttest (M=17.10, p=0.032 as displayed in Table 1. As a result of the quality improvement project, Figure 3 demonstrates a 95% confidence interval of the expected change in behavior from the pre-test and post-test.

Figure 3: Plot: Behavior Pre – Behavior Post

X. Discussion of Results

This quality improvement project was aimed to determine if an educational intervention would improve the knowledge, attitudes, and behaviors of health care providers on adolescent electronic cigarette usage and screening. A total of ten out of eleven providers at the facility participated and completed the project in its entity. Results showed that before the intervention providers did not know the following: e-cigarettes are not safer than combustible cigarettes, e-

cigarette, JUUL, and vape mean the same thing, young e-cigarette users are at an increased risk of transitioning to other tobacco products, the current CRAFFT survey does not screen for e-cigarette use, bystanders of e-cigarettes are exposed to second hand smoke in the same manner as combustible cigarettes, AAP recommends screening of e-cigarette use to begin at 11 years old, how to report an EVALI, the FDA does not improve of e-cigarettes as a cessation device for combustible cigarettes, when to schedule a follow up visit after scheduling a quit date, nor that providers can bill for counseling patients on e-cigarette usage and second hand exposure. The lack of knowledge by health care providers on these products and screening is similarly demonstrated in the literature review, specifically by Halpern-Flescher et al. (2022), McGee et al. (2021), and Peterson et al. (2018). This quality improvement project confirms the findings that an educational intervention would improve the knowledge as demonstrated with 31.5% improvement overall.

The attitudes and behaviors of health care providers changed in a positive way because of the implementation of this quality improvement project. Health care providers reported feeling more comfortable counseling patients on how to quit, finding it important to counsel patients on e-cigarettes. Alongside this, they find it important to not only ask if the patient uses an e-cigarette but also if they use any combination of a Vape, JUUL or mods which is similarly demonstrated improvement in studies by Schrader et al (2021), Lui et al. (2021), and Hein et al. (2020). Such a significant rise in improvement in knowledge, attitudes, and behaviors of health care providers supports the importance of educational interventions to improve providers' ability to screen and properly counsel adolescent patients on e-cigarette usage and this growing global issue as the numbers of users continues to rise.

XI. Limitations of the Project

The results of this quality improvement project reveal improvements in knowledge, attitudes, and behaviors among pediatric health care providers regarding electronic cigarette usage and screening among adolescents, however, there are several limitations to the study that must be taken into consideration. The primary limitation is the small sample size. A single site was used with only 10 participants. Another limitation was that the project was implemented at only one location limiting the variety of feedback received which as a result indicates the results may not be the same in diverse practice settings that work directly with adolescents. An additional limitation is that 90% of participants were Hispanic/Latino and 100% were female. This did not allow for variation in perspective of different ethnicity/race and sex. The last limitation was that the post-test was administered immediately after the educational intervention, making it difficult to determine if the participants behaviors changed over the long term after participating in the educational intervention.

XII. Discussion of the Results with Implications for Advanced Practice Nursing

The implications of the results of this project must be considered for advanced practice nursing. The results of this quality improvement project do support the literature review on the current evidence that the health care providers who utilize the original CRAFFT survey will not specifically ask about electronic cigarette usage and that there is a knowledge deficit among healthcare providers regarding e-cigarette use by adolescents. As these results indicate that the literature is correct, it is reasonable to argue that a change in practice to educate health care providers on e-cigarette usage and screening is vital among the adolescent population. The project demonstrates that the role of a Doctoral Nurse Practitioner may lead and impact practice

change to improve the quality of care provided and identify up-to-date new unhealthy substance abuse practices of the adolescent population.

The QI project will help bring awareness to this growing issue and prepare the healthcare providers who directly care for the adolescent population to become aware and up to date with these new harmful products. The education will help providers learn to properly screen adolescents, counsel patients and their parents who may be e-cigarette users and provide the knowledge and tools to help e-cigarette users among this population quit. Results of the project will be presented to the Pediatric Primary Care Facility as well as the organization to allow providers from the mental health services site utilize this information. The results of this project demonstrate that by integrating evidence-based practice care, more adolescent e-cigarette users will be properly identified and provided the adequate care needed. Alongside this, caregivers and those who reside with younger children will be aware of the secondhand smoke risks posed while utilizing these products in front of their children as well as the hazardous poison risks if their child ingests this product.

XIII. Conclusions

The use of electronic cigarettes continues to grow at an increasingly fast rate, and it is very concerning for the pediatric population. The literature shows that these products came out in 2009 and as of today, the flavored disposable e-cigarettes are the most used device for middle school and high school products. The National Pediatric Nurse Practitioner Association reported the CDC's findings of the rise in adolescents purchasing electronic cigarettes by 47% from January 2020 to December 2022; this does not include off market and non-regulated sales which are a large bulk of purchases for the youth. As the literature shows, many facilities use original CRAFFT survey to screen adolescents without screening for e-cigarette usage; additional

research demonstrated that providers are not properly educated on what exactly these products are nor how to care for patients. Health care providers would benefit from further educational interventions as demonstrated in this quality improvement project. Not only will healthcare providers feel knowledgeable about these products, but they will be able to screen and properly counsel and help treat these patients. The products are not only detrimental to adolescent users but also to any bystander that is inhaling this second hand aerosolized hazardous products. Younger siblings of these adolescent e-cigarette users are also at risk for not only modeling their behavior but for ingesting the liquid when unattended and result in fatality due to the poisonous product inside. Even though there are limitations in this project, there is enough evidence to prove practice change based on the current evidence indicating the need to educate healthcare providers on screening and counseling adolescent patients on electronic cigarette usage.

XIV. Dissemination Plan

Dissemination of the project will occur first at the practice site providing a summary of the project and outcomes achieved. The end goal is to hope that the site will change their CRAFFT screening tool to the modern version CRAFFT 2.0 to help begin conversation with adolescents after identifying users. Additionally, an email will be sent out with a short summary for all employees who work at other modalities of the organization such as the mental health department, to learn more about the project and hopefully will be beneficial in monitoring for substance abuse in those reported adolescent e-cigarette users.

Aside from presenting the results at the site, dissemination of the project will also include efforts to have a peer-reviewed journal with the National Association of Pediatric Nurse Practitioners (NAPNAP)'s journal, *The Journal of Pediatric Health Care*. Also, submitting the abstract to the Advanced Practice Provider Conference representative at Anne Robert and Lurie

Children's Hospital to present the results. Potential disseminations if approved could also include poster presentation at a NAPNAP Conference.

XIII. References

American Academy of Pediatrics. (2019). *The Importance of Addressing E-cigarettes in Clinical Practice*. E-cigarette curriculum. Retrieved January 10,2023, https://downloads.aap.org/AAP/PDF/2A_The_Importance_of_Addressing_E-cigarettes_in_Practice.pdf?_ga=2.7575094.54917729.1677196005591924568.167354976

Andrade, C., Menon, V., Ameen, S., & Kumar Praharaj, S. (2020). Designing and conducting knowledge, attitude, and practice surveys in psychiatry: Practical guidance. *Indian Journal of Psychological Medicine*, *42*(5), 478-481. https://doi.org/10.1177/025371762094611

Bhatnagar, A., Whitsel, L. P., Ribisl, K. M., Bullen, C., Chaloupka, F., Piano, M. R., ... & Benowitz, N. (2014). Electronic cigarettes: A policy statement from the American Heart Association. *Circulation*, *130*(16), 1418-1436. https://doi.org/10.1161/CIR.0000000000000107

Burns, C. E., Dunn, A. M., Brady, M. A., Starr, N. B., Blosser, C. G., & Garzon, D. L. (2012). *Pediatric primary care-e-book*. Elsevier Health Sciences.

