COMPLETED GRANT SYNOPSIS

Title: Engaging Community Pharmacists in the Design and Implementation of a Vaping Prevention Intervention for Adolescents and Parents

Authors: Olufunmilola Abraham, PhD, MS, BPharm; Jenny Li, PharmD, MS

Organization | City, State: University of Wisconsin-Madison School of Pharmacy, Social and Administrative Sciences Division, Madison, Wisconsin

Objectives

The long-term goal of this research is to improve communication on vaping among pharmacists, adolescents, and their parents to decrease adolescent electronic cigarette (e-cigarette) use. Given the accessibility of pharmacists and their role in adult smoking cessation, they are a logical provider of adolescent e-cigarette education and cessation. The main objective of this project was to develop and test an innovative and sustainable intervention for engaging adolescents and their families in communication and education about e-cigarettes. The study aims were:

1. To evaluate pharmacists' knowledge and perspectives on adolescent e-cigarette use and communication among families and pharmacists.
2. To pilot test and evaluate the feasibility and effectiveness of an e-cigarette intervention for adolescents and their families.

Methods

Design

Aim 1

- We surveyed and interviewed Wisconsin pharmacists on their knowledge and perspectives on adolescent e-cigarette use, perspectives on the role pharmacists can play in educating adolescents and their families about e-cigarettes, barriers and facilitators to implementing an intervention for adolescents and their families in the pharmacy setting, strategies for educating adolescents and families on e-cigarettes, prior experience and perspectives on smoking cessation strategies in the pharmacy, and relevant demographics.
- The survey and semi-structured interview guide were based on the Exploration, Preparation, Implementation, Sustainment (EPIS) framework as well as previous survey instruments developed by the study team when gathering feedback from pharmacists, adolescents, and parents for intervention development.
- Pharmacists were recruited to complete the survey via email listservs and newsletters through PearlRx (Pharmacy Practice Enhancement and Action Research Link; a practice-based research network of Wisconsin pharmacists across all settings), Pharmacy Society of Wisconsin (statewide pharmacy association), and Forward Pharmacy (independent pharmacy with 5 locations in Wisconsin, at the time of recruitment).
- At the end of the survey, respondents were asked if they would be interested in a follow-up semi-structured interview to provide in-depth feedback and follow up on their survey responses.
- Close-ended survey data were analyzed with descriptive statistics to summarize key implementation concepts and overall perspectives on adolescent e-cigarette use, and open-ended survey data were analyzed with qualitative content analysis.
- Interview data were analyzed with two coders applying an inductive approach to the content and thematic analysis.

Aim 2

- We developed an educational infographic on vaping for adolescents and their parents (Pharmacist-led E-cigarette and Vaping Educational Resource; **Ph-EVER**) based on pharmacist interview results from

	Aim 1, prior research findings, and feedback from our national youth advisory board. • Pilot tested the Ph-EVER with 35 adolescent-parent dyads using pre-post-surveys to measure the change in e-cigarette knowledge, awareness, and behavioral intentions reading through the Ph-EVER and semi-structured follow-up interviews gather perspectives and preferences on the Ph-EVER, identify barriers, facilitators, and strategies to implementing the Ph-EVER, and expand on their survey responses. • The surveys and semi-structured interview guides were based on the EPIS framework as well as previous survey instruments developed by the study team when gathering feedback from pharmacists, adolescents, and parents for intervention development. • Adolescents and their parents were recruited through in-person recruitment flyer distribution in 6 community pharmacy settings by a study team member and pharmacy staff as well as pharmacy email listservs. • Scheduled virtual sessions via Zoom with participants to complete the pre-survey, read through the Ph-EVER, complete the post-survey, and complete a semi-structured interview. • Survey data were analyzed with descriptive statistics, one-sample proportion tests, and paired-sample proportion tests, reporting results from the McNemar test with a two-sided alpha of 0.05. • Interview data were analyzed with two coders applying an inductive approach to the content and thematic analysis.

