

# Knowledge and Perceptions of E-cigarettes and the Motivations for their Use: Talking to Smokers (E-cigarettes and/or Conventional Cigarettes) and Non-smokers in Puerto Rico

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**Objective:** The awareness and use of e-cigarettes have been increasing in recent years. The World Health Organization recently reported that regulations are needed to impede the promotion of e-cigarettes to young people, prohibit unproven health claims about them (including those regarding smoking-cessation efficacy), minimize potential health risks to e-cigarette users and non-users, and protect existing tobacco controls. The study described herein explored e-cigarette knowledge, perceptions, and usage motivations among a group of adults in Puerto Rico.

**Methods:** This research study used a validated questionnaire with closed-ended questions to gather data. Non-inferential and inferential statistics were used to characterize smokers (of e-cigarettes, of conventional cigarettes, and of both) and non-smokers.

**Results:** A total of 415 respondents took part; they were evenly distributed by gender, age, and socioeconomic status; all were residents of Puerto Rico at the time of the survey. The overall awareness of e-cigarettes was high, but knowledge of nicotine content and regulations was limited. Asked whether e-cigarettes contain nicotine (they do not), approximately two thirds stated either that they do or that they didn't know; asked whether e-cigarettes are regulated as a tobacco product (they are in Puerto Rico), 84% stated either that they are not or that they didn't know. Common perceptions of e-cigarettes are that they are harmful to health and that they are no less harmful than cigarettes are. However, a significant portion of the respondents perceived e-cigarettes to be less addictive than conventional cigarettes are. Overall, the respondents were divided on the efficacy of e-cigarettes for smoking cessation. Nonetheless, the most common motivation for their use, according to both current users and potential future users, is to aid in smoking cessation or reduction.

**Conclusion:** The majority of individuals surveyed were aware of e-cigarettes but had limited knowledge of their contents or regulation. As an aid in smoking cessation was the most commonly mentioned motivation for e-cigarette use. [*P R Health Sci J* 2018;37:148-154]

*Key words:* E-cigarette, Electronic cigarette, Cigarettes, Nicotine, Smoking

**E**lectronic nicotine-delivery systems, also known as electronic cigarettes, or e-cigarettes, are battery-operated devices shaped like conventional cigarettes that deliver nicotine through steam or vapor produced from heating a nicotine-containing liquid, usually contained in replaceable cartridges (1). This is in contrast to traditional cigarettes, which aerosolize nicotine through combustion. Despite the marketing of e-cigarettes as a harmless alternative to conventional cigarettes, the United States (US) Food and Drug Administration (FDA) has conducted e-cigarette studies and found that toxic substances are contained in them (1).

The relative safety of e-cigarettes compared to conventional cigarettes has yet to be fully described. The cartridges used in e-cigarettes utilize propylene glycol and glycerin as the main

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delivery vehicles for nicotine. Other components include acetaldehyde, acrolein, formaldehyde, and other substances sometimes found in combustible cigarettes (2). While the levels of some of these harmful substances were found to be lower than what are seen in combustible cigarettes, exposure to propylene glycol and glycerin may be harmful to users. As with combustible cigarettes, non-using bystanders are exposed to nicotine and other substances when e-cigarettes are used in a closed space (2–5). Exposure to these substances has been associated with respiratory irritation, central nervous system disturbances, and negative effects of spleen (2).

Because of the increase in the use of e-cigarettes in the US, multiple municipalities and states have started to implement regulations on e-cigarette use. As a result, by early 2014, 27 states had laws restricting sales to minors; 3 states, including more than 100 municipalities, prohibited the use of e-cigarettes in 100% smoke-free indoor environments; and 9 states restricted their use in schools, prisons, and public educational facilities (2). The World Health Organization (WHO) has reported that regulations are needed to impede the promotion of e-cigarettes to young people, prohibit unproven health claims about them (including those regarding smoking-cessation efficacy), minimize the potential health risks to e-cigarette users and non-users, and protect existing tobacco controls (6). The American Heart Association (AHA) has reinforced the message from the WHO with a policy statement of its own (7). In 2015, Puerto Rico law was changed to incorporate e-cigarettes under the definition of tobacco products and to prohibit the promoting and use of e-cigarettes to and by minors (8,9). More recently, the FDA, under whose authority Puerto Rico falls, passed similar regulations at the national level to restrict the use of e-cigarettes by minors (10). Recently, Puerto Rico began to levy a tax on e-cigarettes as tobacco products (11).