Burt, B., & Li, J. (2020). The electronic cigarette epidemic in youth and young adults: A practical review. *Journal of the American Academy of PAs*, *33*(3), 17-23. https://doi.org/10.1097/01.JAA.0000654384.02068.99

Christoff, P. (2018). Running PDSA cycles. *Current problems in pediatric and adolescent health care*, *48*(8), 198-201.

Dang, D., & Dearholt, S. (2018). *Johns Hopkins nursing evidence-based practice: Model and guidelines*. Sigma Theta Tau International.

Dasgupta , R., & Johnson, J. (2020). Juul: Side effects and health risks. *Medical*

News Today. Retrieved from https://www.medicalnewstoday.com/articles/juul-side-effects#what-is-a-juul

Foxon, F., & Selya, A. S. (2020). Electronic cigarettes, nicotine use trends and use initiation ages among US adolescents from 1999 to 2018. *Addiction*, *115*(12), 2369-2378. https://doi.org/10.1111/add.15099

Gaiha, S. M., & Halpern-Felsher, B. (2020). Public health considerations for adolescent initiation of electronic cigarettes. *Pediatrics*, *145*(Supplement 2), S175-S180. https://doi.org/10.1542/peds.2019-2056E

Halpern-Felsher, B., Lazaro, A., Ceballos, R., Zorrilla, M., Zicherman, B., & Anoshiravani, A. (2022). The Stanford Vaping Information, Solutions, and Interventions Toolkit (VISIT) for healthcare providers. *Journal of Adolescent Health*, *70*(4), S94. https://doi.org/10.1016/j.jadohealth.2022.01.097

Hein, N., Matheus, C., Narahari, P., Gwynn, L., Mauer, M., Kienstra, C. M., ... & Nur, M. (2020). Improving e-cigarette and vaping use screening among adolescents. *Academic Pediatrics*, *20*(7), e52.

Huey, S. W., & Granitto, M. H. (2020). Smoke screen: The teen vaping epidemic uncovers a new concerning addiction. *Journal of the American Association of Nurse Practitioners*, *32*(4), 293-298. https://doi.org/10.1097/JXX.0000000000000234

Inman, D., El-Mallakh, P., Jensen, L., Ossege, J., & Scott, L. (2020). Addressing substance use in adolescents: Screening, brief intervention, and referral to treatment. *The Journal for Nurse Practitioners*, *16*(1), 69-73. https://doi.org/10.1016/j.nurpra.2019.10.004

Kaisar, M. A., Prasad, S., Liles, T., & Cucullo, L. (2016). A decade of e-cigarettes: Limited

research & unresolved safety concerns. *Toxicology*, *365*, 67-75. https://doi.org/10.1016/j.tox.2016.07.020

Liu, J., Halpern-Felsher, B., & Harris, S. K. (2021). Does tobacco screening in youth primary care identify youth vaping. *Journal of Adolescent Health*, *69*(3), 519-522. https://doi.org/10.1016/j.jadohealth.2021.01.017

McGee, L. U., Parker, S., Bulsara, S., Escobar, B., Kline, K. N., Jibaja-Weiss, M. L., & Montealegre, J. R. (2021). Adolescent electronic cigarette counselling: Knowledge, attitudes and perceived barriers among clinical staff in a primary care setting. *Journal of Evaluation in Clinical Practice*, *27*(6), 1398-1402.

Moss, S. L., & Keyes, K. M. (2020). Commentary on Foxon & Selya (2020): Social gradients in long-term health consequences of cigarette use—will adolescent e-cigarette use follow the same trajectory?. *Addiction (Abingdon, England)*, *115*(12), 237. https/doi.org/10.1111/add.15268

Oxford Languages: *The home of Language Data*. (n.d.). Retrieved November 19, 2022, from https://languages.oup.com/

Pediatric primary health care. (2011). *American Academy of Pediatrics*, *127*(2), 397–397. https://doi.org/10.1542/peds.2010-3416

Pepper, J. K., Gilkey, M. B., & Brewer, N. T. (2015). Physicians' counseling of adolescents regarding e-cigarette use. *Journal of Adolescent Health*, *57*(6), 580-586. https://doi.org/10.1016/j.jadohealth.2015.06.017

Peterson, E. B., Fisher, C. L., & Zhao, X. (2018). Pediatric primary healthcare providers' preferences, experiences, and perceived barriers to discussing electronic cigarettes with adolescent patients. *Journal of Communication in Healthcare*, *11*(4), 245-251.

https://doi.org/10.1080/17538068.2018.1460960

Schneller, L. M., Bansal-Travers, M., Mahoney, M. C., McCann, S. E., & O'Connor, R. J. (2020). Menthol, nicotine, and flavoring content of capsule cigarettes in the US. *Tobacco Regulatory Science*, *6*(3), 196–204. https://doi.org/10.18001/trs.6.3.4

Schrader, P. G., & Lawless, K. A. (2004). The knowledge, attitudes, & behaviors approach how to evaluate performance and learning in complex environments. *Performance Improvement*, *43*(9), 8-15. https://doi.org/10.1002/pfi.4140430905

Snoderly, H. T., Nurkiewicz, T. R., Bowdridge, E. C., & Bennewitz, M. F. (2021). E-cigarette use: Device market, study design, and emerging evidence of biological consequences. *International Journal of Molecular Sciences*, *22*(22), 12452. https://doi.org/10.3390/ijms222212452

Walley, S. C., Wilson, K. M., Winickoff, J. P., & Groner, J. (2019). A public health crisis: Electronic cigarettes, vape, and JUUL. *Pediatrics*, *143*(6).

XV. Appendices

Appendix A: IRB Approval Letter

FIU | Research & Economic Development
FLORIDA INTERNATIONAL UNIVERSITY

MEMORANDUM

To: Dr. Deborah Sherman

CC: Eliana Martinez

From: Carrie Bassols, BA, IRB Coordinator Ceb

Date: March 28, 2023

Proposal Title: "An Educational Intervention for Pediatric Primary Health Care Providers to Increase Their Knowledge, Attitudes, and Behaviors Related to E-Cigarette Usage and Screening Among Adolescents: A Quality Improvement Project"

The Florida International University Office of Research Integrity has reviewed your research study for the use of human subjects and deemed it Exempt via the **Exempt Review** process.

IRB Protocol Exemption #:	IRB-23-0142	**IRB Exemption Date:**	03/28/23
TOPAZ Reference #:	112779		

As a requirement of IRB Exemption you are required to:

1) Submit an IRB Exempt Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved prior to implementation.
2) Promptly submit an IRB Exempt Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
1) Submit an IRB Exempt Project Completion Report Form when the study is finished or discontinued.

