

Addressing Vaping in Youth and Young Adults

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I have no known conflict of interest to disclose.

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Abstract

Vaping dependence has grown in popularity within the last decade, becoming an epidemic among youth and young adults. The surge of vaping can lead to nicotine addiction, long-term health problems, adverse behavioral effects, and social consequences. A systematic and thorough review of the evidence addressed the need for change in vaping in youth and young adults.

Interventions utilized in approaching this population focused on text message delivery systems and social media approaches which are likely to reach a large population of youth and young adults, leading to increased success rates in vaping cessation and population awareness, in turn, promoting the overall health and well-being of individuals and the population health. A vaping education pilot program was launched at a local charter school for all fifth-grade classrooms. Fifth-grade students were recruited by receiving information flyers, parental consent, and child assent forms. Participating students (n=3) were enrolled in a vaping education program consisting of a one-hour in-person PowerPoint presentation followed by 5-week virtual education via Google Classroom. Pre- and post-knowledge surveys were used to assess vaping knowledge. Data analysis was performed using Descriptive Statistics. Results identified that 67% (n=2) responded to understand that vaping is not a better alternative to smoking traditional cigarettes. As a result, no significant statistical change was found after five weeks of vaping education. To conclude, further research is required to identify improvement in vaping knowledge through the vaping educational program.

Keywords: Vaping, electronic cigarettes, e-cigarettes, JUUL, lung injury, EVALI, addiction, vaping education, youth, young adults, adolescents.

Addressing Vaping in Youth and Young Adults

In today's culture, vaping has become a societal norm among youth and young adults. Peer pressure, social acceptance, and imposter syndrome have led to increased use of vaping and other nontraditional methods of nicotine abuse. The fruit flavors, neon colors, and discrete pens target and draw the attention of youth and young adult populations. However, temporary pleasures do not come without risk. The ingredients of vape pens are just as harmful and detrimental to long-term health as traditional tobacco. Therefore, vaping education will enhance awareness and knowledge, potentially reducing vape dependence, and improving long-term health outcomes.

Problem Statement

The seeking of social acceptance and accessible habits to cope with generational stressors, has increased use of vaping in youth and young adults. Addressing the harms of vaping and educating younger populations is crucial to the health of today's generation and future generations. Vaping is used interchangeably with electronic cigarettes (e-cigarettes) and JUUL. Vaping is an epidemic among youth, leading to increased nicotine addictions, health risks, and behavioral and societal consequences (DeGomez & Feirstein, 2022). According to DeGomez & Feirstein (2022), in 2011, 1.5% of adolescents reported vaping, compared to 27.5% in 2019. King et al. (2020) state that the increased outbreak of pulmonary infections is connected to the surge of vaping in young adults. King et al. report that the Centers for Disease Control and Prevention (CDC) addresses the vaping epidemic as e-cigarette, vaping, associated lung injury (EVALI)- confirming all 2,602 U.S. cases and 57 deaths reported in 2020 were of patients with a history of active vaping.

Purpose and Rationale

Increased vaping in youth and young adults increases the risk for long-term health problems and decreases longevity. Vaping contains a liquid compound of nicotine or tetrahydrocannabinol (THC) and other questionable additives, such as propylene glycol and aldehyde combinations known as carcinogens (DeGomez & Feirstein, 2022). It leads to an increased risk of lung cancer, poor brain development, and an increased risk of addiction (King et al., 2020). This paper describes a project to educate youth and young adults on the significance of vaping, the adverse effects that arise from it, and the long-term health risks associated with it.

Background and Significance

A review of recent literature indicates vaping has become widespread among adolescents and young adults. Marketing advertisements have promoted its use and influenced this targeted population to accept and encourage peers to vape. The surge of vaping has led to further research on the harms and adverse health risks that arise from it. According to the CDC (2022), vaping harms brain development, altering control, attention, mood, impulses, and memory. The liquid contents in vape pens, e-cigarettes, and JUULs contain carcinogens and harmful substances such as nicotine, marijuana, carbonyls, benzene, toluene, metal elements, bacterial endotoxins, fungal glucans, diacetyl, and 2,3-pentanediol (Christiani, 2020). According to Christiani (2020), diacetyl and 2,3-pentanediol alone alter bronchial epithelial cells increasing risks of acute lung disease not limited to pneumonia, bronchiolitis, and lung cancer. Lack of health literacy and education on vaping negatively affect youth's health and well-being today.

Youth and Young Adults

As the rise in vaping use and social acceptance spread, it is vital to understand which population is targeted, influenced, and most affected. DeGomez & Feirstein (2022) state that most marketing strategies and advertising target adolescents and young adults, with 47% being

12 to 17 years old. The fresh packaging, unlimited flavors, product concealment, and personalized pod designs are heavily directed to allure adolescents through billboards, social media outlets, and advertisements (Jones & Salzman, 2020). The popularity amongst teenagers has added a new term to the urban dictionary called JUULing instead of the traditional vaping expression (Jones & Salzman, 2020). It is found that vape pods equate to 20 traditional cigarettes; therefore, teens and young adults are 3.6 times more likely to use cigarettes in later life (Jones & Salzman, 2020).

Vaping Education

Vaping likely results from a lack of education about the consequences and risks associated with its increased dependence. The desire to vape may stem from seeking instant gratification, social acceptance, or as a coping mechanism to suppress underlying mental health disorders (Patten, 2021). Therefore, educating youth and young adults on the harms and health risks of vaping is crucial. Most parents and teens assume vape pens do not contain nicotine and toxic chemicals hidden within them (Jones & Salzman, 2020). Informing parents and youth on vaping and its associated health hazards is vital in vaping cessation (Jones & Salzman, 2020). Informing them that vaping is not the “healthier” option than smoking traditional cigarettes is important. Most youth obtain education through peers and social media outlets. Thus, directing them to steer away from the vaping bandwagon is imperative for individual and population health. Education can be provided through information pamphlets discussing parent awareness, what vaping is, why youth vape, risks and harms of it, liquid contents, ways to recognize signs of vaping, and when to take action (Samsa, 2021; Drug Enforcement Administration, 2019).

Current Practice

Vaping is relatively new and has become popular among youth within the last decade. Understanding the depth of vaping, why people use it, and its associated harms are recently surfacing through research and evidence-based practice guidelines. Therefore, there are limited education and interventions on vaping avoidance and cessation (Berg et al., 2021). Berg et al. (2021) express that targeted interventions should focus on: conceptual framework, delivery modality, social influences, intentions to quit (vaping, marijuana, and other tobacco-containing products), and adverse outcome experiences. Lyu et al. (2022) uses social media methodology, chatline links, and texting cessation services in youth and young adults aged 13-21. Although additional time and research are needed for intervention efficacy, the desired outcome of social media reach is a 50% reduction in vaping, attempts to quit, and committed abstinence from vaping (Lyu et al., 2022).

Decreased Vaping in Young Adults

Although nationally certified vaping cessation interventions are limited, educational interventions and technological approaches to vaping cessation can be effective. Social media approaches are likely to reach a large population of youth and young adults, leading to increased success rates in vaping cessation and population awareness. Graham et al. (2021) conducted a randomized clinical trial recruiting e-cigarette-dependent young adults using social media ads and text message delivery systems, including vaping cessation, social support, and developmental coping skills for cognitive and behavioral training. Similarly, Palmer et al. (2022) encourages digital advertising and social media advancements for vaping cessation, supporting remotely delivered messages as a promising path for future research and interventional efficacy.

Common Themes

Most recent research and intervention advancements in approaching youth and attracting attention towards cessation are unanimously driven towards social media advertising and text message delivery systems. Youth and young adults are a generation known for technological wit seeking instant gratification stratagems. Therefore, recruiting them from the sources they are most consumed by is the most appropriate methodology for success.

Internal Evidence

A widely known Western nonprofit hospital care system that focuses on lung cancer prevention has become increasingly aware of the vaping epidemic among youth and young adults. They are striving to work with local public and private schools in seeking direct approaches to educate youth about vaping in pursue of improving individual and population health and outcomes. The aim is to implement a pilot project using successful vaping cessation interventions to expose foundational flaws. Subjective data shows that the root cause of vaping in this population stems from a lack of education on pulmonary diseases and long-term health risks. In addition, exposure to peer bias and social acceptance of vaping dependence has increased through marketing and social media ads on these color-coded, flavor-filled devices. Therefore, promoting interventional improvements in vaping education is imperative in limiting use and preventing exposure in this population.

The review of literature led to the PICOT question: How does education on vaping dependence compared to no education change the understanding or attitude towards vaping in youth and young adults at a local Phoenix charter school.