Although e-cigarettes are not approved by the FDA for smoking cessation, several studies have looked at the possible role of e-cigarettes in smoking cessation (2,12–13). To date, there are no clear data demonstrating the efficacy of e-cigarettes in helping people to quit smoking. In fact, several studies have concluded that smokers who used e-cigarettes were significantly less likely to decrease cigarette consumption or quit smoking than those who had never used e-cigarettes (7,14–15). Nevertheless, many purchasers of e-cigarettes have been identified as former or current smokers, with the latter professing the intent to quit smoking or reduce the amount that they smoke as their reason for initiating e-cigarette use (13,16–17). Recent data from the Behavioral Risk Factor Surveillance System (BRFSS) national survey also indicated that the primary reason people in Puerto Rico used e-cigarettes was to quit smoking (18).

Both the awareness and the use of e-cigarettes have been increasing (2). Current smokers have been reported to be the greatest users of e-cigarettes, followed by former smokers; non-smokers (of conventional cigarettes) appear to be the least frequent users of e-cigarettes. Several studies have revealed that

e-cigarettes are usually used concomitantly with conventional cigarettes and that many perceive them as being less harmful than conventional cigarettes. However, more recently, data in the US suggest that non-smoking adolescents may be using e-cigarettes (19). The results of a longitudinal survey of high school students (9<sup>th</sup> grade) at 10 different schools in Los Angeles, California, show that e-cigarette users (25.3%) at baseline had a higher prevalence of reporting the initiation of combustible tobacco product use in the year following the survey compared to non-users (9.3%).

Although several studies about the awareness and perceptions of e-cigarettes have been reported, reliable data are limited, with much of the data coming from unreliable and internet sources (2,7). The existing data suggest that the awareness of e-cigarettes has increased as has the belief that they are less harmful than regular cigarettes (20–21). In its policy statement, the AHA indicated that users and potential users of e-cigarettes tended to gather their information about these products from television, conversations with other people, and the internet (7). As such, more research is needed to determine the use by and the spread of e-cigarettes to different populations and subgroups and identify the different factors that contribute to e-cigarette use in the general population (3).

Data on healthcare-provider knowledge and perceptions are also limited, but suggest that such providers are aware of e-cigarettes but do not receive professional education regarding their use and potential dangers (22). Additionally, other data suggest that many providers believe that e-cigarettes are less harmful than combustible cigarettes and some are willing to support their use as aids to tobacco cessation (23–24).

Because of the current lack of relevant data, it is important to explore the knowledge and perceptions of e-cigarettes and the motivations for their use in adults in Puerto Rico. Recent data from the BRFSS national survey report, for the first time, the usage rates of and some of the motivations for using e-cigarettes in Puerto Rico, but do not describe the perceptions or knowledge of e-cigarettes in the island population (18). Furthermore, the recent policy statement from the AHA has identified research needs regarding e-cigarettes and their use trajectories, harm perception, and user expectations (7). Because of the current lack of relevant data, it is important to explore the knowledge and perceptions of e-cigarettes and the motivations for their use in adults in Puerto Rico.

## Methods

This research study used a 19-item questionnaire (Appendix A) designed to measure specific variables related to the knowledge and perceptions of e-cigarettes and the motivations for their use in adults in Puerto Rico. The questionnaire was validated for content and construct by 3 independent experts in the social-behavioral and smoking-cessation fields who were not part of the research team. The questionnaire was then revised by the study investigators based on the experts' feedback. The

revised questionnaire was administered to a validation group of 25 individuals representative of the study population and was evaluated for internal consistency. These participants' responses were used for instrument validation only and were not included in the final analysis.

