USE OF ELECTRONIC CIGARETTES BY BIOLOGY STUDENTS AT A PRIVATE UNIVERSITY IN ANÁPOLIS, GOIÁS

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ABSTRACT

Electronic cigarettes (EC) were introduced to the market with the main objective of being a replacement option for conventional cigarettes, promoting the idea that they are less harmful to health and less addictive. However, these devices are associated with Electronic Vaping-Associated Lung Injury (EVALI), which is highly harmful to health, in addition to their widespread use and ease of access today. This study aimed to evaluate the use of electronic cigarettes by university students in the biological sciences at a private university in Anápolis, Goiás. This is a quantitative descriptive study, with the application of an online questionnaire to university students in the biological sciences who agreed to participate in the study and signed a free and informed consent form (FICF). The sample obtained revealed that 10% of respondents were EC users, in addition to 16.25% who were users of other types of cigarettes. Among EC users, the majority identified themselves as female, aged between 18 and 24 years old, with a very low degree of dependence, and the use of the devices was closely associated with socializing and moments of relaxation. Despite the low rates of EC users identified, due to the severity of lung damage caused by ECs, it is still important to develop strategies to raise awareness about the possible negative effects of electronic cigarettes, in addition to debunking possible false ideals about their use.

Keywords: Electronic Nicotine Delivery Systems; Smoking; Odorants.

INTRODUCTION

Electronic cigarettes (EC) were initially introduced as an alternative to conventional cigarettes, since smoking is considered a major public health problem worldwide (WHO, 2011; BERTONI *et al*., 2021). These cigarettes were introduced to the market with the possibility of different flavors and aromas, which is a major attraction for the product, carrying with it a false idea of lower harmful content, lower risk of addiction, and the possibility of being used without nicotine (REYES *et al.,* 2020).

Regarding marketing and access in Brazil, the use, promotion, and marketing of CE are prohibited by RDC 46/2009, of the National Health Surveillance Agency (ANVISA, 2009). However, these products are still sold illegally on the internet or in informal markets, and

great ease of access to the product, especially among younger people (BARUFALDI *et al*., 2021). Over time, these devices have been shown to cause lung injury associated with the use of electronic cigarettes (EVALI), which, despite being a recent discovery, manifests itself in different ways, with the main symptoms being respiratory, ranging from dyspnea to hypoxia, constitutional, and gastrointestinal (KALININSKIY *et al.*, 2019; BLOUNT *et al.*, 2019).

Thus, it is important to take action among the population and warn about the possible negative effects of electronic cigarettes, in addition to debunking any false beliefs about their use. The present study therefore aimed to evaluate the use of electronic cigarettes by biology students at a private university in Anápolis, Goiás.

METHODOLOGY

This is an observational, descriptive, quantitative study conducted at a private university in Anápolis, Goiás, with a population composed of students enrolled in the university's biological sciences programs who agreed to participate in the study and sign the informed consent form.

In 2022, there were 581 students enrolled in the biological sciences, including agronomy, biological sciences, and veterinary medicine. Therefore, a sample calculation was performed to predict the use of electronic cigarettes (dependent variable) in relation to areas of education (independent variable), adjusted for gender and age, with a medium effect size of 0.5, a significance level of 5%, and a sample power of 80%, in addition to 20% for losses. The calculation, performed using G*power software (version 3.1.9.7), found a minimum of 59 students who should be analyzed in the study.

The research is supported by Resolution 466/2012 of the National Health Council, which establishes the criteria for research involving human beings. The project was submitted for ethical review by the CEP of Uni EVANGÉLICA and received approval number 5,998,357. The data were collected through the application of a virtual questionnaire made available by scanning a QR code and

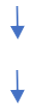
link (Google Forms link – https://forms.gle/v6UMJAHuB1TZ5VVu9. The Fargeström Test was also presented, adapted to the context of electronic cigarettes, to enable analysis of the degree of dependence of EC users. At the end of the questionnaire, an educational booklet was made available to disseminate important information about the use of electronic cigarettes and their risks.

Finally, the questionnaire data were provided by Google Forms in a Microsoft Office Excel spreadsheet file® . These data were processed using descriptive statistics in the form of absolute and relative frequencies and presented in tables.

RESULTS

Among the results, 80 responses were collected from UniEVANGÉLICA students in this survey. All were answered correctly, with no questionnaires needing to be excluded. The results obtained showed that 59 students do not use any type of cigarette, but may have used them at some point in their lives, 0 have never smoked, 13 smoke other cigarettes, and only 8 use CE (flowchart 1).

Flowchart 1. Flowchart of the number of research participants.



Source: authors, 2024.

After data collection, it was found that 10% of students in biological science courses smoke electronic cigarettes, and these students were considered the sample universe for this study, despite the evidence. Among the results, 62.5% are male, 62.5% identify as white, and 50% of EC users are between the ages of 18 and 20, with the other 50% between the ages of 21 and 24. In addition, half of the sample is single (50%), while the other half is dating (50%). Most have an income greater than eight minimum wages (37.5%), and half of the sample does not work.

Regarding the distribution of student EC users, it was found that 4 students (50%) are enrolled in Agronomy, and the other 4 students (50%) are enrolled in Veterinary Medicine, with no student users identified in the Biological Sciences program.

With regard to the dependence of students who use electronic cigarettes, most have a very low dependence (50%), with the main motivating factor being that they enjoy using them and the sensation they provide (75%). It was also observed that most students use ECs at parties and bars (62.5%), accompanied by other people (75%) (Table 1).

TABLE 1: Analysis of electronic cigarette use, socialization, and degree of dependence.

Degree of dependence (Adapted Fargeström test)	**n**
Very low (0-2)	4
Low (3-4)	3
Average (5)	0
High (6-7)	0
Very high (8-10)	1 (12.5)
Reason for use	
Addiction	2
Anxiety	0
Depression	0
Relaxing	0
Likes	6
Influential	0
Others	0
Place where you smoke most	
At home	1
Parties/bars	5
At university	2
Work	0
All of the above	0
When smoking	
With other people	6 (75)
Alone	2
Uses incense sticks	
Yes	8
No	0

Source: authors, 2024.

CONCLUSION

It was concluded that student users were mostly female, aged between 18 and 24, white, single, with an average income of

more than eight minimum wages, with the same number of students who work and do not work while using CE. Most users showed a very low degree of dependence, according to the adapted Fargeström Test, with use in bars and parties, accompanied by other people.

It should also be noted that even with a relatively low percentage of EC users, awareness and dissemination of information about these devices remains important, given the severity of lung damage that this habit can cause. The importance of developing strategies to raise awareness about the negative effects of electronic cigarettes, in addition to demystifying possible untrue ideals about their use, should be emphasized.

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