Evidence Synthesis

Search Strategy

The search process in exploring the best research and practice regarding vaping focused

on using CINAHL, PubMed, and PsychInfo databases. Vaping dependence in youth and young adults focuses on educating about the long-term health consequences of use. Therefore, searching the above databases relates to relevant health information and psychological journals. Keywords utilized to extract high-quality resources included various synonyms related to the PICOT question, such as: *youth, young adults, adolescents, and teens AND vaping, vape pens, electronic cigarettes, e-cigarettes, JUUL, e-cigs AND negative health, adverse effects, lung injury, EVALI, brain development, cardiovascular risk, addiction, and vaping education.*

The initial and final search yielded similar results, finalizing 919 to 1581 articles. Limitations were due to the high level of articles produced under each database searched. Therefore, reframing keywords by removing cigarettes and tobacco from the initial search produced over 919 from 3,654 articles on CINAHL. Refining keywords led to more relevant articles for the intended research problem. However, not all articles produced met the inclusion and exclusion criteria. Inclusion criteria included articles directing education in youth and young adults, ages 10-24, and vaping/e-cigarette dependence. Exclusion criteria included articles published before 2018, youth younger than 10, adults older than 24, and traditional tobacco use. Articles were thoroughly selected by scanning the title page, abstract, and publication information. The ten studies used include a synthesis, meta-analysis, cross-section study, three randomized control trials (RCTs), two systemic reviews, a real-world evidence study, and a descriptive process and policy evaluation study (See Appendix A, Table A1-A2).

Critical Appraisal and Synthesis of Evidence

The critical appraisal process established by Melnyk & Fineout-Overholt (2019) was utilized to define the significance and merit of the chosen studies. The quality and strength of the studies used are high, with a majority being quantitative and the exception of one qualitative.

The level of evidence for most of the articles ranges from Level II and III, most free from bias. The participants are 12-24 years old, with an average being 18, unspecified demographics, non-gender specific, and identified as active vaping or e-cigarette users. Large population sizes were used to provide a greater understanding of interventional success, with one RCT study using a smaller sample size of 27. The locations primarily took place in the United States, with a few collecting data from other countries (See Appendix A, Table A3). The duration of the studies varied from 4-5 weeks up to 16 weeks.

The vast majority of the articles focused on social media and message delivery interventions for vaping education in youth and young adults. Another study evaluated e-cigarette use, marketing, and related content luring Instagram users to vape. Two studies assessed chronic health problems such as EVALI and asthma related to vaping use. The studies utilized various measurement tools, two of which took cotinine samples, and others used the PRIMA checklist. One study found e-cigarette use was determined by other factors such as maternal smoking, paternal smoking, second-hand exposure, youth cigarette smoking, and other tobacco use. However, conclusive evidence expresses future research and interventional efficacy is needed for promising outcomes to signify success in educational strategies.

Discussion of Evidence

The literature implies that vaping education through social media, Instagram, text message delivery systems, and technological outlets can be successful in reaching youth and young adults (See Appendix A, Table A3). It is an easy, cost-effective, and feasible method of delivering vaping cessation interventions to youth and young adults. This population is tech-savvy and mimics what is “in style” and socially acceptable. Therefore, counteracting the marketing strategies on vaping using the same media outlets may steer youth away from vaping

dependence. In turn, this can promote a universal understanding of the risks and harms of vaping and e-cigarette use. The literature reports the use of e-cigarettes is associated with asthma and EVALI. However, since vaping is fairly new on the market, further research is needed to inform the development and optimization of effective vaping cessation interventions for youth and young adults.

Theory/Theoretical Framework Application

Albert Bandura is the founder of the Social Cognitive Theory (SCT), which was initially known as the Social Learning Theory (SLT) in the 1960s (LaMorte, 2022). SCT suggests that human behavior and learning are dependent on personal, behavioral, and environmental factors, as shown in Appendix B, Figure B1. A combination of innate and acquired influences and social exposure shapes individual behavior (LaMorte, 2022). Personal factors contain knowledge, beliefs, and attitudes. Behavioral factors incorporate skills, habits, and self-efficacy. Environmental factors comprise societal norms, community access, and social influences. Bandura (1998) implies normative influences and societal standards regulate self-sanctions, leading to intended behaviors. Behavior is regulated through intent to control and intent to reinforce the desired goal (LaMorte, 2022). SCT suggests personal change is easy when obstacles and barriers are overcome; however, personal, behavioral, or environmental impediments hinder the success of individual goals and anticipated health behaviors (Bandura, 1998).

SCT explains the correlation between why youth and young adults initiate and seek instant gratification through vaping. They have limited personal knowledge of the negative effects of vaping and its related contents. They achieve self-efficacy and intended goals of self-worth through vaping, and they are bombarded with social messages that promote and market

vaping. Notley et al. (2022) discuss other social influences to promote vaping, including descriptions, labeling designs, and experimentation with flavors to create enjoyment and sensory attraction. Therefore, social pressures and individual expectations lure youth and young adults into acting on behavior and impulse (Bandura, 1998).

Although not all studies utilized SCT to initiate behavioral changes related to vaping cessation, Graham et al. (2021) RCT study applied SCT to determine the effectiveness of a text message program for vaping cessation among young adults. Participants in the intervention groups received a monthly automated “This is Quitting” text message program on vaping cessation by offering social support and coaching using cognitive and behavioral coping skills (Graham et al., 2021). This resulted in 24.1% abstinence from vaping in the intervention group. Therefore, concluding text message interventions are effective for education on vaping cessation.

Implementation Framework

The John Hopkins evidence-based practice model (EBP) guided the project initiative in educating youth and young adults on the risks and harms of vaping. According to Dusin et al. (2023), the EBP model is a five-step framework as follows: ask the question, search for the best evidence, critically appraise the evidence, implement the findings into practice, and evaluate the outcomes of the change (See Appendix B, Figure B2). As previously stated, for this project, we ask, “How does education on vaping dependence compared to no education change the understanding or attitude towards vaping in youth and young adults at a local Phoenix charter school?” Through the review of recent literature and appraisal of evidence, research suggests that using a technological approach for education on vaping cessation is effective in this population. Therefore, implementing a “hybrid” vaping educational program with a one hour in-person PowerPoint presentation followed by five weeks of virtual education via Google Classroom was

determined to be most suitable for the success of this project. Once completed, pre- and post-questionnaire responses from participating students were evaluated to assess vaping knowledge and program success. The EBP model was utilized to evaluate the success of an educational intervention approach, and used as a foundational tool to evaluate improvement strategies for future practice.

Implications for Practice Change

The evidence shows that vaping education in youth and young adults tailored through social media and text message delivery systems can be successful. Therefore, educating fifth-grade students at a local charter school within the Phoenix School District, using behavioral interventions and SCT by programmed technology delivery systems, can, in turn, promote avoidance and cessation of vaping.

Methods

Ethical Considerations

Three ethical principles guided this project: respect for person(s), beneficence, and justice. Respect for persons is treating persons with autonomy and protecting those with diminished autonomy or inability to make autonomous decisions (U.S. Department of Health and Human Services, 1979). The project adhered to this principle by acknowledging and respecting individual rights to make individualized decisions (U.S. Department of Health and Human Services, 1979). This was applied in the vaping education youth program in respecting person's right to participate and apply vaping knowledge in behavioral practices. Beneficence means treating persons ethically in respecting decisions by doing no harm, and amplifying benefits (U.S. Department of Health and Human Services, 1979). The project adhered to this principle by educating about the harms of vaping and the benefits of cessation and avoidance (U.S.

Department of Health and Human Services, 1979). This was applied in structuring the vaping education project by providing educational links, resources, and videos virtually about the harms and health risks of vaping. Justice is the final principal and is being fair and treating all parties equally and without bias (U.S. Department of Health and Human Services, 1979). The project adhered to this principle by treating all persons present or participating with equality and fair approaches before, during, and after piloting the vaping education project (U.S. Department of Health and Human Services, 1979). The project's methodology was reviewed by faculty mentors and Arizona State University Institutional review board (IRB). IRB approval was effective on September 17, 2023.

Parental consent and child assent were required for active participation in the project. Due to the ages of the population used, a vaping information flyer was passed out to all fifth-grade classrooms, informing parents and families that vaping education would be presented on October 18th and 19th of 2023. Students without permission were exempt from education.

A thorough hybrid educational program with a one-hour in-person presentation and weekly resources in uniquely designed vaping Google Classroom was uploaded for all participating students. Educational materials included detailed articles and online links to vaping resources with combined videos. Virtual resources were uploaded weekly for a duration of five weeks in the Vaping Google Classroom. Pre- and post-surveys were completed using Google Forms to assess vaping knowledge, intent for future use, and cessation of current use. Developing a successful vaping education program for students can alter social acceptance of vaping adherence and dependency. Lyu et al. (2022) delivered vaping cessation interventions via Instagram with three posts per week for 25 days over five weeks to youth. Although Lyu et al. (2022) conclude that more time and research are needed to determine the success of vaping

education programs; it is already adopted by several health departments and youth servicing partners. The outcomes of vaping education and survey completion are increased vaping knowledge, understanding of the harms of vaping, improved vaping cessation rates, and decreased vaping intentions.