For this study, knowledge was defined as the awareness of the existence of e-cigarettes, their contents, the advertising and marketing used to promote them, and the laws that regulate them. Perception referred to the opinions that the participating adults had formed about e-cigarettes and their beliefs about how safe they were, as well as how effective they were in aiding tobacco cessation. Motivation was defined as the self-identified reason for a person's choosing to use e-cigarettes. Demographics data included gender, age, educational level, annual income, place of residency, and smoking status. For the knowledge domain (questions 1 to 5), the awareness of facts about e-cigarettes was measured, including their nicotine content and the regulations governing their use. Two different components were measured in the perception domain (questions 6 to 11), the safety of e-cigarettes and their efficacy in smoking cessation. The motivation domain (questions 15 to 19) measured the self-identified motivations for using e-cigarettes, according to both smokers and non-smokers.

A literature review determined that there were no previous studies of a similar theme or scope that could be used as a basis for this study. A convenience sample of 400 adults aged 21 years or older who lived in Puerto Rico was the target for this study. Participants were recruited at independent and chain pharmacies during normal business hours as well as at outdoor public plazas in the metropolitan area during evenings and weekends over a 3-month period in early 2016. Researchers oriented in questionnaire administration approached potential respondents and invited them to participate. Those who showed interest were offered both an information sheet which explained the purpose of the study and the self-administered questionnaire. Participation was voluntary and anonymous. Minors (20 years old or younger, under Puerto Rican law) and adults who did not live in Puerto Rico were excluded from the study. Eligibility was verified by researchers at the time of recruitment, and researchers were available at all times to answer the participants' questions. This study was approved by the University of Puerto Rico Medical Sciences Campus Institutional Review Board (protocol B0250515).

Non-inferential and inferential statistics were utilized for the analysis of each domain. Demographic and knowledge information are described as percentages. Perceptions of harm and efficacy in smoking cessation are presented as grouped percentages. For the purposes of the analysis of the Likert scale questions for this domain, the options "strongly agree" and "agree" were considered as "agree" and the options "strongly disagree" and "disagree" both were considered as "disagree." The identification of the motivations for using e-cigarettes, according to both current e-cigarette users and potential future e-cigarette users, are also presented as percentages. A chi-square test was

used to analyze the domains of knowledge and perception. We examined the relationships that existed between conventional cigarette users and non-smokers and between e-cigarette users and non-smokers in these domains. Based on previous data indicating that the majority of e-cigarette users are also current or former conventional cigarette users, a comparison of e-cigarette users versus non-e-cigarette users (which could include conventional cigarette users) was not performed.

## Results

A Cronbach's alpha analysis of the revised questionnaire in the validation group resulted in a reliability of 0.67. Respondents in the study group were representative of Puerto Rico's adult population, with the exception that more than 80% of the participants reported having obtained a college degree (associate degree or higher), a significantly higher rate than that of the general population (Table 1) (25). A total of 405 (98%) of the respondents were from the northern and eastern geographical areas of the island, which areas include the municipalities of San Juan, Carolina, Caguas, and Guaynabo. In those municipalities reside 22% of the population of Puerto Rico (25).