Special Conditions: N/A

For further information, you may visit the IRB website at http://research.fiu.edu/irb.

Appendix B: Letter of Approval from Facility

Citrus
HEALTH NETWORK, INC.
FEDERALLY QUALIFIED HEALTH CENTER
4175 WEST 20TH AVENUE • HIALEAH, FL 33012-5875
OFFICE: (305) 424-3100 • FAX: (786) 209-2054

SAC Recommendation Report

Date: May 11, 2023

Type of Application: ☐ Case Study ☐ Conference Presentation ☒ Research Project

Title of Project: Escape the Vape

Authors: Eliana Martinez

Date of SAC Meeting: August 29, 2022

SAC Recommendation:	☒ **Final approval**	☐ **Conditional approval**	☐ **Rejection**
	Suggestions: ☐ yes ☐ no	*(see conditions below)*	Resubmission: ☐ yes ☐ no

Comments from the Committee:

- Committee has approved collaboration with the author on the proposed concept for the project.

Required Follow-up for Research Studies:

- Every 6 months *(for studies with shorter duration; updates are required at midpoint and completion)*
- Within 60 days of the end date on proposal *(summary of findings)*
- Official Results/Product *(when available)*

Please note that any extensions must be requested in writing and any intent to disseminate (publish/present) must be disclosed to the Scholarly Activity Committee.

Please address any questions or concerns in writing to Dr. Melina Visser at mvisser@citrushealth.com or Ashton Sanchez at asanchez@citrushealth.com.

Melina M. Visser, Psy.D.
Chairperson, Scholarly Activity Committee

05/11/2023
Date

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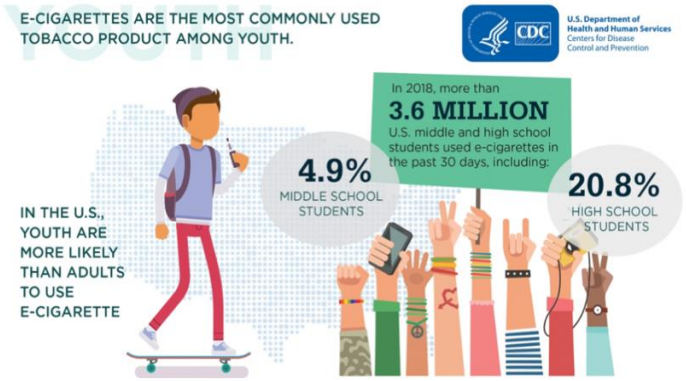
Appendix C: Recruitment Material



Empower. Educate.

We need **YOUR** help! We must help our adolescent population **ESCAPE the VAPE**!

If you are an employee who works directly with adolescents, you are invited to participate in a quality improvement project which will increase your knowledge, attitudes, and behaviors to properly screen, counsel, and understand treatment guidelines for adolescent electronic cigarette users!

Your participation will include signing an informed consent, completing a Demographic and Professional Data Form, and a pre-test and post-test following the educational seminar.

Please join your colleagues to enhance your ability to protect the health of adolescents.

For any further questions or inquiries, please contact the Doctor of Nursing Practice Candidate,
Eliana Martinez, MSN, APRN, PNP-PC at (305) 467-4842 or emart342@fiu.edu

Appendix D: Written Consent Form

ADULT CONSENT TO PARTICIPATE IN A RESEARCH STUDY

An Educational Intervention for Pediatric Primary Health Care Providers to Increase Their Knowledge, Attitudes, and Behaviors Related to E-Cigarette Usage and Screening Among Adolescents: A Quality Improvement Project

SUMMARY INFORMATION

You are asked to do the following:

- **Purpose:** The purpose of the study is to assess the knowledge, attitudes, and behaviors Pediatric Primary Care Providers have regarding electronic cigarette use in the adolescent population.
- **Procedures**: If you choose to participate, you will be asked to sign an informed consent, followed by filling out the Demographic and Professional Data Form and the Knowledge, Attitudes and Behaviors regarding the Use of Electronic Cigarettes in Adolescents Questionnaire as the study's pretest. Afterward, you will attend an on-site 30-minute educational presentation that will be scheduled in coordination with your manager at a convenient time regarding E-cigarettes use and screening in the adolescent population. Following the completion of the educational presentation, you will complete the same questionnaire again.
- **Duration:** This will take about approximately 60 minutes.
- **Risks**: The main risk or discomfort from this research is that it is possible that you may experience some stress regarding participation in an educational presentation during their work day.
- **Benefits:** The main benefit to you from this research is an increase in knowledge, attitudes, and behaviors regarding the use of E-Cigarettes in adolescents and screening.
- **Alternatives:** There are no known alternatives available to you other than not taking part in this study.
- **Participation:** Taking part in this research project is voluntary.

Please carefully read the entire document before agreeing to participate.

PURPOSE OF THE STUDY

The purpose of this study is to assess the knowledge, attitudes, and behaviors Pediatric Primary Care Providers have regarding electronic cigarette use in the adolescent population.

NUMBER OF STUDY PARTICIPANTS

If you decide to be in this study, you will be one of 11 people in this research study.

DURATION OF THE STUDY

Your participation will involve signing of the informed consent (5 minutes), completion of the Demographic and Professional Data Form (3 minutes), completion of Pre-Test (10 minutes), attendance at the Educational Intervention (30 minutes), and completion of the study Post Test (10 minutes) for a total duration of participants at approximately 60 minutes.

PROCEDURES

If you agree to be in the study, we will ask you to do the following things:

1. Sign the informed consent that will be emailed to you and drop it off in a locked box in the pediatric clinic within 48 hours.
2. Fill out the Demographic and Professional Data Form and the Pre-Test provided to you in a packet and seal it in envelope with your signature across the back.
3. Bring the envelope with completed forms to the scheduled educational presentation.
4. Attend an on-site 30-minute educational presentation regarding E-Cigarette use and screening in the adolescent population.
5. Immediately after the presentation finishes, the same questionnaire used for the pre-test will be distributed to you to be completed as a post-test at that time.

RISKS AND/OR DISCOMFORTS

The study has the following possible risks to you: Although there is minimal to no expected risks, it is possible that participants may experience some psychological stress regarding participation in an educational presentation during their workday.

BENEFITS

The study has the following possible benefits to you:

- Providers will increase knowledge, attitudes, and behaviors toward counseling adolescent patients who utilize e-cigarettes.

- Providers will increase knowledge, attitudes, and behaviors toward screening adolescent patients on electronic cigarette usage.
- Providers will increase knowledge, attitudes, and behaviors toward providing up-to-date resources and treatment plans for adolescent patients who utilize or are exposed to e-cigarette.

ALTERNATIVES

There are no known alternatives available to you other than not taking part in this study Any significant new findings developed during the research which may relate to your willingness to continue participation will be provided to you.

CONFIDENTIALITY

The records of this study will be kept private and will be protected to the fullest extent provided by law. In any sort of report, we might publish, we will not include any information that will make it possible to identify you. Research records will be stored securely, and only the researcher team will have access to the records. However, your records may be inspected by authorized University or other agents who will also keep the information confidential.