Setting and Stakeholders

Project organization stakeholders are from a well-known Western nonprofit hospital organization and a local Phoenix charter school. The project and funding were under the umbrella and supervision of the hospital facilities' Multidisciplinary Program Director and Chief Division of Advanced Practice and Clinical Integration, where the educational program for fifth-grade students at the charter school was implemented. The initiative consisted of implementing vaping education in youth to help educate them about the risks and harms of vaping before vaping exposure begins. This piloted program will be a legacy project to utilize and incorporate vaping education into future curricula. A legacy project refers to a change project or initiative passed on to future generations to modify or improve based on stakeholders' needs and intended goals and outcomes. The long-term goal is to create a domino effect of vaping education within surrounding schools in the Phoenix school district, seeking to prevent vaping dependence among youth.

Participants and Recruitment

Criteria was based on project site parameters and restrictions. Stakeholders and funding were limited to the local charter school for the piloted project. Inclusion criteria included English speaking, willing 5th grade students (ages 9-12 years) at the charter school. Any parent or guardian of the fifth-grade students were encouraged to attend but were not evaluated in the project. The exclusion criteria were any student not in 5th grade, students not English speaking,

and not an actively enrolled student at the charter school. Youth in fifth-grade were recruited from the charter school for the vaping education youth program. Recruitment information flyers were handed out to this population of students relaying information of the vaping program (See Appendix C). Parental consent and child assent forms were dispersed with the information flyers and collected the day of the in-person presentation. Students without parental permission to be present during education hours were withdrawn from participation.

Planning and Intervention

The aim was to implement a vaping education project to pilot successful educational interventions to expose foundational flaws. Therefore, promoting interventional improvements in vaping education is imperative in limiting the use, averting exposure in the youth population, and preventing long-term health risks. Questions asked included but were not limited to: “Are youth and young adults aware of the risks and harms of vaping?” and “How likely are you to educate others about vaping?” Initiation began by creating information recruitment flyers, parental consent, and child assent forms, which were dispersed to fifth-grade classrooms and students. Lack of consent resulted in exemption from participation. Once consent was obtained, participating students were directed to take a pre-vaping knowledge questionnaire following a link into Google Forms to determine vaping knowledge, current practice, and past exposure. Given the age of the population, the questionnaire was evaluated for age appropriateness by the DNP student and the stakeholders for age appropriation. Next, vaping education was provided in presentation format using a visual PowerPoint with attached videos.

Additionally, participating students were added to the vaping Google Classroom, where weekly educational links, videos, and resources were uploaded for a duration of five weeks. After completion, a link using Google Forms for a post-knowledge questionnaire was uploaded

to Google Classroom to evaluate post-education knowledge and understanding of vaping dependence. Barriers included parental consent and child assent for participation, students monitoring vaping Google Classroom weekly, and teacher/educator support on the incorporation of vaping programs in future academic curricula. The program was covered through grant funding from the nonprofit hospital organization. Implementing an education program was cost-effective, readily available, and sustainable with a technological hybrid approach; see Appendix D for projected costs.

Data Collection, Instrument or Tool, and Outcomes Measurement

Due to the young age of the population, most valid and reliable vaping survey tools were not appropriate for fifth-grade students. An online questionnaire using Google Forms was created for students to take before and after vaping education to test their knowledge, exposure, and understanding of its risks. The pre- and post-surveys took five minutes to complete using yes or no responses (See Appendix E, Figure E1). Although a self-produced tool has no psychometric data supporting its use or deeming it valid and reliable, it was most suitable for the vaping project and current stakeholders' goals. Outcome measures revolved around assessing the impact of the vaping education youth program. As reflected by the logic model, the aim was to evaluate baseline knowledge on vaping, implement the five-week hybrid educational vaping program, and assess if vaping education benefited or impacted students at the fifth-grade level (See Appendix B, Figure B3).

A combination of innate and acquired influences and social exposure shapes individual behavior (LaMorte, 2022). The self-made vaping survey reflecting the SCT helped expand youth knowledge and risks, limiting use and dependence. The population evaluated was confined to fifth-grade students; specifications of demographic data were not vital for evaluating vaping

knowledge pre- and post-education. Due to the minority age of the population, protection of privacy is crucial. Results and outcome variables were evaluated using a generalized approach by descriptive statistics. No participant identifiers, such as name or date of birth, were used. Students were directed to input the last four digits of their or their parent's phone numbers to the pre-and post-surveys, in which a subject ID was assigned to surveys with the same phone number to monitor internal consistency and trends.

Results

An average of 250 fifth-grade students received information about the vaping education youth program, ten submitted parental consent and child assent forms, and three actively participated, completing the pre- and post-knowledge surveys. Ineligibility was based on missing the following criteria: (1) missing or unsigned parental consent form; (2) missing or unsigned child assent form; and (3) absent in phase one of the program, the in-person presentation, resulting in dismissal. The participant demographics were unanimous; all (n=3) were fifth-grade students, Hispanic/Latino, and ten years old. Descriptive statistics were used to manage, run, and analyze the data. In the post-knowledge questionnaire, 100% of participants (n=3) answered 'YES' to confirm they have seen a vape pen and know people who vape, and 'NO' to "Is vaping safe?" Whereas 33% (n=1) answered 'YES' to "Is vaping better than smoking cigarettes or other tobacco products?" and 67% (n=2) answered 'YES' to "Does vaping, e-cigarettes, and JUULs mean the same thing?" in the post-knowledge questionnaire from 100% (n=3) in the pre-knowledge questionnaire. When asked, "Was it easy to find the online resources using Google Classroom?" 100% (n=3) responded 'YES.' While only 67% (n=2) responded 'YES' to "Did you open and read the online vaping education resources on Google Classroom?" As a result,

there was no improvement in comparing the pre- and post-knowledge questionnaires. No significant statistical change was found after five weeks of vaping education.

Sustainability

The project will be piloted as a legacy project which will then be passed down to staff and educators at the charter school to utilize and incorporate the vaping education into future curricula. The long-term goal of the Western nonprofit hospital organization is to create a causal sequence of vaping education within the curricula of surrounding schools in the Phoenix school district. The aim is to educate all fifth-grade students about the risks and harms of vaping before vaping exposure and dependence begin.

Discussion

Vaping dependence and exposure remain high among youth and young adults. The adolescent population, specifically students, remains vulnerable to social media marketing, industrial advertisements, and peer influences due to a lack of knowledge and misconception of its harm and risks (Liu et al., 2022). Therefore, implementing a school-based vaping prevention program is crucial in addressing the vaping epidemic to minimize exposure and use (Liu et al., 2022).

Strengths and Limitations

The projected strengths of the education program include the following: (1) vaping education positively impacts vaping knowledge and awareness; (2) the intervention is supported by evidence-based research for this population; (3) virtual graphics and videos aligned with the population interests; (4) participants were deidentified and remained anonymous, and (5) pre- and post-questionnaires were at fifth-grade reading level and completed at own pace.

This study had many limitations hindering program success. As reflected in the results, a five-week program using a narrow demographic of students and a small sample size has strongly limited any substantial data on program success. The patient population was strictly Hispanic/Latino. Although participating students were required to be English-speaking, a language barrier was observed between parents and participating families. Program recruitment and project implementation were sandwiched between fall break, resulting in students forgetting to give parents information flyers, failure to obtain parental consent, and inability to participate. The pre- and post-questionnaires have no psychometric data and are not deemed valid and reliable, with no supporting evidence that it is most effective in measuring vaping knowledge in adolescents.

Future Recommendations

Vaping education and prevention programs are supported by evidence-based practice and research and are proven to be best practices for the adolescent population (Liu et al., 2022). Although the results were inconclusive of program success, further research is needed to assess the impact of vaping education on youth and young adults for increased vaping knowledge and decreased exposure. Therefore, the vaping education youth program should be reintroduced and polished using a broader range of students, preferably 10-15, in grades five through eight for better insight of vaping knowledge.

Conclusion

Vaping dependence has become widespread among youth and young adults. This has potentially led this vulnerable population into misconceiving it as a harmless habit through seeking pleasure and social acceptance. Therefore, formulating a hybrid educational program of in-person and online resources will educate youth and young adults on the risks and harms of

vaping, leading to decreased vaping exposure and improved long-term health outcomes for individual and population well-being.