Of those responding, most of the conventional cigarette and e-cigarette users were aware of what an e-cigarette was. More than 50% of the respondents of each group of smokers (conventional-

**Table 1.** Respondent demographic information

|  | n (%)    |
|--|----------|
| Gender   |          |
| Male   | 183 (44) |
| Female   | 232 (56) |
| Age (y/o)  |          |
| 21–24  | 42 (10)  |
| 25–34  | 94 (23)  |
| 35–44  | 74 (18)  |
| 45–54  | 95 (23)  |
| 55–64  | 58 (14)  |
| >65  | 52 (12)  |
| Area of residence (on the island of Puerto Rico) |          |
| West   | 1 (<1)   |
| North  | 202 (49) |
| Central  | 7 (2)    |
| South  | 2 (<1)   |
| East   | 203 (49) |
| Education level                                  |          |
| No degree  | 15 (4)   |
| High school diploma                              | 64 (15)  |
| Associate degree                                 | 100 (24) |
| Bachelor's degree                                | 144 (35) |
| Master's degree                                  | 67 (16)  |
| Doctorate degree                                 | 25 (6)   |
| Household annual income†                         |          |
| <\$15,000  | 97 (24)  |
| \$15,000–24,999                                  | 96 (23)  |
| \$25,000–39,999                                  | 95 (23)  |
| \$40,000–59,999                                  | 54 (13)  |
| >\$60,000  | 67 (17)  |

†6 respondents did not answer this question

cigarette users, e-cigarette users, or users of both) and non-smokers were aware of advertising featuring e-cigarettes and had seen them available for purchase in gas stations, drugstores, and other places. When respondents were asked about the nicotine content in e-cigarettes, only 151 (36%) of all the respondents knew that e-cigarettes contained nicotine. A complete breakdown of the knowledge domain is included in Table 2. Statistical analysis showed an association between those who had ever used conventional cigarettes and the knowledge that e-cigarettes contain nicotine ( $p$ -value = 0.0002). The same association was found with those who had ever used e-cigarettes ( $p$ -value < 0.0001). Regarding the regulation of e-cigarettes, 347 (84% across all the groups) respondents were misinformed, either responding incorrectly that e-cigarettes are not regulated as tobacco products or indicating that they were unaware of the current regulations.

Respondents (>44%) across all the groups, except dual users (31%), agreed that e-cigarettes were harmful to the health. Approximately 50% of the e-cigarette users and dual users and 30% of the conventional cigarette users and non-smokers agreed that e-cigarettes were less harmful than conventional cigarettes. Meanwhile, 290 respondents (70% across all the groups) believed that e-cigarettes should be regulated as conventional cigarettes. One hundred fifty of all the respondents (36%) believed e-cigarettes could be a useful smoking-cessation tool. An association was identified between conventional cigarette users and the perception that e-cigarettes are a useful smoking-cessation tool ( $p$ -value < 0.0086). The same association was observed for e-cigarette users ( $p$ -value = 0.0091). In terms of the perception that e-cigarettes offer benefits that are unavailable in conventional cigarettes, 106 (26%) of the respondents across all the groups believed this to be the case. There was a relationship between individuals who had ever used e-cigarettes and the perception that e-cigarettes offer benefits that are not found in conventional cigarettes ( $p$ -value = 0.0026). Ninety-four (23%) of our respondents thought that e-cigarettes were less addictive than conventional cigarettes, and an association exists between conventional cigarette users and the perception that e-cigarettes are less addictive ( $p$ -value = 0.0171). A complete breakdown of the perception domains can be found in Table 3.

Forty-seven of the participants (previous or current e-cigarette users) replied to the question exploring the motivations for using e-cigarettes; 23 (48.94%) reported that they had used them in attempts to quit smoking or to smoke less. Additional motivations for e-cigarette use in our study included: users found e-cigarettes to be innovative (13,