Code numbers will be assigned to the participant and kept in a master key which identifies the name of the participant, their email address, and their assigned code number. The master key will be kept in a separate file cabinet from the study data to protect the participant's confidentiality.

COMPENSATION & COSTS

There is no compensation provided for participation in this study. There are no costs to you for participating in this study.

RIGHT TO DECLINE OR WITHDRAW

Your participation in this study is voluntary. You are free to participate in the study or withdraw your consent at any time during the study. You will not lose any benefits if you decide not to participate or if you quit the study early. The investigator reserves the right to remove you without your consent at such time that he/she feels it is in the best interest.

RESEARCHER CONTACT INFORMATION

If you have any questions about the purpose, procedures, or any other issues relating to this research study you may contact Eliana Martinez at FIU, (305) 467-4842, emart342@fiu.edu.

IRB CONTACT INFORMATION

If you would like to talk with someone about your rights of being a subject in this research study or about ethical issues with this research study, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu.

PARTICIPANT AGREEMENT

I have read the information in this consent form and agree to participate in this study. I have had a chance to ask any questions I have about this study, and they have been answered for me. I understand that I will be given a copy of this form for my records.

_____ _____

Signature of Participant Date

_____

Printed Name of Participant

_____ _____

Signature of Person Obtaining Consent Date

Appendix E: Data Collection Documents

Demographic and Professional Data Form

Code Number: _____

Florida International University
College of Nursing and Health Sciences
Doctor of Nursing Practice

Demographic and Professional Data Form

All participants can choose not to answer to protect their privacy interest

1) **What gender do you identify as?**
- Male
- Female
- Non-binary
- Prefer not to say

2) **What is your age range?**
- 18 to 24 years-old
- 25 to 34 years-old
- 35 to 44 years-old
- 45 to 54 years-old
- 55 to 64 years-old
- 65+ years old

3) **What is your highest level of education?**
- Associate degree
- Bachelor's degree
- Graduate degree
- Other: _____

4) **How many years have you been working for Citrus Health?**
- 0- 2 years
- 3- 5 years
- 6- 9 years
- 10- 15 years
- 16- 20 years
- 20+ years

5) **What is your current professional role at this facility?**
- Medical Assistant

- Nurse Practitioner
- Physician
- Physician Assistant (PA)
- Doctoral Degree
- Other: _____

6) What is your race/ethnicity?

- Hispanic/Latino
- Asian or Pacific Islander
- Black or African American
- White or Caucasian
- Native American
- Other: _____

Appendix F: Study Instruments

Pre-Test: Knowledge, Attitudes and Behaviors regarding the Use of Electronic Cigarettes in Adolescents Questionnaire

Knowledge:

1. *True or False:* Electronic cigarettes (e-cigarettes) contain nicotine, carcinogens, ultrafine particles, heavy metals, and/or flavoring elements.
    a. True
    b. False

2. *True or False:* E- cigarettes are safer than regular combustible cigarettes.
    a. True
    b. False

3. *True or False:* E-cigarette and regular combustible cigarettes both pose a health risk to individuals exposed to secondhand smoke.
    a. True
    b. False

4. *True or False:* E-cigarette, JUUL, vape and Mods mean the same thing.
    a. True
    b. False

5. *True or False:* Young e-cigarette users are at increased risk of transitioning to use of other tobacco products.
    a. True
    b. False

6. Which of the following locations are e-cigarettes sold at?
    a. Vape shops
    b. Convenience or grocery stores
    c. Internet vendors
    d. Gas stations
    e. All the above

7. *True or False:* The current CRAFFT survey screens for e-cigarette use.
    a. True
    b. False

8. *True or False:* Bystanders of e cigarettes are not exposed to secondhand smoke in the same manner as regular combustible cigarettes.
    a. True
    b. False

9. At what age does the American Academy of Pediatrics recommend that health professionals should start screening for e-cigarette use?
    a. 11 years old
    b. 12 years old
    c. 13 years old
    d. 14 years old

10. To report a suspected E-Cigarette or Vaping Associated Lung Injury (EVALI), you report it by which of the following?
    a. Safety reporting portal online to FDA and state health department
    b. Report it to the office manager of the practice on site
    c. To the American Lung Association online or by phone
    d. Safety reporting portal online to American Academy of Pediatrics

11. *True or False:* The FDA approves e-cigarettes as a cessation device for combustible cigarettes.
    a. True
    b. False

12. How soon after an adolescent patient wellness visit with e-cigarette counseling to quit, should a follow up visit or phone call be scheduled?
    a. 2 weeks
    b. 4 weeks
    c. 8 weeks
    d. 12 weeks

13. *True or False:* A Health Professional can bill a patient for counseling them on e-cigarette usage and secondhand smoke exposure.
    a. True
    b. False

Attitudes:

1. It is worth taking 2-3 minutes from an adolescent patient visit to counsel on e-cigarette usage.
    a. Strongly agree
    b. Agree
    c. Disagree
    d. Strongly disagree

2. I am comfortable counseling patients and their guardians about e-cigarettes and the health risks related to usage.
    a. Strongly agree
    b. Agree
    c. Disagree
    d. Strongly disagree

3. I am interested in learning more about e-cigarettes and the impact it has on my patient population.
    a. Strongly agree
    b. Agree
    c. Disagree
    d. Strongly disagree

4. I feel comfortable counseling adolescent e- cigarette users on how to quit.
    a. Strongly agree
    b. Agree
    c. Disagree
    d. Strongly disagree

5. I believe it is important to educate adolescents regarding the use of e-cigarettes, but I feel l I do not have enough time within a wellness visit.
    a. Strongly agree
    b. Agree
    c. Disagree
    d. Strongly disagree

6. If a patient reports they do not use e-cigarettes, I do not find it necessary to counsel them on the products and harmful effects.
    a. Strongly agree
    b. Agree
    c. Disagree
    d. Strongly disagree

Behaviors:

1. In addition to using the CRAFFT screening tool, do you currently ask your patients if they use e- cigarettes?
    a. Always
    b. Often
    c. Sometimes
    d. Rarely
    e. Never

2. When you screen for e-cigarette use, do you use synonymous terms, such as Vape, JUUL, or Mods?
    a. Always
    b. Often
    c. Sometimes
    d. Rarely
    e. Never

3. Do you currently provide any resources to patients or parents for e-cigarette users who are attempting to quit?
    a. Always
    b. Often
    c. Sometimes
    d. Rarely
    e. Never

4. Do you currently ask your patient's parents if they have e- cigarettes at home?
    a. Always
    b. Often
    c. Sometimes
    d. Rarely
    e. Never

5. Do you keep up to date on common habits of adolescents and substance use exposures?
    a. Always
    b. Often
    c. Sometimes
    d. Rarely
    e. Never

Post-Test: Knowledge, Attitudes and Behaviors regarding the Use of Electronic Cigarettes in Adolescents Questionnaire

Knowledge:

1. *True or False:* Electronic cigarettes (e-cigarettes) contain nicotine, carcinogens, ultrafine particles, heavy metals, and/or flavoring elements.
    c. True
    d. False

2. *True or False:* E- cigarettes are safer than regular combustible cigarettes.
    a. True
    b. False