References

- Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology & Health, 13*(4), 623–649. <https://doi.org/10.1080/08870449808407422>
- Berg, C. J., Krishnan, N., Graham, A. L., & Abrams, L. C. (2021). A synthesis of the literature to inform vaping cessation interventions for young adults. *Addictive Behaviors, 119*, 106898–106898. <https://doi.org/10.1016/j.addbeh.2021.106898>
- Centers for Disease Control and Prevention. (2022). Quick facts on the risks of e-cigarettes for kids, teens, and young adults. *CDC*. https://www.cdc.gov/tobacco/basic_information/e-cigarettes/Quick-Facts-on-the-Risks-of-E-cigarettes-for-Kids-Teens-and-Young-Adults.html
- Christiani. (2020). Vaping-induced acute lung injury. *The New England Journal of Medicine, 382*(10), 960–962. <https://doi.org/10.1056/NEJMe1912032>
- Dang, D., Dearholt, S., Bissett, K., Ascenzi, J., & Whalen, M. (2022). Johns hopkins evidence-based practice for nurses and healthcare professionals: Model and guidelines. 4th ed. *Sigma Theta Tau International*
- DeGomez, C., & Feirstein, J. (2022). Vaping. *JAAPA (Montvale, N.J.), 35*(9), 25–30. <https://doi.org/10.1097/01.JAA.0000854544.26702.2e>
- Drug Enforcement Administration. (2019). Vaping & marijuana concentrates: What is vaping? *Drug Enforcement Administration*. https://permanent.fdlp.gov/gpo130783/VapingMarijuana__Brochure__2019_508.pdf
- Dusin, J., Melanson, A., & Mische-Lawson, L. (2023). Evidence-based practice models and frameworks in the healthcare setting: A scoping review. *BMJ open, 13*(5), e071188. <https://doi.org/10.1136/bmjopen-2022-071188>

- Graham, A. L., Amato, M. S., Cha, S., Jacobs, M. A., Bottcher, M. M., & Papandonatos, G. D. (2021). Effectiveness of a vaping cessation text message program among young adult e-cigarette users: A randomized clinical trial. *JAMA Internal Medicine, 181*(7), 923–930. <https://doi.org/10.1001/jamainternmed.2021.1793>
- Jones, K., & Salzman, G. A. (2020). The Vaping Epidemic in Adolescents. *Missouri medicine, 117*(1), 56–58. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7023954/pdf/ms117_p0056.pdf
- Kephart, L., Rastogi, R., Song, G., Ursprung, W. W. S., Kingsley, M., & Bharel, M. (2022). Implementation and evaluation of the public health emergency response to the 2019 outbreak of e-cigarette and vaping product use–associated lung injury in Massachusetts, USA. *Public Health (Elsevier), 204*, 25–32. <https://doi-org.ezproxy1.lib.asu.edu/10.1016/j.puhe.2021.12.020>
- King, B. A., Jones, C. M., Baldwin, G. T., & Briss, P. A. (2020). The EVALI and youth vaping epidemics — Implications for public health. *The New England Journal of Medicine, 382*(8), 689–691. <https://doi.org/10.1056/NEJMp1916171>
- Laestadius, L.I., Wahl, M. M., Pokhrel, P., & Cho, Y. I. (2019). From apple to werewolf: A content analysis of marketing for e-liquids on instagram. *Addictive Behaviors, 91*, 119–127. <https://doi.org/10.1016/j.addbeh.2018.09.008>
- LaMorte, W. (2022). The social cognitive theory. *Boston University School of Public Health*. <https://sphweb.bumc.bu.edu/otlt/mph-modules/sb/behavioralchangetheories/behavioralchangetheories5.html>
- Li, X., Zhang, Y., Zhang, R., Chen, F., Shao, L., Zhang, L. (2022). Association between e-cigarettes and asthma in adolescents: A systematic review and meta-analysis. *American*

- Journal of Preventative Medicine*, 62(6), 953–960.
<https://doi.org/10.1016/j.amepre.2022.01.015>
- Liu, J., Gaiha, S. M., & Halpern-Felsher, B. (2022). School-based programs to prevent adolescent e-cigarette use: A report card. *Current problems in pediatric and adolescent health care*, 52(6), 101204. <https://doi.org/10.1016/j.cppeds.2022.101204>
- Lyu, J. C., Olson, S. S., Ramo, D. E., & Ling, P. M. (2022). Delivering vaping cessation interventions to adolescents and young adults on instagram: Protocol for a randomized controlled trial. *BMC Public Health*, 22(1), 2311–2311. <https://doi.org/10.1186/s12889-022-14606-7>
- Notley, C., Gentry, S., Cox, S., Dockrell, M., Havill, M., Attwood, A. S., Smith, M., & Munafò, M. R. (2022). Youth use of e-liquid flavours—A systematic review exploring patterns of use of e-liquid flavours and associations with continued vaping, tobacco smoking uptake or cessation. *Addiction*, 117(5), 1258–1272. [https://doi-org.ezproxy1.lib.asu.edu/10.1111/add.15723](https://doi.org.ezproxy1.lib.asu.edu/10.1111/add.15723)
- Palmer, A. M., Tomko, R. L., Squeglia, L. M., Gray, K. M., Carpenter, M. J., Smith, T. T., Dahne, J., Toll, B. A., & McClure, E. A. (2022). A pilot feasibility study of a behavioral intervention for nicotine vaping cessation among young adults delivered via telehealth. *Drug and Alcohol Dependence*, 232, 109311–109311.
<https://doi.org/10.1016/j.drugalcdep.2022.109311>
- Patten, S. B. (2021). Vaping and mental health. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, 30(1), 3–5.
- Samsha. (2021). Talking with your teen about vaping: Keeping your kids safe. *Substance Abuse and Mental Health Services Administration*.

https://permanent.fdlp.gov/gpo153366/store.samhsa.gov/sites/default/files/SAMHSA_Digital_Download/PEP20-03-01-080%20508C.pdf

Sun, J., Xi, B., Ma, C., Zhao, M., & Bovet, P. (2022). Prevalence of e-cigarette use and its associated factors among youths aged 12 to 16 years in 68 countries and territories:

Global youth tobacco survey, 2012–2019. *American Journal of Public Health, 112*(4), 650–661. <https://doi-org.ezproxy1.lib.asu.edu/10.2105/ajph.2021.306686>

Tattan-Birch, H., Jackson, S. E., Kock, L., Dockrell, M., & Brown, J. (2023). Rapid growth in disposable e-cigarette vaping among young adults in Great Britain from 2021 to 2022: A repeat cross-sectional survey. *Addiction (Abingdon, England), 118*(2), 382–386.

<https://doi.org/10.1111/add.16044>

U.S. Department of Health and Human Services. (1979). The belmont report ethical principles and guidelines for the protection of human subjects of research. *Department of Health, Education, and Welfare*. https://www.hhs.gov/ohrp/sites/default/files/the-belmont-report-508c_FINAL.pdf

Appendix A

Evaluation and Synthesis Tables

Table A1

Evaluation Table for Quantitative Studies

Citation	Theoretical/ Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Variables	Measurement/ Instrumentation	Data Analysis	Results/ Findings	Level of Evidence; Application to practice; Generalization
1 st Author et al., (year), title (<i>no other information needed</i>) Palmer et al., (2022) A pilot feasibility study of a behavioral intervention for nicotine vaping cessation among young adults	None specified	Design: RCT Purpose: Behavioral intervention for nicotine vaping cessation among young adults delivered via telehealth	N= 27 Demographics: Ages 18-21, Male/female, White/Asian/Multi-racial Setting: Recruited locally in SC, and across U.S. on social media (Facebook, Instagram) and	IV1: Behavioral Intervention - CM DV1: Vaping Cessation Definitions: CM- Contingency Management	Tools: Cotinine samples Validity/ Reliability: CM and monitoring group interventions delivered via DynamiCare Health mobile app- participant	Statistical Tests Used: - Independent samples t-tests -Chi-square tests	DV1: Vaping Cessation (p-value 0.74) - CM group: 27% abstinence out of 22 - Monitoring group: 20% abstinence out of 5	Level of Evidence: Level II Strengths: RCT Practical, easy to use, technology based Weakness: Small sample size (n=27)