**Table 2.** Awareness and knowledge domains, distributed by group

| Variables                            | Ever used conventional cigarettes (n = 162) | Ever used e-cigarettes (n = 48) | Current dual use (n = 13) | Never used cigarettes of any kind (n = 248) |
|--------------------------------------|---|---------------------------------|---------------------------|---|
| Awareness of e-cigs                  |   |                                 |                           |   |
| Yes                                  | 139 (86%)                                   | 48 (100%)                       | 13 (100%)                 | 184 (74%)                                   |
| No                                   | 26 (16%)                                    | 0                               | 0                         | 64 (26%)                                    |
| Awareness of e-cig ads               |   |                                 |                           |   |
| Yes                                  | 105 (65%)                                   | 37 (77%)                        | 10 (77%)                  | 138 (56%)                                   |
| No                                   | 57 (35%)                                    | 11 (23%)                        | 3 (23%)                   | 110 (44%)                                   |
| Awareness of e-cig marketing         |   |                                 |                           |   |
| Yes                                  | 106 (65%)                                   | 41 (85%)                        | 12 (92%)                  | 124 (50%)                                   |
| No                                   | 53 (33%)                                    | 7 (15%)                         | 1 (8%)                    | 118 (48%)                                   |
| Do not know                          | 3 (2%)                                      | 0                               | 0                         | 6 (2%)                                      |
| Knowledge of e-cig nicotine content* |   |                                 |                           |   |
| Yes                                  | 77 (48%)                                    | 32 (67%)                        | 7 (54%)                   | 71 (29%)                                    |
| No                                   | 26 (16%)                                    | 8 (17%)                         | 3 (23%)                   | 51 (21%)                                    |
| Do not know                          | 59 (36%)                                    | 8 (17%)                         | 3 (23%)                   | 126 (51%)                                   |
| Knowledge of e-cig regulations*      |   |                                 |                           |   |
| Yes                                  | 27 (17%)                                    | 10 (21%)                        | 3 (23%)                   | 40 (16%)                                    |
| No                                   | 65 (40%)                                    | 21 (44%)                        | 7 (54%)                   | 78 (31%)                                    |
| Do not know                          | 70 (43%)                                    | 17 (35%)                        | 3 (23%)                   | 130 (52%)                                   |

\*The options "No" and "Do not know" are both indicators of limited information or misinformation on e-cigarettes.

27.66%); peer pressure (2, 4.26%); and users were interested in trying the different flavors available (9, 19.15%). Another motivation to use e-cigarettes was that they are perceived as being less harmful for the environment (9, 19.15%). Additionally, e-cigarette users were motivated by the desire to replace conventional cigarettes or to be able to smoke in areas where traditional smoking is restricted. Smokers of traditional cigarettes who indicated they would consider trying e-cigarettes in the future had motivations for trying e-cigarettes that were similar to those of respondents who already used e-cigarettes (Figure 1). Non-smokers who indicated that they might try e-cigarettes in the future claimed to be motivated by the recreational aspect linked to the technology.

## Discussion

Prior to this study, data concerning the knowledge and perceptions of e-cigarettes and the motivations for their use in a population of adults in Puerto Rico were lacking. Previous studies have assessed the use of e-cigarettes by adults in the US (50 states and the District of Columbia), of which 12.6% have tried e-cigarettes at some point (26-27). Our data show that 11.57% of our study population had tried e-cigarettes. In terms of gender, 14.2% of adult males and 11.2% of adult females in the US have tried e-cigarettes. In this study, a larger disparity between gender was found, with 19% of adult males and only 6% of adult females in Puerto Rico having tried e-cigarettes. Our adult population was limited to users who were 21 years of age or older, while the study of adult users in the US (as