3. *True or False:* E-cigarette and regular combustible cigarettes both pose a health risk to individuals exposed to secondhand smoke.
    a. True
    b. False

4. *True or False:* E-cigarette, JUUL, vape and Mods mean the same thing.
    a. True
    b. False

5. *True or False:* Young e-cigarette users are at increased risk of transitioning to use of other tobacco products.
    a. True
    b. False

6. Which of the following locations are e-cigarettes sold at?
    a. Vape shops
    b. Convenience or grocery stores
    c. Internet vendors
    d. Gas stations
    e. All the above

7. *True or False:* The current CRAFFT survey screens for e-cigarette use.
    a. True
    b. False

8. *True or False:* Bystanders of e cigarettes are not exposed to secondhand smoke in the same manner as regular combustible cigarettes.
    a. True
    b. False

9. At what age does the American Academy of Pediatrics recommend that health professionals should start screening for e-cigarette use?
    a. 11 years old
    b. 12 years old
    c. 13 years old
    d. 14 years old

10. To report a suspected E-Cigarette or Vaping Associated Lung Injury (EVALI), you report it by which of the following?
   a. Safety reporting portal online to FDA and state health department
   b. Report it to the office manager of the practice on site
   c. To the American Lung Association online or by phone
   d. Safety reporting portal online to American Academy of Pediatrics

11. True or False: The FDA approves e-cigarettes as a cessation device for combustible cigarettes.
   a. True
   b. False

12. How soon after an adolescent patient wellness visit with e-cigarette counseling to quit, should a follow up visit or phone call be scheduled?
   a. 2 weeks
   b. 4 weeks
   c. 8 weeks
   d. 12 weeks

13. True or False: A Health Professional can bill a patient for counseling them on e-cigarette usage and secondhand smoke exposure.
   a. True
   b. False

Attitudes:

7. It is worth taking 2-3 minutes from an adolescent patient visit to counsel on e-cigarette usage.
   a. Strongly agree
   b. Agree
   c. Disagree
   d. Strongly disagree

8. I am comfortable counseling patients and their guardians about e-cigarettes and the health risks related to usage.
   a. Strongly agree
   b. Agree
   c. Disagree
   d. Strongly disagree

9. I am interested in learning more about e-cigarettes and the impact it has on my patient population.
   a. Strongly agree
   b. Agree
   c. Disagree

d. Strongly disagree

10. I feel comfortable counseling adolescent e- cigarette users on how to quit.
    a. Strongly agree
    b. Agree
    c. Disagree
    d. Strongly disagree

11. I believe it is important to educate adolescents regarding the use of e-cigarettes, but I feel l I do not have enough time within a wellness visit.
    a. Strongly agree
    b. Agree
    c. Disagree
    d. Strongly disagree

12. If a patient reports they do not use e-cigarettes, I do not find it necessary to counsel them on the products and harmful effects.
    a. Strongly agree
    b. Agree
    c. Disagree
    d. Strongly disagree

Behaviors:

14. In addition to using the CRAFFT screening tool, do you currently ask your patients if they use e- cigarettes?
    a. Always
    b. Often
    c. Sometimes
    d. Rarely
    e. Never

15. When you screen for e-cigarette use, do you use synonymous terms, such as Vape, JUUL, or Mods?
    a. Always
    b. Often
    c. Sometimes
    d. Rarely
    e. Never

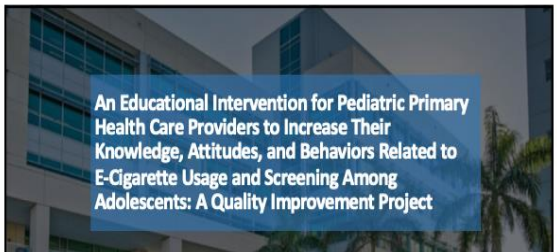
16. Do you currently provide any resources to patients or parents for e-cigarette users who are attempting to quit?
    a. Always
    b. Often
    c. Sometimes
    d. Rarely

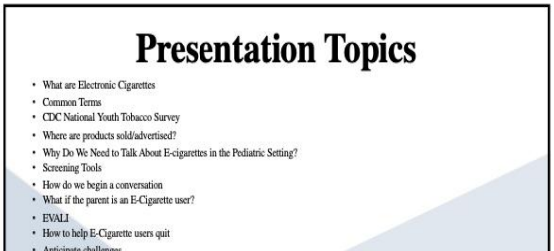
e. Never

17. Do you currently ask your patient's parents if they have e- cigarettes at home?
a. Always
b. Often
c. Sometimes
d. Rarely
e. Never

18. Do you keep up to date on common habits of adolescents and substance use exposures?
a. Always
b. Often
c. Sometimes
d. Rarely
e. Never

Appendix G: Educational Intervention

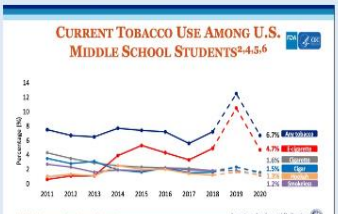




Common Terms Used to Refer to Electronic Cigarettes

"Vape Pens" | "Mods" | "JUUL" | "Vape"
(AAP, 2019 C)

CDC National Youth Tobacco Survey



Why Do We Need to Talk About Electronic Cigarettes in the Pediatric Setting?

- Safety Risk:
  - Burns, Poisoning (AAP, 2019 B).
  - In addition to nicotine, most e-cigarette products contain and emit numerous potentially toxic substances (AAP, 2019 H).
    - **Aldehydes**, including *acrolein* and *formaldehyde*: ranked as one of the most significant cardiovascular toxins found in cigarette smoke (AAP, 2019 H).
    - **Diacetyl:** associated with *bronchiolitis obliterans*, or "popcorn lung" (AAP, 2019 H).

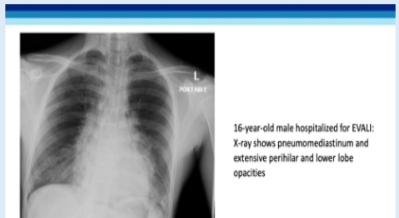
Why Do We Need to Talk About Electronic Cigarettes in the Pediatric Setting?

Product	Nicotine (mg)	
E-cigarette *(Average Pod 0.7-1ml)*	**59mg/ml** (not regulated) (AAP, 2019 H).	
Regular cigarettes: 1. Marlboro 2. Camel 3. Newport	**17.3mg** **15.8mg** **13.7mg** (Schneller, et al. 2020)	

- The **adolescent brain** is uniquely vulnerable to the effects of nicotine (AAP, 2019 H).

What If The Parent of the Child is An Electronic Cigarette User?

- Advise parent to keep e-liquid in child proof containers and out of reach of children. It can be **fatal** if swallowed (AAP, 2019 A).
- Educate that children should not be exposed to the aerosol from the vaping products (AAP, 2019 A).
  - Remind them that e-cigarette aerosol contains nicotine, chemicals, carcinogens, heavy metals, and ultrafine particles (AAP, 2019 A).



16-year-old male hospitalized for EVALI: X-ray shows pneumomediastinum and extensive perihilar and lower lobe opacities

Anticipate Challenges

- Identify triggers
  - Situations or people that may make them want to use e-cigarettes (AAP, 2019 E).
- Withdrawal Symptoms
  - Anxiousness, irritability, frustration, changes in appetite, difficulty concentrating, and insomnia (AAP, 2019 E).
  - Help inform patients to anticipate these symptoms and how to address them (AAP, 2019 E).