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<p>delivered via telehealth.</p> <p>Country: United States</p> <p>Funding: Internal funds at Medical University of South Carolina (MUSC), and partial funding from Hollings Cancer Center.</p> <p>Bias: Potential bias due to authors working at MUSC, involvement in funding, and study execution.</p> <p>Participants given financial</p>			<p>online advertisement (Craigslist)</p> <p>Exclusion: Using other nicotine-containing products or had a serious physical/mental health condition</p> <p>Attrition: Of 28 initial participants- 1 participant did not submit + cotinine sample at pre-enrollment and was excluded.</p>	<p>t</p>	<p>submit videos of saliva cotinine test and result (3-4 times per week). Once prompted, they had 12 hr. window to complete the sample.</p>			<p>Groups not evenly split for more accurate ratios.</p> <p>Monitoring group under sampled at n=5</p> <p>Incentives provided</p> <p>CM is a resource-heavy intervention and high in cost, staff, and time.</p> <p>Feasibility: Telehealth platforms are accessible and readily available for use and are cost-effective.</p> <p>Application: Identified that future research is needed for</p>
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incentives.								telehealth-delivered CM platforms for larger clinical trials regarding treatments, long-term vaping abstinence, and effective interventions.
1 st Author et al., (year), title (<i>no other information needed</i>) Lyu et al. (2022) Delivering vaping cessation interventions to adolescents and young adults on Instagram: Protocol for a randomized controlled trial	Generalized linear mixed model (GLMM); MI, CBCS, and TTM.	Design: RCT Purpose: Using RCT to test the efficacy of an Instagram-based vaping cessation intervention for adolescents and young adults.	N= 500 Demographics: Ages 13-21 years; No race/ethnicity/gender requirements Setting: California Exclusion: No English literacy, under 13 or over 21 years, have not vaped at least once per week in past 30	IV1: Intervention group- Received 3 Instagram posts per weekday for 25 days over 5 weeks IV2: Control group- Kickitca.org - chatline and text cessation	Tools: 7-day point prevalence abstinence assessed immediately, 3 months, and 6 months after treatments- those not using NRT are mailed a saliva cotinine test kit. Validity/Reliability: Two sets of	Statistical Tests Used: Logistic and multinomial regression models for longitudinal ordinal response data	DV1: This is the first RCT to test vaping cessation intervention delivery through Instagram. Results undetermined at this time.	Level of Evidence: Level II Strengths: RCT Easy access through use of technology and practical for adolescent population through use of social media

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<p>Country: United States</p> <p>Funding: California Tobacco Related Disease Research Program & the UCSF Helen Diller Comprehensive Cancer Center SF CAN Program</p> <p>Bias: The funders had no role in the study, and authors declare no conflicts of interest noted.</p>			<p>days, no access to electronic device w/ camera, not interesting in quitting vaping, not California resident.</p> <p>Attrition: Anticipated dropout rate 7%- none confirmed at this time</p>	<p>services</p> <p>DV1: Vaping Cessation</p> <p>DV2: Vaping reduction</p> <p>DV3: Readiness to quit</p> <p>Definitions:</p>	<p>outcome analysis- 1st is self-reported by all participants, and the 2nd is based on biochemically verified abstinence rates.</p>			<p>outlets</p> <p>Weakness: Privacy of posts and information accessed is limited since Instagram is under control of materials posted</p> <p>Feasibility: Social media platforms are accessible and readily available for use and are cost-effective.</p> <p>Application: The program is already adopted by several health departments and youth servicing</p>
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								partners
<p>1st Author et al., (year), title (<i>no other information needed</i>) Graham et al., (2021). Effectiveness of a vaping cessation text message program among young adult e-cigarette users: A randomized clinical trial.</p> <p>Country: United States</p> <p>Funding: Truth Initiative and CVS Health Foundation</p>	<p>Social cognitive theory</p>	<p>Design: Double-blind RCT</p> <p>Purpose: To determine the effectiveness of a text message program for vaping cessation among young adults vs. assessment-only control.</p>	<p>N= 2588</p> <p>Demographics: Mean age 20.4, 1253 were male, 2159 were white, 275 were Hispanic, and 493 were a sexual minority.</p> <p>Setting: US residents aged 18-24 years</p> <p>Exclusion: -Have to own mobile phone with active text message plan -Reported past 30-day e-cigarette use -Interested in quitting</p> <p>Attrition: Follow-up rate was 76% (n=1967), with</p>	<p>IV1: “This is quitting” text message program</p> <p>IV2: Assessment-only control</p> <p>DV1: Vaping cessation</p> <p>Definitions: This is quitting- an automated text message program for vaping cessation-delivers social</p>	<p>Tools: IPRW to help reduce bias</p> <p>Validity/Reliability: PPA and intention to treat analysis and retention weighted complete care analysis of 30 day and 7 day PPA</p>	<p>Statistical Tests Used: A multivariate logistic regression model</p>	<p>DV1: 7-month follow-up at 76%, with no differential attrition</p> <p>DV2: Abstinence rates 24.1% among intervention participants, and 18.6% among control participants</p> <p>DV3: No baseline variables moderated the treatment-outcome relationship</p>	<p>Level of Evidence: Level II</p> <p>Strengths: Double-blind RCT Large diverse sample size High follow-up rates</p> <p>Weakness: Did not conduct biochemical verification of abstinence Did not include teens in which are reported to have the highest vaping</p>

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<p>Bias: Funding sources had no role in study; However, Authors work at Truth Initiative, and Dr. Papandonatos received a personal fee from Truth Initiative as a statistical consultant</p>			<p>no differential attrition</p>	<p>support and CBCS training.</p>				<p>use</p> <p>Feasibility: Text messaging programs are accessible and readily available for use and are cost-effective.</p> <p>Application: Easy and cost effected treatment of vaping cessation delivered via text message for youth and young adults</p>
<p>1st Author et al., (year), title (no other information needed)</p>	<p>Working hypothesis</p>	<p>Design: Meta-analysis population-</p>	<p>N= 485,746</p> <p>Demographics:</p>	<p>IV1: Influencing factors-parental</p>	<p>Tools: Self-reported data using a standard and</p>	<p>Statistical Tests Used: Multivariable logistic</p>	<p>DV1: E-cigarette use was determined on maternal smoking,</p>	<p>Level of Evidence: Level II</p>

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<p>Sun et al., (2022). Prevalence of e-cigarette use and its associated factors among youths aged 12 to 16 years in 68 countries and territories: Global youth tobacco survey, 2012–2019.</p> <p>Country: 68 countries</p> <p>Funding: Supported by the Youth Team of Humanistic and Social Science of Shandong University</p>		<p>based cross-sectional approach</p> <p>Purpose: To described the global prevalence of e-cigarette use and associated factors</p>	<p>Ages 12-16 years old</p> <p>Setting: Conducted in 67 countries</p> <p>Exclusion: -If no reported e-cigarette use within the past 30 days</p> <p>Attrition: None reported</p>	<p>smoke, income level, youth cigarette smoking, 2nd hand smoke. i.e.</p> <p>DV1: E-cigarette use</p> <p>Definitions: GYTS- Global Youth Tobacco Survey</p> <p>NYTS- National Youth Tobacco Survey</p>	<p>anonymous questionnaire</p> <p>Validity/Reliability: Confidence intervals (CI)</p>	<p>regression model for analysis</p>	<p>paternal smoking, 2nd hand exposure, youth cigarette smoking, and other tobacco use.</p>	<p>Strengths: Meta-analysis Same standard questionnaire and sampling strategy in all countries</p> <p>Weakness: Large population Data self-reported Single question on e-cigarettes- unable to decipher types used Many other countries not included</p> <p>Feasibility: Understanding associated factors related</p>
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<p>Bias: Self-reported data can result in recall bias</p>								<p>to e-cigarette use is feasible, however the methodology on obtaining national data from 68 countries is a big undertaking that many result in many limitations</p> <p>Application: Further studies needed to assess e-cigarettes and combustible cigarettes in youth to compare if one leads to another.</p>
<p>1st Author et al., (year), title <i>(no other information needed)</i> Berg et al.,</p>	<p>Conceptual Framework</p>	<p>Design: Synthesis</p> <p>Purpose:</p>	<p>N= N/A</p> <p>Demographics: Youth & young adults 18-24 years</p>	<p>IV1: Technology-based interventions</p>	<p>Tools: Critical research synthesizing current evidence on vaping cessation</p>	<p>Statistical Tests Used: N/A</p>	<p>DV1: Ensuring those that quit vaping do not divert to co-use of other tobacco product and/or</p>	<p>Level of Evidence: Level III</p> <p>Strengths:</p>

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<p>(2021). A synthesis of the literature to inform vaping cessation interventions for young adults.</p> <p>Country: United States</p> <p>Funding: Supported by the US National Cancer Institute, US Fogarty International Center/National Institutes of Health, and the US National Institute of Environmental Health</p>		<p>To inform vaping cessation interventions for young adults.</p>	<p>old</p> <p>Setting: N/A</p> <p>Exclusion: -Marijuana, cigarette, and substance use outside of vaping</p> <p>Attrition: None mentioned</p>	<p>IV2: One-on-one counseling</p> <p>DV1: Vaping Cessation</p> <p>Definitions: Polytobacco - the use of several different tobacco products</p>	<p>Validity/Reliability: Unknown</p>		<p>marijuana.</p> <p>DV2: Technology based interventions is promising for vaping cessation</p> <p>DV3: One-on-one counseling is needed for careful intervention for complex substance use, cigarette/marijuana in addition to vaping.</p>	<p>Multiple modes of intervention delivery is likely to boost quit rates</p> <p>Weakness: Vaping cessation intervention research is needed to examine technology-based strategies Individualized counseling is needed to address various dimensions of cessation (tobacco, nicotine, & marijuana polyuse).</p>
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Science/Fogarty International Center. Bias: Funding sources had no role in study								<p>Feasibility:</p> <p>Utilizing technology based-interventions and one-on-one counseling is feasible for vaping cessation</p> <p>Application:</p> <p>Research is needed to inform the development and optimization of effective vaping cessation interventions on youth and young adults.</p>
1 st Author et al., (year), title (<i>no other information needed</i>)	N/A	Design: Systematic review using interventional	N= 39 (average of the 58 studies included) N_{total} = 512,874	IV1: Vaping liquid flavors	Tools: The protocol pre-registered on the open	Statistical Tests Used: Non specified	DV1: flavor descriptions, labelling designs, and	Level of Evidence: Level I