**Table 3.** Perception domains, distributed by group

| Variables  | Ever used conventional cigarettes* (n = 162) | Ever used e-cigarettes* (n = 48) | Currently using both* (n = 13) | Never used cigarettes of any kind (n = 248) |
|--|--|----------------------------------|--------------------------------|---|
| E-cigarettes are harmful to the health                           |  |                                  |                                |   |
| Agree  | 95 (59%)                                     | 21 (44%)                         | 4 (31%)                        | 164 (66%)                                   |
| Neutral  | 47 (29%)                                     | 18 (38%)                         | 7 (54%)                        | 62 (25%)                                    |
| Disagree   | 20 (12%)                                     | 9 (18%)                          | 2 (15%)                        | 22 (9%)                                     |
| E-cigarettes are less harmful than conventional cigarettes       |  |                                  |                                |   |
| Agree  | 54 (33%)                                     | 22 (46%)                         | 9 (70%)                        | 68 (27%)                                    |
| Neutral  | 47 (29%)                                     | 9 (19%)                          | 1 (8%)                         | 77 (31%)                                    |
| Disagree   | 61 (38%)                                     | 17 (35%)                         | 3 (22%)                        | 103 (42%)                                   |
| E-cigarettes should be regulated as conventional cigarettes      |  |                                  |                                |   |
| Agree  | 114 (70%)                                    | 31 (64%)                         | 11 (85%)                       | 175 (70%)                                   |
| Neutral  | 27 (17%)                                     | 10 (21%)                         | 2 (15%)                        | 49 (20%)                                    |
| Disagree   | 21 (13%)                                     | 7 (15%)                          | 0                              | 24 (10%)                                    |
| E-cigarettes are a useful smoking-cessation tool                 |  |                                  |                                |   |
| Agree  | 70 (43%)                                     | 28 (58%)                         | 10 (77%)                       | 77 (31%)                                    |
| Neutral  | 44 (27%)                                     | 7 (15%)                          | 1 (8%)                         | 71 (29%)                                    |
| Disagree   | 48 (30%)                                     | 13 (27%)                         | 2 (15%)                        | 100 (40%)                                   |
| E-cigarettes offer benefits not found in conventional cigarettes |  |                                  |                                |   |
| Agree  | 49 (30%)                                     | 24 (50%)                         | 9 (70%)                        | 55 (22%)                                    |
| Neutral  | 50 (31%)                                     | 9 (19%)                          | 3 (23%)                        | 101 (41%)                                   |
| Disagree   | 63 (39%)                                     | 15 (31%)                         | 1 (8%)                         | 92 (37%)                                    |
| E-cigarettes are less addictive than conventional cigarettes     |  |                                  |                                |   |
| Agree  | 45 (28%)                                     | 18 (38%)                         | 5 (39%)                        | 48 (19%)                                    |
| Neutral  | 65 (40%)                                     | 19 (39%)                         | 6 (46%)                        | 108 (44%)                                   |
| Disagree   | 52 (32%)                                     | 11 (23%)                         | 2 (15%)                        | 92 (37%)                                    |

\*Columns are not mutually exclusive

qualified previously in this paragraph) included users aged 18 to 20. The same study showed that the largest proportion of the population to have tried e-cigarettes was users aged 18 to 24 years. The difference in the makeup of the groups between studies may partially explain the minor variations in the results between the 2 studies (26-27).

