



Awareness on Nicotine Gums among Undergraduate Dental Students

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Authors' contributions

This work was carried out in collaboration among all authors. Author DL designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author DG managed the analyses of the study. Author LKS managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2020/v32i1730681

Editor(s):

(1) Dr. Pone Kamdem Boniface, University of Sao Paulo, Brazil.

Reviewers:

(1) Shireen Jawed, Journal of Aziz Fatima Medical and Dental College, Pakistan.

(2) Bruno Chrcanovic, Malmö University, Sweden.

(3) Dwi Putri Wulansari, Hasanuddin University, Indonesia.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/59767>

Original Research Article

Received 28 May 2020
Accepted 04 August 2020
Published 25 August 2020

ABSTRACT

Background: The use of tobacco by smokers contributes to the increase of the number of deaths worldwide. According to WHO, nearly 4 million deaths are recorded annually, and 10 million are expected by 2030. Cigarette smoke contains more than 4000 chemicals and the foremost nicotine replacement therapy (NRT) is by chewing gum. The nicotine resin is obtained from a buffered chewing gum base. Those nicotine chewing gums enable nicotine to be immediately absorbed by means of the buccal mucosa, which in turn causes a plasma concentration that is half that produced by way of smoking a cigarette. The gum has numerous strengths and it can be used both after scheduled periods or maybe taken while needed.

Purpose: To assess the awareness of nicotine gums among dental students.

Materials and Methods: A self-administered questionnaire with 10 questions eliciting responses regarding the awareness of nicotine gums was prepared and circulated to 100 dental students after obtaining informed consent. The responses were collected and analyzed.

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Results: The data were analyzed using SPSS software version 20 and results were expressed as percentages. 75% of the participants were aware of nicotine gums. 43% said nicotine absorption from the gum is predominant in the mouth and 38 % said it is from gastric mucosa.

Conclusion: In summary, nicotine gums awareness among dental students is a moderate fact, and efforts to improve this are required.

Keywords: Dental students; smoking; cure; nicotine gums; survey.

1. INTRODUCTION

The use of tobacco by smokers contributes to the increase in the number of deaths worldwide. According to WHO, nearly 4 million deaths are recorded annually, and 10 million are expected by 2030. Cigarette smoke contains more than 4000 chemicals and the foremost nicotine replacement therapy (NRT) is by chewing gum [1]. Smoking is one of the most important and preventable cause of morbidity and premature mortality in the developed and developing world. The overall smoking rate in the US has slowly diminished over the past 40 years, transforming the habit from a cultural centerpiece to a target of social exclusion. Several states have taken bold action to protect residents from the well-known and extensively documented adverse effects of using tobacco products [2].

Cigarette smoking, independently and synergistically with other risk factors such as hypertension and hypercholesterolemia, contributes to the development and promotion of the atherosclerotic process. The previous studies have shown that the risk of developing oral and lung cancer increases with the number of cigarettes smoked per day, the total number of smoking years, and the age of initiation, thus indicating a dose-related response. In contrast, cessation of smoking is reported to reduce mortality and morbidity from the atherosclerotic vascular disease [3]. Among the nicotine replacement therapy, chewing gum is the foremost therapy to overcome the nicotine effects. The nicotine resin is obtained from a buffered chewing gum base and enables nicotine to be immediately absorbed through the buccal mucosa, which in turn causes a plasma concentration half of that produced by way of smoking a cigarette. The gum has numerous strengths and it can be used both after scheduled periods or maybe taken while needed [4].