Resources: Cessation Support Services

- **Smokefree Teen:**
  - National Institute of Health tobacco and vaping cessation support (AAP, 2019 E).
  - Program located online:
    - https://teen.smokefree.gov (AAP, 2019 E).

- **This Is Quitting**:
  - Immediate text-based vaping cessation support from Truth Initiative (AAP, 2019 E).
  - Text "DITCHJUUL" to 88709 , at any time (AAP, 2019 E).

Referral Recommendations

- **Citrus Health Network,** Hialeah, FL
  - Outpatient services:
    - Psychiatric evaluations, outpatient psychiatry management (**Citrus Health Network**, 2017).
    - Individual, group and family therapy for adolescents and families (**Citrus Health Network**, 2017).
  - Inpatient services if they have not benefitted:
    - Individualized treatment plans that include psychiatric and primary medical care, clinical therapy, and life skills training (**Citrus Health Network**, 2017).
    - Certified teachers are also brought in to teach the adolescents during their stay (**Citrus Health Network**, 2017).
    - JARF Program Crisis Unit (**Citrus Health Network**, 2017).
- **Juvenile Addicted Receiving Facility (JARF),** Tampa, FL
  - Medically assisted adolescent clinic for substance abuse disorders and co-occurring mental

Follow Up Recommendations

1. Schedule a follow up in person visit, virtual visit, or phone call (AAP, 2019 E).
2. Initiating a follow up after certain behavioral goals can have a positive impact on the patient (AAP, 2019 E).
3. At the follow up, determine if patient utilized a free resource or service and if it was helpful (AAP, 2019 E).
4. If none of the above were helpful, an example of what to say is:
   1. "Quitting is hard, and sometimes people don't succeed on their first try. I want you to know

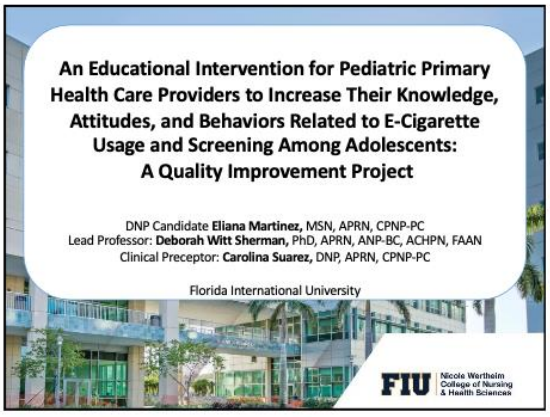
ICD Code – Related to Electronic Cigarette Use

- **Z72.0** Tobacco Use (AAP, 2019 B).
- **F17.29** Nicotine dependence, other tobacco product, uncomplicated (AAP, 2019 B).
- **F17.200** Nicotine dependence, unspecified, uncomplicated (AAP, 2019 B).
- **F17.22** Nicotine dependence, chewing tobacco (AAP, 2019 B).
- **F17.201** Nicotine dependence, in remission (AAP, 2019 B).
- **F17.290** Nicotine dependence, other tobacco product, uncomplicated (AAP, 2019 B).
- **F17.291** Nicotine dependence, other tobacco product, in remission (AAP, 2019 B).

Billing for Second-Hand Smoke Risks

- If the parent of the adolescent vapes, can you bill for it?
  - If parent uses e-cigarettes, you can counsel and bill for second-hand smoke (AAP, 2019 B).
    - **Z77.22** Secondhand Smoke Exposure (AAP, 2019 B).
      - Document time spent discussing secondhand smoke risks (AAP, 2019 B).
    - **Z81.2** Family history of tobacco abuse and dependence (AAP, 2019 B).
    - **Z71.89** Counseling, other specified (AAP, 2019 B).

Appendix H: DNP Project PowerPoint



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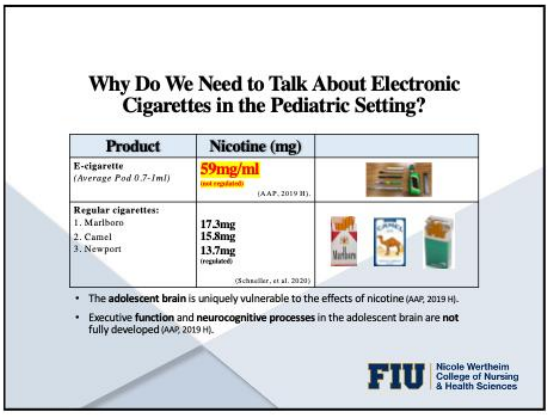

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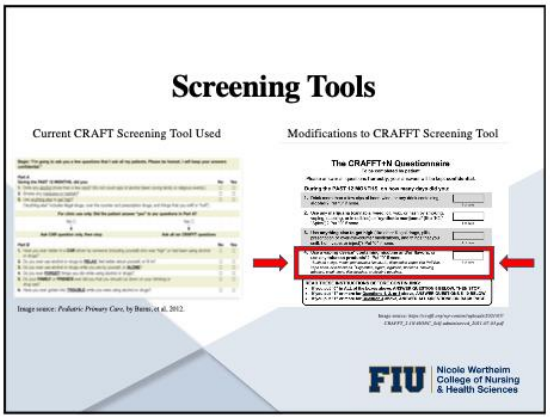

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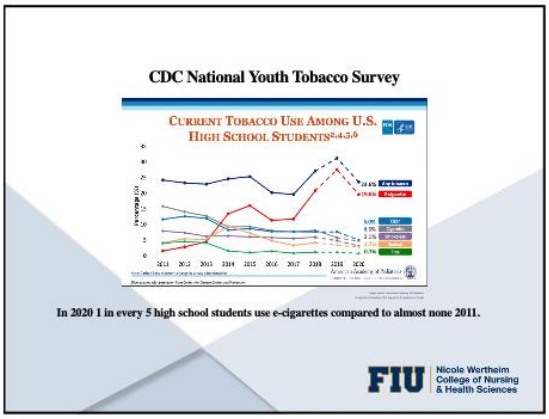

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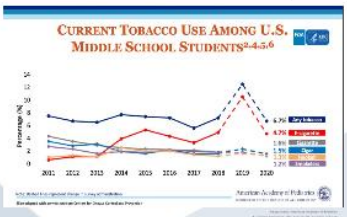
CDC National Youth Tobacco Survey



In 2020 1 in 20 middle school students use e-cigarettes compared to almost none in 2011.

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5

Literature Review: Increased Electronic Cigarette Use in Adolescence

Author(s)	Year	Study Design	Findings
Harlow et al.	2022	Descriptive cross-sectional study	• Electronic cigarettes were the most common product used over a 6-month period of 3,516 adolescent high school students.
Foxon & Selva	2020	Observational study	• The use of regular cigarettes has declined to a minimum of 1% of adolescents. • A rapid increase of e-cigarette usage since their introduction in 2009
McKeganey & Russell	2020	Quantitative, cross-sectional study	• 4% of adolescents, aged 15-17 utilized the electronic cigarettes • Those 13-14 years old were 0.8% of reported users.

