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EDUCATING HIGH SCHOOL STUDENTS ON THE NEGATIVE HEALTH EFFECTS OF VAPING

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Londonderry, Hudson, and Nashua, NH
Mentor: Dr. Melissa Duxbury
PROBLEM: INCREASED TEEN VAPING AMONG HIGH SCHOOL STUDENTS

• E-cigarettes have been part of the US market starting in the mid-2000s and since their introduction they have been marketed to youth by using candy flavors, celebrities, and social media¹

• E-cigarettes work by delivering an aerosol of nicotine, flavorings, and other additives to users²

• Nicotine exposure in teens has been shown to cause numerous problems in adulthood including: drug seeking behavior, deficits in attention and cognition, and mood disorders¹

• Vaping exposes users to multiple toxins that have been shown to cause asthma and other lung diseases, heart disease, neurologic problems, and cancer¹

• E-cigarettes surpassed conventional cigarettes in 2014 to become the most commonly used tobacco product among youth¹

• In 2016, more than 2 million U.S. middle and high school students used e-cigarettes in the past 30 days, including 4.3% of middle school students and 11.3% of high school students²
Given how new e-cigarettes are on the market, information on public health cost specific to e-cigarette use is not yet available, however we do know the cost of smoking related illness in the US is greater than $300 billion each year\(^3\):
- $170 billion for direct medical care of adults
- 156 billion in lost productivity

The cost of e-cigarettes is ~$720 per year for e-liquid and ~$50 for a starter kit\(^4\).

In the local NH communities where this project will be implemented we do not have specific data on e-cigarette related health costs, but anecdotally we know that their use among students has lead to schools spending more money on educational sessions and enforcement staff, and doctors needing to give increased prescriptions for inhalers to youth.
COMMUNITY PERSPECTIVE #1

• Assistant principal Londonderry High School, Londonderry, NH
  • Feels that vaping is poorly regulated, that there are many unknown health effects, and that it is a major problem in his and many other schools
  • Many students have asked him about vaping, and believe it is harmless and safer than regular cigarettes
  • He roughly estimates that 50% of students at his school have tried vaping
  • He thinks vaping is appealing to teens because “it comes in fruity flavors, and it is taken in through an electronic device that this generation is accustomed to”
  • He feels that teen vaping is ultimately a parenting issue, but that schools can combat it with more student education and building relationships
  • He believes that a pamphlet on the negative health effects of vaping would be useful for administrators to distribute to students
COMMUNITY PERSPECTIVE #2

• Jason Strniste: Principal of Bishop Guertin High School, Nashua, NH
  • Says that teen vaping is a major concern at Bishop Guertin and is constantly brought up as an issue at regional principal meetings
  • Many kids are using the Juul, which is shaped like a USB-drive and can be charged via a USB outlet. It is hard to spot the Juul and many students use them in the bathrooms and classrooms.
  • Seniors who are 18 years old purchase the devices for younger students
  • Feels that the solution is through education and not discipline as punishment just drives usage further underground
  • Students are taking time out of class to vape to satisfy their nicotine craving
  • Estimates that 10%-40% of his students vape, and 5%-15% are intense users
  • States that administrators do not have the time to look through medical journals for e-cigarette studies and that a good set of factual information with cited studies that can be distributed to students would be extremely useful
  • Thinks that future steps would be to have medical professionals speak to students in schools so that they could hear a new perspective on the issue
INTERVENTION AND METHODOLOGY

• The goal of this project was to provide educators at Londonderry and Bishop Guertin High School and physicians at Primary Care of Hudson with evidence based information on the harmful effects vaping has on adolescents.

• The information was given in the form of a pamphlet that was designed to appeal to teens and written at a level they would understand.

• Included with the pamphlet was a complete reference list with the 36 different sources used to compile the pamphlet so that educators or physicians could provide the original studies to teens who wanted further information.
• Select teen patients at Hudson Primary Care and students at Londonderry High School were given the opportunity to offer qualitative feedback on pamphlet that was distributed
  • Positive comments were that they liked the design and cover photo, and one student said that after reading the pamphlet he was afraid to try vaping. Another student said that he would consider quitting vaping after reading about all of the negative health effects that he did not know about
  • Areas for improvement included making the pamphlet less wordy and highlighting certain important points

• Faculty at Hudson Primary Care were also given the opportunity to offer comments on the content and format of the pamphlet
  • Positive comments were that there were numerous cited studies backing up the information provided so that students could have more educational material if they wished
  • Areas for improvement included fixing some of the formatting and revising certain terms so that teens would understand them
EVALUATION OF EFFECTIVENESS AND LIMITATIONS

• A proposed method to evaluate the effectiveness of this project would be to distribute a survey to students immediately after receiving the pamphlet and 6 months later
  • The surveys would ask them to rate on a scale 1-5 how much their thoughts on vaping changed after reading the pamphlet. It could also ask students to report the frequency of their vaping on a 1-5 scale (correlated to times per day, week, month).
  • The results of the immediate survey could then be compared with those of the survey at 6 months to see if the pamphlet had a lasting impact on the thoughts of students regarding vaping, and it would show if there was a decrease in the frequency of vaping among students

• Limitations include students being inundated with homework and extracurriculars resulting in a lack of motivation and/or time to read the pamphlets that will be distributed

• Another limitation is that the pamphlet is written in English, creating a language barrier for students whose preferred language is something other than English
FUTURE INTERVENTION

• Given adolescents increase use of technology, the pamphlet could be adapted into an online module that could be more attractive for students to complete. The module could be question based and use the facts presented in the pamphlet. Incentives (homework passes, parking pass points) could be provided for students to complete the module.

• The pamphlet could also be adapted into a PowerPoint presentation that medical professionals could present to students so that they could hear a first hand account of the negative health effects of vaping observed in teens.