The chewing gum is one of the new methods of oral transmucosal drug delivery and is a useful tool for systemic drug delivery. Advantages of chewing gum over conventional drug delivery

systems include Rapid onset of action, high bioavailability, easy consumption without the need for water, higher patient compliance, and fewer side effects like dry mouth and decrease in toxicity. Formulations of medicated chewing gums may include active components, gum base, filler, softeners, sweetening agents, flavoring agents, and emulsifiers [1]. Smokers who are addicted to chewing gums have been shown to improve their chances of achieving abstinence with the 4-mg than the 2-mg gum. After a few weeks or months, the number of doses per day is reduced gradually until it is no longer required. Acidic beverages have been shown to interfere with the buccal absorption of nicotine; therefore, patients should avoid acidic beverages for 15 minutes before and during chewing gum [5]. Since nicotine can be addictive, there is a possibility that people who don't use tobacco may become addicted to NRT products. There is, to our knowledge, no published case of addiction to NRT products in non-smokers or in people who don't use tobacco. Among former smokers who used the nicotine gum to quit smoking, the prevalence of dependence on the gum is very low, about one percent [6].

Previously our department has published extensive research on various aspects of prosthetic dentistry [7–17], this vast research experience has inspired us to research about Awareness on nicotine gums among undergraduate dental students. The aim of this study was to determine the awareness nicotine gums among undergraduate dental students.

2. MATERIALS AND METHODS

The study design was a cross-sectional survey done among undergraduate dental students in Saveetha University, Chennai, India. The participants included 40 male and 60 female students. A simple random sampling method was done to identify the participants. A self-administered questionnaire with 10 open-ended questions eliciting responses regarding the awareness of nicotine gums was prepared and circulated to 100 dental students. The responses were collected and analyzed.

3. RESULTS AND DISCUSSION

The proportion of non-smokers and people who do not use tobacco among regular nicotine gum users is unknown and, contrary to what many people believe, this proportion may not necessarily be zero [18]. The precautions taken while using nicotine gums are: It is advised not to chew two pieces of gum at the same time. It is unsafe to use more than the prescribed number of chewing gums or unsafe side effects that may happen. If not under supervision it is advisable to not chew more than 24 pieces of 2 mg gum in a day. Nicotine gum is not to be swallowed. It is contraindicated to eat or drink within 15 minutes before using the gum, or while you are using it [19]. The dose of nicotine appears to be an important factor for the efficacy of NRT in the treatment of tobacco dependence. A study explains that a 25 mg nicotine patch was superior to both and a 15 mg patch with regards to 12-month smoking cessation rates. In real life, patients may not use enough doses of oral NRT per day to get the maximum benefit, and underdosing has long been discussed as a problem that results in suboptimal treatment effect [20]. Tobacco smoking increases the risk of

contracting a wide range of diseases, many of which are fatal. Discontinuing smoking at any age is beneficial compared with continuing to smoke. For some diseases, the risk can be reversed while for others the risk is approximately frozen at the point when smoking stopped [21].

From Fig. 1 when the participants were asked which way they prefer to stop smoking about 40% says nicotine gums and 55% says exercises and 5% says other ways. In Fig. 2 when the subjects were asked about if they smoke or know someone who smokes 30% say yes where 70% say no. In Fig. 3 when they were asked how they get to know about nicotine gums 20% says from books 67% says by advertisement and 13% says others. In Fig. 4 when they were asked if they are aware of nicotine gums 75% says yes where 25% says no. In Fig. 5 when they were asked where the nicotine gums are absorbed mostly 43% say mouth, 38 % say stomach, and 19 % say lungs. In Fig. 6, the participants were asked if they were aware that the nicotine gums are banned in Haryana 19% said yes where 81% said no.