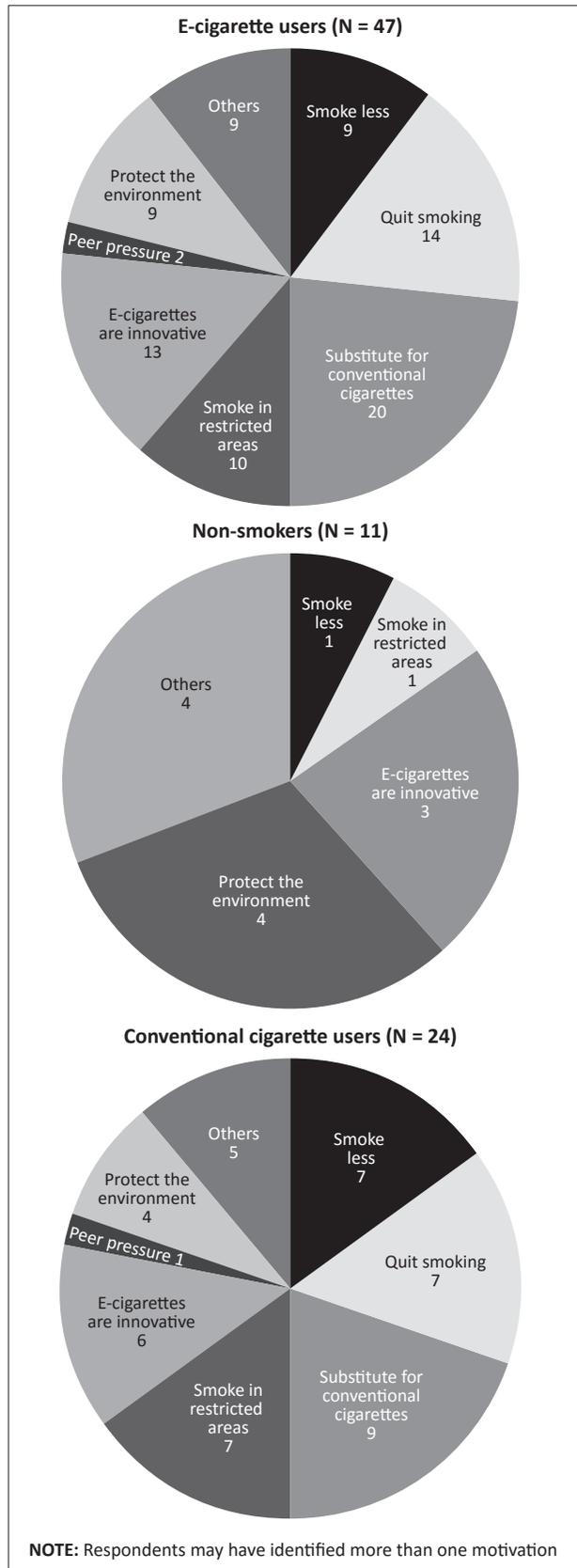
The majority of the respondents had a limited concept of what an e-cigarette was as well as incorrect information on the nicotine content of e-cigarettes and the current regulation of the devices as tobacco products. In terms of damage to health, the respondents from all the groups indicated that they believed e-cigarettes to be harmful. Previous studies have shown that respondents believe that e-cigarettes are less harmful than traditional cigarettes, which was one of the reasons given for their having decided to try e-cigarettes: to smoke less or quit smoking (19). When compared with conventional-cigarette users, e-cigarette users and dual users (all from this study) indicated that they believed e-cigarettes to be less harmful than and to provide benefits not found in conventional cigarettes,

while non-smokers and conventional users did not harbor either of these beliefs. This is consistent with data from other populations, in which populations the benefits of e-cigarettes were perceived (by the members of said populations) to outweigh their risks (17,28).

Prior to our data collection in 2015, 2 laws (8,9) were approved in Puerto Rico to more strongly regulate e-cigarettes. Law #92-2015 prohibits the advertisement of e-cigarettes in public places, and law #41-2015 classifies e-cigarettes as tobacco products, making it illegal for minors to buy or use the device. More recently, the FDA approved new rules that extend federal regulatory authority to e-cigarettes, banning their sale to individuals under 18 and requiring adults under the age of 26 to show a photo identification to buy them (10). In our study, the members of all the groups agreed that laws should be put in place to regulate e-cigarettes as tobacco products, but were generally unaware of existing regulations, suggesting a need for public education and potentially more stringent enforcement of such regulations.

General public opinion is that e-cigarettes have proven to be a useful tool for smoking cessation. The nicotine users of our study (conventional-cigarette, e-cigarette, and dual users) agreed that e-cigarettes are an effective smoking-cessation aid. Furthermore, the respondents who had tried e-cigarettes revealed that their primary motivation for having done so was to either smoke less or quit smoking. This motivation was also given by those individuals who said they would consider trying e-cigarettes in the future. Our findings are consistent with those of previous research and suggest that smokers are using e-cigarettes as a smoking-cessation aid (7). Members of all the groups were under the impression that e-cigarettes were less addictive than conventional cigarettes. This represents a significant finding in that perceptions of addictive potential may have an impact on the use of e-cigarettes for quitting as well as the possibility for the initiation of (e-cigarette) use in current non-smokers. Moreover, as the addictive potential of e-cigarettes has yet to be conclusively determined, the possibility exists of e-cigarettes replacing conventional cigarettes as a public health burden, creating a new group of smokers among those who have never smoked.