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Literature Review: Screening of Electronic Cigarette Use Among Adolescence

Author(s)	Year	Study Design	Findings
Schrader et al.	2021	Randomized controlled pilot study	• Of 79 participants who watched the educational video were more likely to report use of electronic cigarettes to their provider. • Results led to an opportunity for provider/patient conversation about electronic cigarettes.
Luí et al.	2021	Secondary analysis or a pilot study	• Modifications to the screening tool were made to specifically list electronic cigarettes. • Results identified 24 of the 30 adolescents within the past twelve months as users that were not identified in the prior to study.
Hein et al.	2020	Quantitative, cross-sectional study	• 32% increase in identifying adolescent electronic cigarette users with a new tab on the EMR system to screen for e-cigarettes

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Literature Review: Knowledge Deficit of Health Care Providers Regarding E-Cigarette Use by Adolescents

Author(s)	Year	Study Design	Findings
Halpern-Flescher et al.	2022	Quantitative cross-sectional study	• All participating providers reported the Educational Vaping Tool Kit is important for effective dissemination of other e-cigarette prevention and intervention.

Peterson et al.	2018	Qualitative cross-sectional study	• Most of the 25 providers interviewed reported barriers.
			• Barriers to treating adolescent e-cigarette users:
			  • lack of knowledge of effects of electronic cigarettes on adolescent health
			  • lack of confidence in counseling and screening these patients.

McGee et al.	2021	Quantitative research study	• 159 staff members indicated that providers lacked knowledge in how to treat these adolescents and appropriate referral. • Results indicated the need to provide a guideline for an educational intervention for clinical staff in primary care settings to address the rapid rates of electronic cigarette users.

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Population, Intervention, Comparison and Outcome (PICO) Question

Will an educational intervention **(I)** regarding effects of electronic cigarette usage and screening tools for adolescents, increase Pediatric Primary Health Care Providers **(P)** knowledge, attitudes, and behaviors **(O)** related to electronic cigarette use and screening pre and post intervention **(C)?**

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Conceptual Framework: KAP Model (Knowledge, Attitudes, and Practice)

- Bloom initially created this model in 1956 describing three components: cognitive, affective, and psychomotor (Schrader & Lawless, 2004).
- The KAP Model has been applied to understanding health-related behaviors and health-seeking habits (Andrade et al., 2020).
- Future modifications of the model addressed not only knowledge, but learner attitudes and their impact on behavior.

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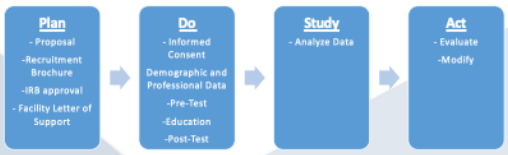
PDSA Methodology



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Plan

Design: A pre-test and post-test, one group study design.

Setting: This quality improvement project was conducted at a Federally Qualified Health Center.

Sample: Ten participants

- 2 nurse practitioners, 3 physicians, 2 registered nurses and 3 medical assistants
- *Inclusion criteria were* health care professionals who provide direct care to the adolescent population.
- *Exclusion criteria were* health care professionals who do not provide direct patient care.

Intervention:

- The DNP Candidate conducted a 30-minute educational presentation regarding E-Cigarette use and screening in the adolescent population.

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Plan

Data Collection:

- Demographic and Professional Data Form
  - *Age, gender, level of education, occupation at the work site, ethnicity, and tenure at the facility.*
- Knowledge, Attitudes, and Behavior Questionnaire was administered as a pre-test to participants which was completed before the educational intervention and as a post-test following the intervention.

Data Management:

- Code numbers were assigned to the participants and documented in a master key which identified the name of the participant, their email address, and their assigned code number. Their code number was indicated on all study instruments rather than any personal identifiable information.
- The master key was kept in a separate file cabinet from the study data to protect the participant's confidentiality. Only the DNP candidate had access to the master key.

Data Analysis:

- Descriptive statistics were used to analyze the Demographic and Professional Data Form.
- Paired T tests were used to compare the pre and post test scores regarding Knowledge, Attitudes, and Behaviors regarding E-Cigarette Usage and Screening Among Adolescents Questionnaire.

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Plan

Human Subject Protection:

- IRB approval was obtained from FIU.
- Participation in the study was voluntary with the right to withdraw from the study at any time without consequences.
- On the Demographic and Professional Data Form participants were informed that they could choose not to answer a question to protect their privacy.
- Confidentiality was maintained by the use of code numbers.
- All study materials were kept in a locked file cabinet in the locked office of the DNP Candidate at the facility.
- Study data were destroyed after the completion of the project.

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Results: Demographic & Professional Data Form

(n = 10)

- **Age ranged** from 25 to 64 years
- **Gender:** All participants were female
- **Education** varied from graduate degree, masters, bachelors, associate, and other
- **Provider tenure** at the practice varied from 0 to 20 plus years working at the site
- **Participant's role** at the site varied from physician, nurse practitioner, registered nurse and medical assistant
- **Race/Ethnicity** ranged from Hispanic/Latino and other, the participant chose not to specify.

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Results: Paired Sample T Test

			Statistic	p
Knowledge Pre	Knowledge Post	Wilcoxon W	0.00	0.006
Attitudes pre	Attitudes Post	Wilcoxon W	1.50 *	0.014
Behavior Pre	Behavior post	Wilcoxon W	6.00	0.032

* 1 pair(s) of values were tied

	N	Mean	Median	SD	SE
Knowledge Pre	10	8.90	9.00	1.97	0.623
Knowledge Post	10	11.70	12.00	1.25	0.396
Attitudes pre	10	18.90	19.00	1.52	0.482
Attitudes Post	10	20.70	21.00	1.49	0.473
Behavior Pre	10	12.40	13.50	5.89	1.863
Behavior post	10	17.10	17.00	5.30	1.676

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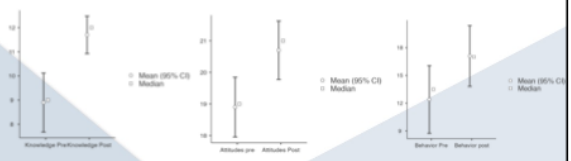
Results: Plot Confidence Intervals



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Discussion

- **Limitations** to the project: sample size, location of implementation, 90% Hispanic/Latino participants, post-test provided immediately after educational presentation.
- Results support **literature review**:
  - Health care providers who utilize the original CRAFFT survey will not specifically ask about electronic cigarette usage
  - There is a knowledge deficit of health care providers regarding e-cigarette use by adolescents
- Reasonable to argue that a change in practice to educate health care providers on e-cigarette usage and screening is vital among the adolescent population.

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Implications for Advanced Practice Nursing

- It is reasonable to argue that a change in practice to educate health care providers on e-cigarette usage and screening is vital among the adolescent population.
- Doctoral Nurse Practitioners may lead and impact practice change to improve the quality of care provided and identify up-to-date new unhealthy substance abuse practices of the adolescent population.
- The project will help to bring awareness to healthcare providers on being up to date on these substances and future substances to provide proper screening and counseling.