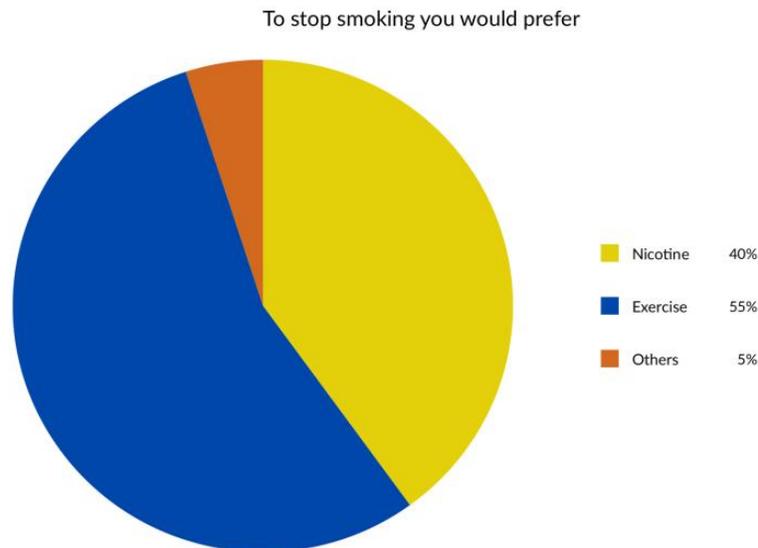


Fig. 1. The pie chart depicts the preference of the participants to stop smoking. When they were asked Which way they prefer to stop smoking about 40% say nicotine gums (yellow) and 55% say exercise (blue) and 5% say other ways (orange). The majority of the population prefers exercise over nicotine gums

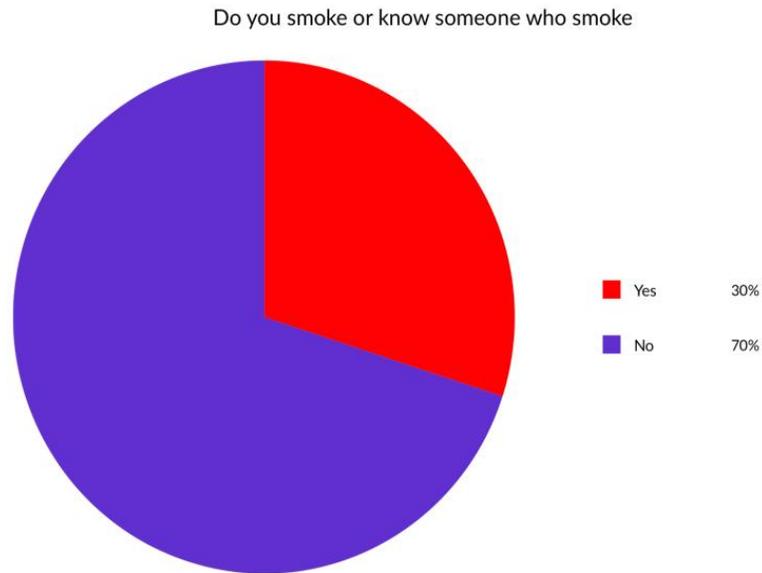


Fig. 2. The pie chart depicts the weather the participants smoke or know someone who smokes. When the subjects were asked about if they smoke or know someone who smokes 30% say yes (red) where 70% say no (purple). The majority of the populations say No

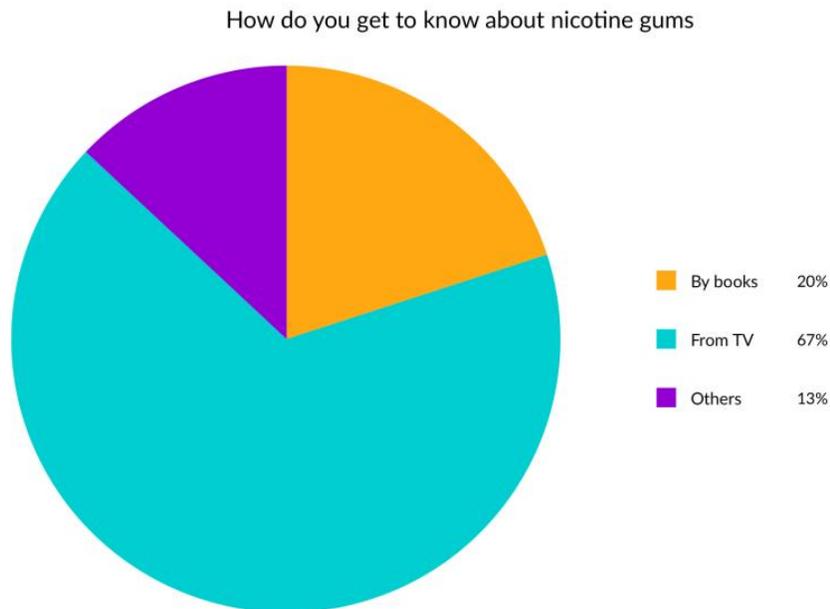


Fig. 3. The pie chart depicts what means the participants got to know about nicotine gums. When they were asked how they got to know about nicotine gums 20% said from books (orange) 67% said by advertisement (artic blue) and 13% said others (purple). The majority of the population say from TV advertisement