Study endpoints	• Pharmacist perspectives on:
	  ○ Knowledge and perspectives on adolescent e-cigarette use
	  ○ Pharmacists' role in educating adolescents and families on the harm of adolescent e-cigarette use
	  ○ Barriers and facilitators to providing e-cigarette education or interventions in community pharmacies
	  ○ Strategies for educating and counseling adolescents on e-cigarettes in community pharmacies
	• Development of the Ph-EVER (the intervention)
	• Changes in adolescent and parent e-cigarette awareness and knowledge of e-cigarettes after the intervention (reading through the Ph-EVER)
	• Changes in behavior intentions surrounding e-cigarette use after the intervention
	• Adolescent and parent perspectives on the Ph-EVER and its feasibility, including barriers and facilitators to implementation

Results

Aim 1

- From September 2022 to January 2023, 111 pharmacist respondents completed the survey, and 30 pharmacists completed the semi-structured interview.
- From the 111 survey responses:
  - Respondents were 65% female and 80% white with a mean age of 38.2 years.
  - Most participants practiced in community pharmacies (50%), hospitals (22%), or outpatient clinics (19%) and were staff pharmacists (30%), manager pharmacists (22%), or clinical pharmacists (34%).
  - Most participants considered adolescent vaping to be an important problem in their communities (72%), but they reported limited knowledge on vaping.
  - At best, 35% knew about the health consequences of vaping, and at worst, 5% were familiar with vaping policies and regulations.
  - Over 85% of participants never received any education or training on vaping, but nearly all were interested in continuing education (95%).
  - Half of participants (49%) had patients ask them about vaping, primarily focused on e-cigarette safety, comparison to traditional cigarettes, health consequences of vaping, use of e-cigarettes for smoking cessation, vaping cessation options, and drug interactions with e-cigarettes.

- Participants did report having at least some engagement with middle schoolers (32%), high schoolers (48%), and parents of adolescents (55%) in their pharmacy practice.
- Over 90% of participants agreed that pharmacists should educate adolescents and parents on vaping and support vaping cessation through referral to external resources like quit lines or providers.
- The main barriers to pharmacists providing vaping services were lack of training for pharmacists (82%), time constraints (81%), and lack of resources to share (82%).
- Only 11% of participants felt they could overcome these barriers on their own, but over 70% of them would feel more comfortable and confident in addressing adolescent vaping if at least some of these barriers were overcome.
- The top strategies for connecting with and educating adolescents and parents on vaping were to share immediate consequences of youth vaping (81%) and sharing resources on the pharmacy's website and social media platforms (76%).
- Around half of participants were interested in playing a role for prevention and reduction of adolescent vaping (44%) and willing to engage in this role (55%).

- From the 30 pharmacist interviews:
  - Participants worked either in community pharmacies (73%) or outpatient clinics (27%).
  - Pharmacists wanted more training and education on vaping to provide for their patients, specifically on topics related to health risks and cessation resources on vaping.
  - Pharmacists were supportive and willing to use an educational infographic on vaping in their own practice, with most stating that their work organization would support the use of this potential tool.
  - Most participants agreed that they would share an educational infographic on vaping with their patients, particularly parents, since adolescents infrequently engage with pharmacists.

<u>Aim 2</u>

- From January to May 2023, 35 adolescent-parent dyads (n = 60) completed the pilot test and semi-structured interview of the Ph-EVER.
- From the pre-post survey responses from 35 adolescents:
  - Participants had a mean age of 14.4 years (SD 1.9), 54.3% in middle school and 45.7% in high school or just graduated high school, 48.6% identifying as female, and 74.3% identifying as Caucasian/White.
  - 71.4% have seen someone vaping, and 65.7% have seen a teenager vaping.
  - Significant increase in perceived knowledge of vaping ($z = 3.32$, $p = <0.001$) and being against vaping after the intervention ($z = 2$, $p = 0.046$).
  - Significant increase in knowledge that nicotine worsens adolescent brain development ($z = 2.45$, $p = 0.014$), that mental health is affected by nicotine exposure ($z = 2.45$, $p = 0.014$), and that vaping does not help with coping with mental health in the long run ($z = 2.53$, $p = 0.011$).
  - 60% found the Ph-EVER to be useful, and 100% thought it was easy to understand.
  - New topics learned from the Ph-EVER were the statistics on adolescent vaping (62.9%) and resources for quitting vaping (60%).
  - About half of participants preferred the Ph-EVER to be disseminated as a physical handout (54.3%) or on social media (45.7%).
  - More participants were more open to having the Ph-EVER available for anyone to pick up at the pharmacy (80%) versus receiving the Ph-EVER with medication or prescription pick-ups (51.4%) or having the pharmacist talk through the Ph-EVER with you (42.9%).
  - Main barriers to educating on vaping in pharmacies were minimal time spent in pharmacies (62.9%) and that adolescents do not go to pharmacies often (77.1%).
  - The best places for adolescents to receive the Ph-EVER were at school (85.7%) or the doctor's office (82.9%).
- From the pre-post survey responses from 35 parents:
  - Participants had a mean age of 45.7 years (SD 5.9) with 82.9% identifying as female, 91.4% identifying as Caucasian/White, 77.1% college-educated, 82.9% married, 51.4% household income less than $150,000, and an average of 2.7 children (SD 1.6).