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<p>Notley et al., (2022). Youth use of e-liquid flavours—A systematic review exploring patterns of use of e-liquid flavours and associations with continued vaping, tobacco smoking uptake or cessation.</p> <p>Country: United Kingdom</p> <p>Funding: Public Health England</p> <p>Bias:</p>		<p>, observational , and qualitative studies</p> <p>Purpose: Review the use of e-liquid flavours by young people and describe associations with uptake or cessation</p>	<p>Demographics: -young people and their carers (participants <18 year).</p> <p>-Most recruited from a school setting or via community routes</p> <p>Setting: Published in English language from any country or cultural setting- US, UK, England, Scotland, Ireland, Korea, Taiwan, and Mexico</p> <p>Exclusion: -Use of other products other than e-cigarettes</p> <p>Attrition: 56 studied excluded during the selection</p>	<p>DV1: Vaping cessation</p> <p>Definitions:</p>	<p>science framework</p> <p>Validity/Reliability: Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidance</p>		<p>experimentation with flavors create enjoyment and sensory attraction</p> <p>DV2: Flavored liquids promotes ongoing and regular vaping as opposed to non-flavored liquids.</p> <p>DV3: Concern that vaping will lead to tobacco smoking through the gateway effect</p>	<p>Strengths: Systematic review Use of high quality study comparisons</p> <p>Weakness: Limitations by the characteristics of the studies and a GRADE rating of low evidence quality Inability to contact authors due to study limitations Some cross-sectional studies had inconsistent definitions.</p>
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<p>Assessed using the critical appraisal skills programme (CASP) tool for cohort studies to limit potential bias.</p>			<p>process.</p>					<p>Many studies did not collect data on nicotine use alongside flavors</p> <p>Feasibility: Understanding flavored e-cigarettes by young people and the associations with uptake or cessation is imperative in formulating interventions to promote cessation.</p> <p>Application: Further research is needed since the quality of evidence regarding flavored e-</p>
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								cigarettes use by young adults is low.
<p>1st Author et al., (year), title (<i>no other information needed</i>) Laestadius et al., (2019). From apple to werewolf: A content analysis of marketing for e-liquids on instagram.</p> <p>Country: Honolulu, HI & Milwaukee, WI</p> <p>Funding: Supported by NCI and FDA Center for Tobacco Products (CTP)</p>	<p>Symbolic consumption theory</p>	<p>Design: Content analysis-Systematic random sampling</p> <p>Purpose: Examine e-liquid marketing on Instagram and related e-cigarette content.</p>	<p>N= 1,000 posts</p> <p>Demographics: Most posts originated from the U.S., U.K., and Indonesia.</p> <p>Setting: Social media analysis on Instagram</p> <p>Exclusion: -Non-Instagram user -Posts tagging other than #eliquid and #ejuice</p> <p>Attrition: None stated.</p>	<p>IV1: Social media and marketing strategies of flavored e-liquids</p> <p>DV1: E-liquid use</p> <p>Definitions:</p>	<p>Tools: Netlytic, an online software authorizing 3rd party access to Instagram API</p> <p>Validity/Reliability: Coefficient (Cohen’s Kappa) at 0.805 average, Robust F-test for continuous variables, and Pearson Chi-square test for categorical variables. Then, All quantitative analysis was done using STATA 14.</p>	<p>Statistical Tests Used: Descriptive statistics</p>	<p>DV1: 61.1% promoted e-liquid use (vape shops, ambassadors, and representatives).</p> <p>DV2: 80% promotional posts of flavored e-liquids</p> <p>DV3: Posts focusing on e-liquids tasting good (35.4%) and being cool/edgy (19%).</p>	<p>Level of Evidence: Level III</p> <p>Strengths: Randomized sampling Data collection every hour for 1 weeks at two different times helped strength data</p> <p>Weakness: Level III study -Data focused on e-liquid post at one point in time vs. complete body of e-liquid posts.</p>

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<p>Bias: None stated.</p>								<p>Data limited to public posts</p> <p>Posts without #eliquid or #ejuice were excluded from analysis</p> <p>Feasibility: The research is feasible due to readily available posts on social media- however limitations in viewing private posts and what is assumed on social media may not be accurately represented in reality.</p> <p>Application: Further research in</p>
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								needed to determine social media users interpretation of vaping and e-liquid claims and attitudes on use.
1 st Author et al., (year), title (<i>no other information needed</i>) Li et al., (2022). Association between e-cigarettes and asthma in adolescents: A systematic review and meta-analysis. Country: China	Working hypothesis	Design: A systematic review and Meta-Analysis Purpose: Evaluated the potential association between e-cigarette use and asthma in adolescents.	N= 483,948 participants; N= 10 studies Demographics: Middle- and high-school students from U.S., Canada, and South Korea Setting: Online databased-PubMed, Embase, Cochrane, and China biological medicine database. Exclusion: -Articles for which	IV1: E-cigarettes DV1: Asthma Definitions:	Tools: PRISMA checklist Validity/Reliability: Analysis was conducted in RevMan, Version 5.4, and Stata SE, version 15.0, with a 2-sided p<0.05 considered statistically significant.	Statistical Tests Used: Chi-square test, random-effect model, fixed effect model, Egger linear regression test	DV1: Most studies report current use of e-cigarettes is associated with asthma	Level of Evidence: Level II Strengths: Meta-analysis Weakness: Large sample size Didn't compare e-cigarettes use (daily vs. occasional; current vs. ever used) Assessing for

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<p>Funding: The research center of traditional Chinese medicine (TCM), TCM evidence-based capacity project, and clinical practice of TCM comprehensive prevention and treatment of heart failure based on evidence-based research.</p> <p>Bias: None mentioned</p>			<p>data could not be obtained -Participants used e-cigs in combination with marijuana -studies that were not in English or Chinese or where full text was not available.</p> <p>Attrition: 3,982 studies excluded</p>					<p>active vs nonactive asthma</p> <p>Only included English and Chinese literature</p> <p>Feasibility: Education of e-cigarette associated asthma is vital in vaping education and cessation.</p> <p>Application: E-cigarettes education on associated asthma can be applied when educating on cessation and health risks associated to.</p>
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Key: **CBCS** Cognitive Behavioral Coping Skills, **CM** Contingency Management **DV** Dependent Variable, **EVALI** E-cigarette Vaping Associated Lung Injury, **GYTS** Global Youth Tobacco Survey, **IPRW** Inverse Probability of Retention Weighting, **IV** Independent Variable, **MI** Motivation Interviewing, **NYTS** National Youth Tobacco Survey, **PPA** Point of Prevalence Analysis, **RCT** Randomized Control Trial, **SC** South Carolina, **TTM** The Transtheoretical Model.

<p>1st Author et al., (year), title (<i>no other information needed</i>) Tattan-Birch et al., (2023). Rapid growth in disposable e-cigarette vaping among young adults in Great Britain from 2021 to 2022: A repeat cross-sectional survey.</p> <p>Country: United Kingdom</p> <p>Funding: Cancer research UK, The office for</p>	<p>Observational 1</p>	<p>Design: Cross-sectional study, Observation study design</p> <p>Purpose: To estimate recent trends in the prevalence of disposable e-cigarette vaping in Great Britain</p>	<p>N= 36,876</p> <p>Demographics: >18 years old -51.6% women</p> <p>Setting: Great Britain</p> <p>Exclusion: -Participants missing data for smoking and vaping status</p> <p>Attrition:</p>	<p>IV1: E-cigarette vaping</p> <p>DV1: Changes in smoking</p> <p>DV2: Vaping prevalence</p> <p>Definitions:</p>	<p>Tools: Smoking toolkit study (STS)</p> <p>Validity/Reliability: p-value & confidence interval</p>	<p>Statistical Tests Used: Weighted logistic regression</p>	<p>DV1: Disposable e-cigarette use is most prevalent in young adults.</p> <p>DV2: Young adults prefer disposable products</p>	<p>Level of Evidence: Level V</p> <p>Strengths: -Focused strictly on e-cigarette use</p> <p>Weakness: Level V study 95% CI due to few participants reporting e-cigarette use in early months Didn't distinguish between modern e-cigs vs. cigalikes</p> <p>Feasibility: Understanding</p>
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<p>health improvement and disparities, and The UK research prevention partnership.</p> <p>Bias: No conflicts of interest discussed</p>								<p>the use of e-cigarettes among young adults and why it's their products of choice it vital for seeking interventions for cessation.</p> <p>Application: Future studies are needed to examine why disposable e-cigarettes are the product of choice in young adults.</p>
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Key: **CBCS** Cognitive Behavioral Coping Skills, **CM** Contingency Management **DV** Dependent Variable, **EVALI** E-cigarette Vaping Associated Lung Injury, **GYTS** Global Youth Tobacco Survey, **IPRW** Inverse Probability of Retention Weighting, **IV** Independent Variable, **MI** Motivation Interviewing, **NYTS** National Youth Tobacco Survey, **PPA** Point of Prevalence Analysis, **RCT** Randomized Control Trial, **SC** South Carolina, **TTM** The Transtheoretical Model.