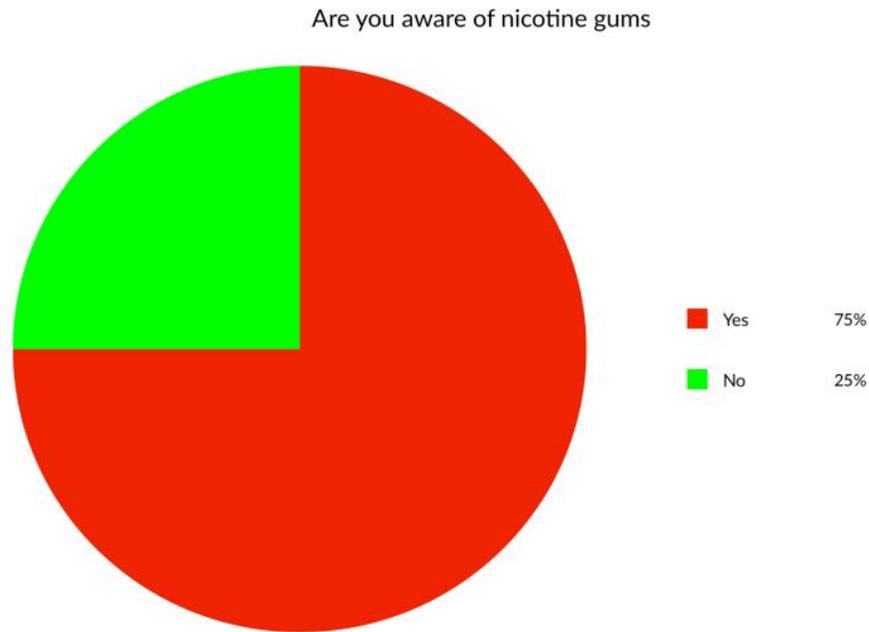


Fig. 4. The pie chart depicts if the participants are aware of nicotine gums. when they were asked if they are aware of nicotine gums 75% says yes (red) where 25% says no (green). The majority of the population say Yes

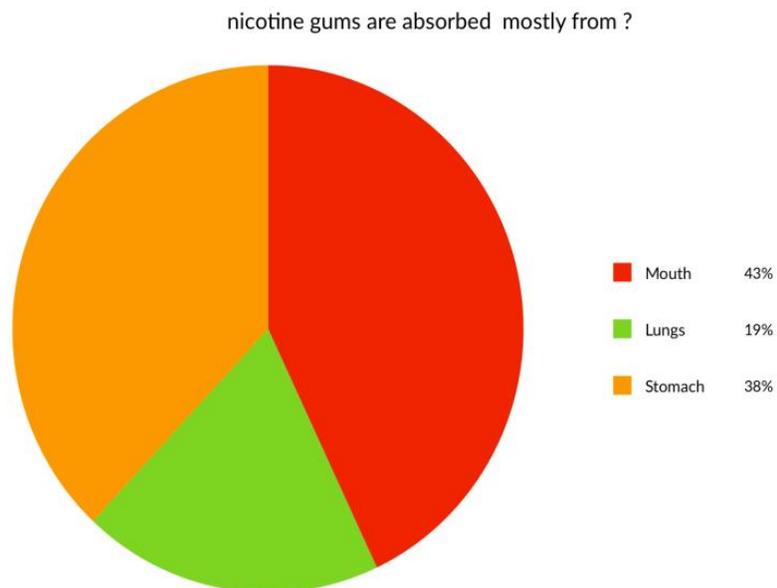


Fig. 5. The pie chart depicts where the nicotine gums are absorbed mostly. When they were asked where the nicotine gums are absorbed mostly 43% say mouth (red), 38% say stomach (orange), and 19 % say lungs (green). The majority of the population say oesophagus