This study had several limitations. Because they are still considered minors under Puerto Rican law, young adults aged 18 to 20 years old, a population shown elsewhere to be gaining interest in e-cigarettes, were not able to participate, and thus



**Figure 1.** Motivations for using e-cigarettes, according to e-cigarette users, conventional cigarette smokers, and non-smokers in PR.

no data were collected on them. In this study, we compared e-cigarettes with traditional cigarettes only because they have similar delivery systems, with the latter being the most commonly used tobacco product in Puerto Rico. Similarly, the survey instrument focused directly on e-cigarettes and may not have adequately captured data on users of electronic vaporizers. Nonetheless, further comparison with other tobacco products may be warranted. Lastly, while every attempt was made to collect data from a random sample of adults, the majority of the respondents were from the San Juan metro area and so may not completely represent the entire population.

In conclusion, this study provides new data that were not previously available in Puerto Rico. Further research is needed to measure the knowledge and perceptions of e-cigarettes and the motivations for their use in young adults aged 18 to 20. These results show there is a deficit of knowledge in regard to e-cigarettes and their use as a smoking-cessation aid. Of particular concern is the knowledge deficit regarding the nicotine content of e-cigarettes and the perception that e-cigarettes are less addictive than conventional cigarettes are, which deficit is specifically noted in those who have never used conventional cigarettes. Such knowledge deficits may contribute to increases in the use of e-cigarettes in the future. In fact, as new data suggest that e-cigarette use is continuing to rise, educational outreaches from public health officials and healthcare professionals alike would do well to address these knowledge deficits and perceptions.

### Resumen

**Objetivo:** La concientización y el uso de los cigarrillos electrónicos han aumentado en los últimos años. La Organización Mundial de la Salud declaró recientemente que se necesitan reglamentaciones para impedir la promoción y las alegaciones de salud no probadas, minimizar los posibles riesgos para la salud de los usuarios y no usuarios de cigarrillos electrónicos, y proteger los controles de tabaco existentes. El propósito de este estudio fue medir el conocimiento, la percepción y la motivación sobre el uso de cigarrillos electrónicos entre adultos en Puerto Rico. **Métodos:** Este estudio de investigación utilizó un cuestionario validado con preguntas cerradas para reunir datos. Se utilizaron estadísticas no inferenciales e inferenciales para caracterizar a los fumadores (de los cigarrillos electrónicos, de los cigarrillos convencionales y de ambos) y a los no fumadores. **Resultados:** Participaron de le encuesta 415 personas distribuidas uniformemente por género, edad y estado socioeconómico. El conocimiento general de los cigarrillos electrónicos era alto. Los encuestados declararon que los cigarrillos electrónicos no contienen nicotina (cuando sí contienen) o no sabían si tenían nicotina (64%) y que los cigarrillos electrónicos no están regulados (los cuales sí están) como productos de tabaco o no sabían (84%). Se percibe que los cigarrillos electrónicos son perjudiciales para la salud y no son menos dañinos que los cigarrillos tradicionales. Se percibe que

los cigarrillos electrónicos son menos adictivos. Sin embargo, una parte significativa de los encuestados percibió que los cigarrillos electrónicos son menos adictivos que los cigarrillos convencionales. En general, los encuestados estaban divididos sobre la eficacia de los cigarrillos electrónicos para dejar de fumar. No obstante, la motivación más común para su uso, de acuerdo con los usuarios actuales y potenciales usuarios futuros es ayudar a dejar de fumar o dejar de fumar. Conclusión: La mayoría de las personas encuestadas conocían los cigarrillos electrónicos, pero tenían un conocimiento limitado de su contenido o regulación. El uso del cigarrillo electrónico para ayudar a cesar fue la motivación más comúnmente mencionada para el uso del cigarrillo electrónico.

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