Table A2

Evaluation Table for Qualitative Studies

Citation	Theory/ Conceptual Framework	Design/ Method/ Sampling	Sample/ Setting	Major Themes Studied/ Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level/ Quality of Evidence; Decision for/ Application to practice; Generalization
1 st Author et al., (year), title (<i>no other information needed</i>) Kephart et al., (2022). Implementation and evaluation of the public health	Evaluation Framework	Design: Descriptive process and policy evaluation	Sample: (n=) Educational and enforcement activities- (n=1,337) Adult panel survey- (n=602)	<ul style="list-style-type: none"> RQ1: What activities were done by to educate retailers, health providers, schools, 	Data Collection: MTCP used several existing data sources and conducted primary data collection to access public	State type used. (ie: Content analysis, inter-rater reliability, interpretation of patterns and themes	(1) Vaping education (2) Access in the retail environment (3) Changes in use and	Level of Evidence: Level III Strengths: Strong retailer engagement in banning e-

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Citation	Theory/ Conceptual Framework	Design/ Method/ Sampling	Sample/ Setting	Major Themes Studied/ Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level/ Quality of Evidence; Decision for/ Application to practice; Generalization
<p>emergency response to the 2019 outbreak of e-cigarette and vaping product use-associated lung injury in Massachusetts, USA.</p> <p>Country: United States</p> <p>Funding: No funding provided.</p> <p>Bias: None.</p>		<p>Method:</p> <p>Public health responses to temporary removal of e-cigs from Sep.-Dec. 2019 was monitored through online adult panel surveys, in-school youth surveys, retailer compliance checks, and existing tobacco control program surveillance.</p> <p>Purpose: To describe</p>	<p>Demographics: Youth and young adults- high school and middle school in 12 communities</p> <p>Setting: Massachusetts</p> <p>Attrition: 0 (none identified)</p>	<p>and individuals on vaping and its risks?</p> <ul style="list-style-type: none"> • RQ2: Did retailers comply to the vaping prohibition? • RQ3: Have youth and young adults change how they access vaping due to EVALI outbreak? • RQ4: Have youth attempted to quit and cut down on vaping due to EVALI 	<p>response, access, use, and cessation on vaping products in youth and young adults.</p> <p>Data Dependability: Limited dependability due to self-reported data</p>	<p>in textual data, etc).</p> <p>Descriptive statistics (counts and proportions) were calculated during the 16-weeks from Sep. 24-Dec.11.</p>	<p>behavior</p> <p>(4) Vaping Cessation</p> <p>(5) Awareness of vaping risks-EVALI</p>	<p>cigarettes sales</p> <p>Public health involvement and support programs prevent health risk behaviors, promote health sustaining behaviors, and reduction of chronic diseases.</p> <p>Weakness:</p> <p>Survey results are self-reported</p> <p>Samples are not representative of all youth and young adults who vape</p> <p>The data is not specific and</p>

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Citation	Theory/ Conceptual Framework	Design/ Method/ Sampling	Sample/ Setting	Major Themes Studied/ Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Themes	Level/ Quality of Evidence; Decision for/ Application to practice; Generalization
		and evaluate the public health surveillance and emergency response activities that occurred in Massachusetts during the 2019 EVALI outbreak .		outbreak? Definitions: EVALI- E- cigarette/vaping associated lung injury				limit ability to draw accurate conclusions Feasibility: Yes, it is feasible if retail stores reduce accessibility and availability to vape products. Application: Identified what retail stores need to do to limit vape use. Also, spreading EVALI awareness and vape risks can increase vaping cessation.

Key: **CBCS** Cognitive Behavioral Coping Skills, **CM** Contingency Management **DV** Dependent Variable, **EVALI** E-cigarette Vaping Associated Lung Injury, **GYTS** Global Youth Tobacco Survey, **IPRW** Inverse Probability of Retention Weighting, **IV** Independent Variable, **MI** Motivation Interviewing, **NYTS** National Youth Tobacco Survey, **PPA** Point of Prevalence Analysis, **RCT** Randomized Control Trial, **SC** South Carolina, **TTM** The Transtheoretical Model.

Table A3

Synthesis Table on Vaping in Youth and Young Adults

Study (Author, year)	Palmer et al., 2022	Lyu et al., 2022	Graham et al., 2021	Sun et al., 2022	Berg et al., 2021	Notley et al., 2022	Laestadius et al., 2019	Li et al., 2022	Tattan-Birch et al., 2023	Kephart et al., 2022
Design LOE	RCT/II	RCT/II	RCT/II	MA/II	Synthesis/III	SR/I	Content Analysis/III	SR/MAII	CSS/V	Descriptive process and policy evaluation/III
Sample										
<i>n subjects</i>	27	500	2588	485,746	N/A	512,874	1,000 posts	483,948	36,876	1,337
<i>M-Age</i>	18-21	13-21	18-24	12-16	18-24	<18	N/A	12-18	>18	12-18
Setting										
<i>United States</i>	x	x	x	x	x	x	x	x		x
<i>Outside of U.S.</i>				x		x	x	x	x	
Interventions										
<i>Social Media/Instagram</i>		x					x			
<i>Behavioral Intervention</i>	x				x					
<i>Text Cessation Services/ Technology interventions</i>	x	x	x		x					
<i>Influencing factors (Parental, smoke, income level, 2nd hand smoke, asthma, EVALI).</i>				x				x		x
<i>Vaping: e-liquid</i>						x	x		x	x

Key: CSS Cross sectional study, **EVALI** E-cigarette vaping associated lung injury, **MA** Meta-analysis, **RCT** Randomized Control Trial, **SR** Systematic Review.

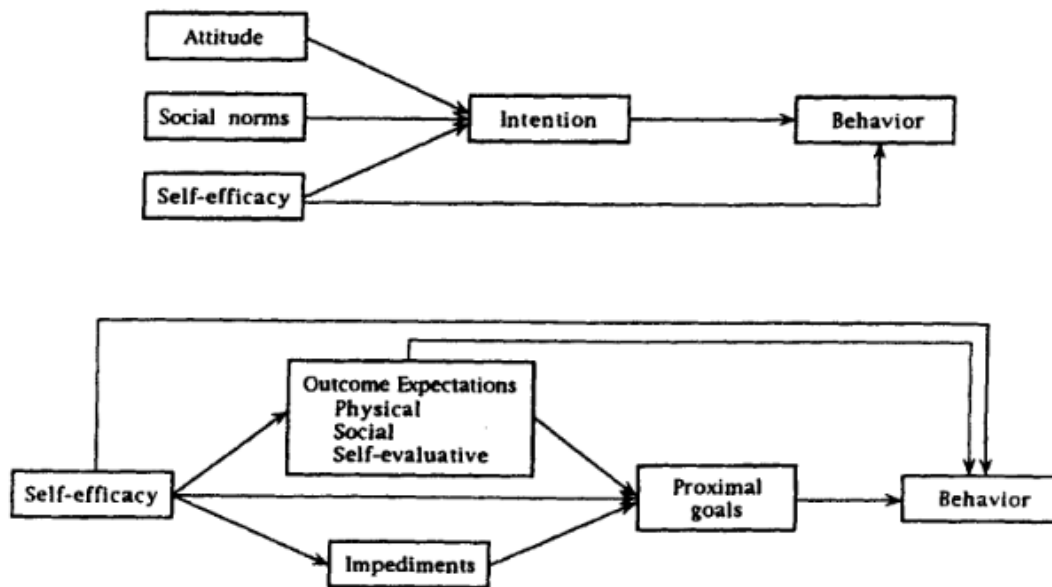
Study (Author, year)	Palmer et al., 2022	Lyu et al., 2022	Graham et al., 2021	Sun et al., 2022	Berg et al., 2021	Notley et al., 2022	Laestadius et al., 2019	Li et al., 2022	Tattan-Birch et al., 2023	Kephart et al., 2022
<i>flavors</i>										
Outcomes/ Themes										
<i>Vaping cessation</i>	↑	x	↑		x	x				
<i>Vaping Reduction</i>		x							x	↑
<i>Readiness to quit</i>		x								↑
<i>E-cigarette use</i>				x		↑	↑	↑	↑	

Key: **CSS** Cross sectional study, **EVALI** E-cigarette vaping associated lung injury, **MA** Meta-analysis, **RCT** Randomized Control Trial, **SR** Systematic Review.