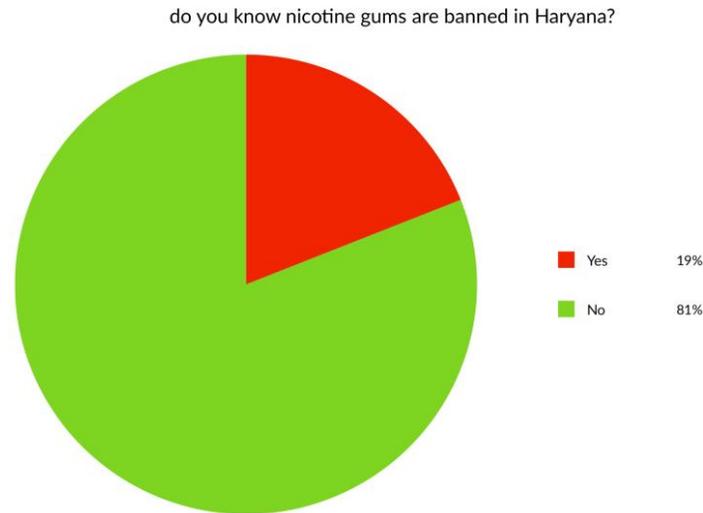


Fig. 6. The pie chart depicts if the participants are aware that the nicotine gums are banned in Haryana. The participants were asked if they were aware that the nicotine gums are banned in Haryana 19% said yes (red) where 81% said no (green). The majority of the population say No

In the study done by Reed in 2005, 95% of the participants were aware of the nicotine gums, its uses, and beneficial effects [19] whereas in our study 75% of the population was only aware of nicotine gums. This small variation in the study might be because the study done among the smoker's population and this study was done among dental students and the sample size of the previous study done was more than the present study which may have affected the results. In one study done, the majority of responses opted that nicotine is delivered into the oral cavity (36%) and in the oesophagus and stomach (36%), Very little nicotine is delivered to the lung (4%) [22], in contrast, the respondents in this study opted nicotine gums are absorbed mostly 43% through the mouth , 38 % opted stomach and 19 % opted lungs. There is a variation in the study because both the study is done in different populations which may affect the study. In a study done by Sunil Lingaraj Ajagannavar in 2015, Almost 63% of the students were aware about NRT terms whereas in our study as mentioned 75% of the population were aware of nicotine gums. The results are almost the same because both the studies are done among dental students but in different parts [23]. In the study done by Ellis Owusu-Dabo in 2011, 65% of the survey population were aware that nicotine gums were banned in Singapore whereas in Our study majority of the population (81%) were not aware that nicotine gums are

banned in Haryana [24]. Daniel Du developed a new mint-flavored nicotine gum with modified taste and texture is bioequivalent to the original flavor sugar-free nicotine gum at both the 2 and 4 mg dosage strengths and has a similar safety profile [25]. Some e-cigarette users were dependent on nicotine-containing e-cigarettes, but these products were less addictive than tobacco cigarettes. E-cigarettes may be as or less addictive than nicotine gums, which themselves are not very addictive [26].

The limitation of our study is the less sample size, response bias, and survey fatigue. It is also done in a homogenous population which may mislead the responses. The future scope of this study is to explore in more detail the nicotine gums and personality, commitment, and satisfaction and the research can be utilized to inform strategies for individual and organizational efficiency, evaluation, and formulation of industrial standards.

4. CONCLUSION

The survey concluded there are moderate levels of awareness among dental students about nicotine gums and it needs to be improved. More intensive continuing education and awareness programs need to be initiated to further enhance the knowledge and awareness among the students.

CONSENT AND ETHICAL APPROVAL

Ethical clearance was obtained from the Institutional Review Board (SU/SDC/IEC/084/20). Informed consent was obtained from all the participants.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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