- 100% have seen someone vaping, and 77.1% have seen a teen vaping.
- Significant increase in perceived knowledge of vaping after the intervention ($z = 3.05$, $p = 0.002$).
- Significant increase in parents seeking more education on vaping after the intervention ($z = 2.67$, $p = 0.008$).
- 100% thought the Ph-EVER was useful, and 94.3% thought it was easy to understand.
- New topics learned from the Ph-EVER were the statistics on adolescent vaping (65.7%) and signs that someone is vaping (62.9%).
- Most participants preferred the Ph-EVER to be disseminated online on social media (74.3%) or on a website (60%).
- More participants were more open to having the Ph-EVER available for anyone to pick up at the pharmacy (97.1%) or receiving the Ph-EVER with medication or prescription pick-ups (80%) versus having the pharmacist talk through the Ph-EVER with you (54.3%).
- Main barriers to educating on vaping in pharmacies were minimal time spent in pharmacies (60%) and that adolescents do not go to pharmacies often (91.4%).
- The best places for parents to receive the Ph-EVER were at school (97.1%), the doctor's office (91.4%), or pharmacies (80%).

- From the 35 adolescent interviews:
  - Adolescents' infrequent visits to pharmacies and parental personal e-cigarette use were found as barriers to implementing an adolescent-targeted pharmacy intervention on e-cigarettes and vaping.
  - Participants perceived the Ph-EVER to have a dynamic design and valuable information on e-cigarettes.
  - Most participants agreed that underage e-cigarette use was highly addictive and dangerous.
  - Participants believed the Ph-EVER should be delivered in a digital format and available in various public medical settings, such as pharmacies and doctor's offices.
  - Areas of improvement for the Ph-EVER include providing additional detail about e-cigarettes and their accessibility among underage youth.
- From the 35 parent interviews:
  - Participants reported knowledge of the health consequences of e-cigarette use but were seeking further information and recommendations on how to address adolescent vaping in their households and communities.
  - The most useful information from the Ph-EVER were the statistics on the high prevalence of adolescent vaping in Wisconsin, resources for quitting e-cigarette use, and a QR code link to additional resources.
  - Participants supported implementation of the Ph-EVER in community centers, pharmacies, other healthcare facilities, as well as social media.
  - Pharmacists were viewed as a trusted resource who can significantly influence both parents and adolescents, specifically noted for being knowledgeable about cessation recommendations for nicotine products and disseminating information on the health risks of vaping.
- Participants found the Ph-EVER to be an effective method to educate families on vaping risks.

Conclusion

Pharmacists are undereducated and underutilized in addressing adolescent vaping, despite being uniquely positioned as substance and drug experts with immense potential for this role. Future studies should co-develop training programs with pharmacists to equip them with the knowledge and skills to address adolescent vaping in their practice. Purposefully sampling pharmacists working in underserved communities and areas with higher prevalence of adolescent vaping would also help future studies develop more equitable resources and programs for patients. The pilot test of the Ph-EVER demonstrated promising results with significant increases in perceived and actual knowledge by adolescent and parents as well as increased parental intention of learning more about vaping following the intervention. Participants were open and willing to receive vaping education from pharmacies using the Ph-EVER tool, with most participants agreeing that it was useful and easy to understand. Ph-EVER will continue to undergo adaptions using these results. Future work will evaluate the use of Ph-EVER by among diverse adolescents and parents in various community settings.