Appendix B

Models and Frameworks

Figure B1

Social Cognitive Theory

Adapted from "Health Promotion From the Perspective of Social Cognitive Theory," by Bandura, A., 1998, *Psychology & Health*, 13(4), 623–649.

<https://doi.org/10.1080/08870449808407422>. Copyright 2007 by Taylor & Francis. Adapted with permission.

Figure B2

The John Hopkins Evidence-Based Practice Model



Adapted from “Johns Hopkins Evidence-Based Practice for Nurses and Healthcare Professionals: Model and Guidelines. 4th ed.,” by Dang, D., Dearholt, S., Bissett, K., Ascenzi, J., & Whalen, M., 2022, *Sigma Theta Tau International*. Copyright 2022 by the Johns Hopkins Health System/Johns Hopkins School of Nursing. Adapted with permission.

Figure B3

Logic Model

Inputs	Activities	Outputs (Participants)	Short-term Outcomes	Mid-term Outcomes	Long-term Outcomes	Assumptions	Impact
<p>Funding</p> <p>Time</p> <p>Technology</p> <p><i>Palmer et al. (2022) encourage digital advertising and social media advancements for vaping cessation, supporting remotely delivered messages as a promising path for future research and interventional efficacy.</i></p> <p>Teachers/Staff Educators</p> <p>Youth and young adults Participants</p>	<p>Develop educational resources and vaping curriculum</p> <p>Program development & education about vaping</p> <p>Utilize technology and virtual PPT education on vaping cessation</p> <p>Inform and include staff and stakeholders about the intended project and seek support from vaping education partners</p> <p>Use Social Cognitive Theory (SCT) and EBP model to guide and educate participants about vaping</p>	<p>Stakeholders provide funding for vaping education youth program</p> <p>Vaping project program fully developed & implemented in local school districts</p> <p>PPT & virtual education provided biweekly to participants</p> <p>Educators and stakeholder training on project implementation of vaping education program</p> <p>Participants take Pre- and post-survey's on vaping.</p> <p>Vaping education youth program supplied via hybrid with virtual and in person educational material biweekly for 5 weeks.</p>	<p>Vaping educational youth program fully funded</p> <p>Vaping project implemented</p> <p>Youth and young adults engage in virtual vaping education</p> <p>Educators/stakeholders learn about the benefits of vaping education</p> <p>Youth and young adults learn about the risks and harms of vaping</p>	<p>Youth and young adults use protective strategies to steer away from vaping and peer pressures</p> <p>Youth and young adults support vaping cessation</p> <p>Less youth and young adults engage in vaping</p> <p>Teacher and stakeholders incorporate vaping education in curriculum</p>	<p>The rate of vaping amid youth and young adults decreases</p> <p>Vaping education youth program is implemented in all phoenix school districts</p>	<p>Youth and young adults avoid vaping by seeking healthy coping mechanisms for current behaviors.</p> <p><i>The determinacy in quitting vaping is relative to self-efficacy, meaning personal belief and confidence in adopting healthier behaviors is overcome (Washburn, n.d.).</i></p> <p>Vaping cessation is supported among this population</p>	<p>Increased knowledge and improved learning outcomes of vaping</p> <p>Vaping will no longer be socially favored</p> <p>The understanding youth and young adults have on how severe vaping is and how it relates to negative health outcomes</p>

Appendix C
Recruitment Flyer

Figure C1

Vaping Recruitment and Parental Consent Flyer

The flyer features a vibrant, abstract background with overlapping geometric shapes in shades of blue, yellow, green, and purple. At the bottom, there are stylized illustrations of various e-cigarettes in yellow, pink, green, and blue. The text is centered and uses a mix of bold and regular fonts.

**Vaping Education
Youth Program**

Be Smart. Don't Start.

Vista College Preparatory presents afterschool hybrid vaping educational program for all 5th grade students. Parents are welcome to join. Participation is voluntary. The educational program will be presented by Ayat Rassas, a graduate student at ASU under the direction of Rochelle Chiffelle, DNP, FNP and in collaboration with Banner MD Anderson Cancer Center.

Date: October 18 or 19, 2023

Time: 4-5 pm

Location: Student café

Parental consent is required. Students, please bring signed consent form to be collected at the door the day of the presentation. If consent is to be withdrawn from a student at any given time, notify Ayat Rassas for exclusion from program.

Ayat Rassas
Arizona State University
Cell: 602-695-4207
Email: anrassas@asu.edu

Don't be fooled. Vaping is not cool.

Appendix D

Budget

Figure D1

Budget

Phase	Activities	Cost	subtotal	Total
Preparation	Create and design vaping educational materials to potential audiences- students	\$0		
	Create and collect online resources, links, videos, and vaping articles for biweekly emails x 5weeks	\$0		
	Create and print promotional flyer, parental consents forms, and child assent forms for vaping program	\$591.56		
	Create and design pre- and post- evaluation survey to assess student knowledge via Google Forms	\$0	\$591.56	
Delivery	Utilizing school property for afterschool vaping education program	\$0		
	Regulated virtual resources for vaping education uploaded weekly x 5 weeks using Google Classroom	\$0		
	Refreshments and snacks for in-person presentations on 10/18 & 10/19	\$156.28	\$156.28	
Evaluation	Send Google Forms link to post-survey evaluation during 5 th week of education via Google Classroom	\$0		
	Review and analysis of results	\$0	\$0	\$747.84

Appendix E
Data Collection Survey Tool

Figure E1

Pre-Vaping Knowledge Survey

Participant ID: _____

Date: _____

1

Pre-Vaping Knowledge Questionnaire

Instructions: Please write in the last four numbers of your phone number _____

Demographics: Please answer the following questions

1. Age: _____ (years)

2. Grade: 5th grade

Please place “X” for what best describes you

3. Race:

White/Caucasian _____

Black/African American _____

Hispanic/Latino _____

Asian _____

Native Hawaiian/Pacific Islander _____

Data Entry: _____

Data Validation: _____

Data Analysis: _____

Participant ID: _____

Date: _____

2

Native American _____

Other _____ (specify)

- | | |
|---|-----------|
| 4. Does anyone in your family and some you know vape or smoke? | YES or NO |
| 5. Have you ever vaped? | YES or NO |
| 6. Do you know what vaping is? Have you heard of vaping? | YES or NO |
| 7. Have you seen what a vape pen or e-cigarette looks like? | YES or NO |
| 8. Do you know people who vape? | YES or NO |
| 9. Is vaping better than smoking cigarettes or other tobacco products? | YES or NO |
| 10. Does vaping, e-cigarettes, and JUULs mean the same thing? | YES or NO |
| 11. Do vape pens contain nicotine? | YES or NO |
| 12. Do vape pens contain harmful chemicals that can cause cancer, heart, lung problems? | YES or NO |
| 13. Are vape pens addictive? | YES or NO |
| 14. Is vaping harmful to your health? | YES or NO |
| 15. Is vaping safe? | YES or NO |

Data Entry: _____

Data Validation: _____

Data Analysis: _____

Figure E2

Post-Vaping Knowledge Survey

Participant ID: _____

Date: _____

1

Post-Vaping Knowledge Questionnaire

Instructions: Please write in the last four numbers of your phone number _____

- | | |
|--|-----------|
| 1. Do you know what vaping is? Have you heard of vaping? | YES or NO |
| 2. Have you seen what a vape pen or e-cigarette looks like? | YES or NO |
| 3. Do you know people who vape? | YES or NO |
| 4. Is vaping better than smoking cigarettes or other tobacco products? | YES or NO |
| 5. Does vaping, e-cigarettes, and JUULs mean the same thing? | YES or NO |
| 6. Do vape pens contain nicotine? | YES or NO |
| 7. Do vape pens contain harmful chemicals that can cause cancer, heart, lung problems? | YES or NO |
| 8. Are vape pens addictive? | YES or NO |
| 9. Is vaping harmful to your health? | YES or NO |
| 10. Is vaping safe? | YES or NO |
| 11. Was this education helpful? | YES or NO |

Data Entry: _____

Data Validation: _____

Data Analysis: _____

Participant ID: _____

Date: _____

2

- 12. Would you take what you learned today to help others avoid vaping? YES or NO
- 13. Did you find the online resources on vaping helpful? YES or NO
- 14. Was it easy to find the online resources using Google Classroom? YES or NO
- 15. Did you open and read the online vaping education resources on Google Classroom? YES or NO
- 16. Any additional comments? Please explain. _____

Data Entry: _____

Data Validation: _____

Data Analysis: _____