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Dissemination Plan

- **Dissemination by Presentation**
  - Present the results to the **facility** and attempt to influence change on modifying their screening tool from CRAFFT to CRAFT 2.0.
  - Email will be sent out with a short summary for all participants and **facility** manager to request sending results to the substance use/mental health facility within the organization.
  - Submit abstract to present either a podium or poster presentation at **2024 Advance Practice Provider Conference** at Anne Robert and Lurie Children's Hospital and the National Association of Pediatric Nurse Practitioners (NAPNAP) conference.
- **Dissemination by Publication**
  - To submit an article regarding the DNP topic and quality improvement project to the **National Association of Pediatric Nurse Practitioners (NAPNAP)'s journal, *The Journal of Pediatric Health Care*.**

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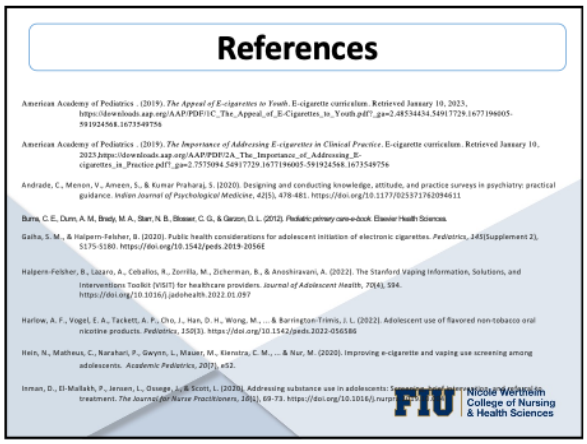
References
American Academy of Pediatrics . (2019). The Appeal of E-cigarettes to Youth. E-cigarette curriculum. Retrieved January 10, 2023, https://downloads.aap.org/AAP/PDF/EC_The_Appeal_of_E-Cigarettes_to_Youth.pdf?_ga=2.48534434.54917729.1677196005-591924568.1673549756
American Academy of Pediatrics . (2019). The Importance of Addressing E-cigarettes in Clinical Practice. E-cigarette curriculum. Retrieved January 10, 2023,https://downloads.aap.org/AAP/PDF/2A_The_Importance_of_Addressing_E-cigarettes_in_Practice.pdf?_ga=2.7575094.54917729.1677196005-591924568.1673549756
Andrade, C., Menon, V., Ameen, S., & Kumar Praharaj, S. (2020). Designing and conducting knowledge, attitude, and practice surveys in psychiatry: practical guidance. Indian Journal of Psychological Medicine, 42(5), 478-481. https://doi.org/10.1177/0253717620946111
Burns, C. E., Dunn, A. M., Brady, M. A., Starr, N. B., Blosser, C. G., & Garzon, D. L. (2012). Pediatric primary care e-book. Elsevier Health Sciences.
Gaiha, S. M., & Halpern-Felsher, B. (2020). Public health considerations for adolescent initiation of electronic cigarettes. Pediatrics, 145(Supplement 2), S175-S180. https://doi.org/10.1542/peds.2019-2056E
Halpern-Felsher, B., Lazaro, A., Ceballos, R., Zorrilla, M., Zicherman, B., & Anoshiravani, A. (2022). The Stanford Vaping Information, Solutions, and Interventions Toolkit (ViSIT) for healthcare providers. Journal of Adolescent Health, 70(4), 594. https://doi.org/10.1016/j.jadohealth.2022.01.097
Harlow, A. F., Vogel, E. A., Tackett, A. P., Cho, J., Han, D. H., Wong, M., ... & Barrington-Trimis, J. L. (2022). Adolescent use of flavored non-tobacco oral nicotine products. Pediatrics, 150(3). https://doi.org/10.1542/peds.2022-056586
Hein, N., Matheus, C., Narahari, P., Gwynn, L., Mauer, M., Kienstra, C. M., ... & Nur, M. (2020). Improving e-cigarette and vaping use screening among adolescents. Academic Pediatrics, 20(7), e52.
Inman, D., El-Mallakh, P., Jensen, L., Osenga, J., & Scott, L. (2020). Addressing substance use in adolescents: Screening, brief intervention, and referral to treatment. The Journal for Nurse Practitioners, 16(1), 69-73. https://doi.org/10.1016/j.nurpra.2019.10.016
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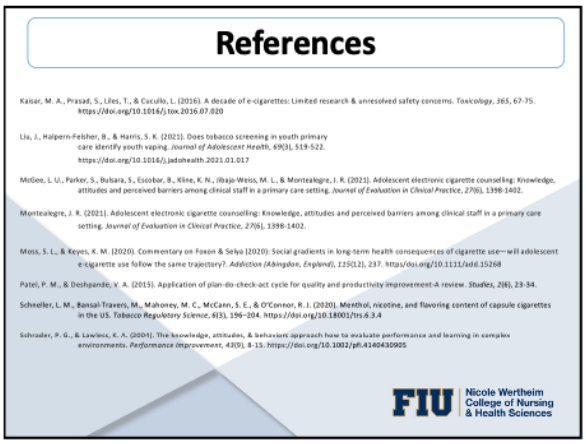
References
Kaisar, M. A., Prasad, S., Liles, T., & Cuculllo, L. (2016). A decade of e-cigarettes: Limited research & unresolved safety concerns. Toxicology, 365, 67-75. https://doi.org/10.1016/j.tox.2016.07.020
Liu, J., Halpern-Felsher, B., & Harris, S. K. (2021). Does tobacco screening in youth primary care identify youth vaping. Journal of Adolescent Health, 69(3), 519-522. https://doi.org/10.1016/j.jadohealth.2021.01.017
McGee, L. U., Parker, S., Bubara, S., Escobar, B., Kline, K. N., Jibaja-Weiss, M. L., & Montealegre, J. R. (2021). Adolescent electronic cigarette counseling: Knowledge, attitudes and perceived barriers among clinical staff in a primary care setting. Journal of Evaluation in Clinical Practice, 27(6), 1398-1402.
Montealegre, J. R. (2021). Adolescent electronic cigarette counselling: Knowledge, attitudes and perceived barriers among clinical staff in a primary care setting. Journal of Evaluation in Clinical Practice, 27(6), 1398-1402.
Moss, S. L., & Keyes, K. M. (2020). Commentary on Foxon & Selya (2020): Social gradients in long-term health consequences of cigarette use—will adolescent e-cigarette use follow the same trajectory?. Addiction (Abingdon, England), 115(12), 237. https://doi.org/10.1111/add.15268
Patel, P. M., & Deshpande, V. A. (2015). Application of plan-do-check-act cycle for quality and productivity improvement-A review. Studies, 2(6), 23-34.
Schneller, L. M., Bansal-Travers, M., Mahoney, M. C., McCann, S. E., & O'Connor, R. J. (2020). Menthol, nicotine, and flavoring content of capsule cigarettes in the US. Tobacco Regulatory Science, 6(3), 196–204. https://doi.org/10.18001/trs.6.3.4
Schrader, P. G., & Lawless, K. A. (2004). The knowledge, attitudes, & behaviors approach how to evaluate performance and learning in complex environments. Performance Improvement, 43(9), 8-15. https://doi.org/10.1002/pfi.4140430905
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