iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** IX **Month of publication:** September 2020

DOI: https://doi.org/10.22214/ijraset.2020.31357

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IX Sep 2020- Available at www.ijraset.com

Electronic Cigarettes (Vaping) preferences among University Students in Bangladesh

Md. Mehedi Hasan[1], Md. Shahjahan Ali Sarker[2], KHM Nazmul Hussain Nazir[3], Md. Bahanur Rahman[4], Md. Asaduzzaman Sarker[5], Md. Ismail Hosen[6], Md. Reazul Hasan[7], Taslima Nasrin[8]

[1]*Department of Narcotics Control, Security Services Division, Ministry of Home Affairs, The People's Republic of Bangladesh*
[2, 3, 4]*Bangladesh Agricultural University, Department of Microbiology & Hygiene, Bangladesh*
[5]*Bangladesh Agricultural University, Department of Agricultural Extension Education, Bangladesh*
[6]*University of Dhaka, Department of Biochemistry & Molecular Biology, Bangladesh*
[7]*University of Development Alternative, Department of Pharmacy, Bangladesh*
[8]*Manarat International University, Department of Business Administration, Bangladesh*

Abstract: Introduction: The use of electronic cigarettes has increased rapidly around the world, but the situation was unknown in Bangladesh. For that, the aim of this study was to measures the prevalence of Electronic Cigarettes.
Methods: A cross-sectional study was made among university students. An online survey with questions on smoking habits, the experience of e-cigarettes, availability, and attitudes toward 408 respondents
Results: The results of the study showed that 31.27 % of respondents were familiar with e-cigarettes and had taken it at least once in their lives, 29.31% said it was readily available in their area and a significant portion of respondents (63.05%) said they did not know of any harmful or beneficial effects. Although 35.48% of the respondents said that smoking e-cigarettes have caused them to become addicted to themselves or the people around them.
Conclusion: It undoubtedly gives us a terrible message that E-cigarettes have penetrated in our young generation Whether it is moving in the right direction or not is a matter of research. It can be explored through in-depth studies.
Keyword: Electronic cigarettes, Prevalence, University student, Bangladesh
Implications: The Department of Narcotics Control is the regulatory body of the Government of Bangladesh. The influx of new drugs and its level of impact on the people is useful information for them. Also, for researchers who want to work in this field, this study may be generate an idea and future direction.

I. INTRODUCTION

Electronic cigarette (e-cigarette) is one type of electronic nicotine delivery systems (ENDS) that emits a vaporized solution to inhale. It is a battery-powered gadget that operates by heating a liquid into an aerosol that the user inhales and exhales.[1-3]. The liquid typically comprises nicotine, propylene glycol, glycerin, flavorings, and other chemicals. It is a new class of electronic nicotine delivery system, introduced in 2004.[2,4,5] The global market for e-cigarettes was worth $15.7 billion in 2018, according to data from Euromonitor International, and is projected to more than double to $40 billion in 2023.[6] Many researchers and public health experts have acknowledged that ENDS are less dangerous than conventional cigarettes because they do not contain more than 60 well-established carcinogens like polycyclic aromatic hydrocarbons, N-nitrosamines, aromatic amines, aldehydes, and metals, but research into the harms that e-cigarette ingredients can do to the human body is still underway.[7-9] In a recent World Health Organization report, Global Tobacco Epidemic-2019, it has identified the e-cigarette as harmful for health.[10] Commercially available e-cigarettes are marketed with different levels of nicotine, and the distribution of inhaled levels have remained unclear.[11,12] E-cigarettes require higher levels of suction to smoke than conventional cigarettes, and the amount and density of aerosol produced by e-cigarettes diminish progressively as puffs are taken. The total level of nicotine in 15 puffs of vapor generated e-cigarettes by an automatic smoking machine varied from 0.5 to 15.4 mg whereas the typical level of nicotine from one smoked conventional cigarette ranges from 1.54 to 2.60 mg. A review of various research articles shows that young people in developed countries like Europe and America are more inclined towards these.[13,14] Research by the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA) in the USA has found that the use of electronic tobacco products among school-going teens increased by 78% in the last one year.[15,16] The results of their research give us an indication of an alarming situation. Since Bangladesh's culture is influenced by the western countries and it is much more especially observed among the young society. The country currently has no proper statistics on how many people are consuming e-cigarettes and heated tobacco products. DHAKA

©IJRASET: All Rights are Reserved

Tribune a popular newspaper published news on October 3, 2019, heading "Government considering banning e-cigarettes". The government is now considering banning three categories of nicotine products in the country, including e-cigarettes, considering their adverse effect on public health and individuals.[17] Global Center for Good Governance in Tobacco Control (GGTC) mentioned that 41 countries including Sri Lanka, India, and Thailand have already banned e-cigarettes, and the Medical Education and Family Division Secretary of Bangladesh has said: "We have made the best use of global experience." But there has been no such survey or study in Bangladesh where an idea of the extent of e-cigarette addiction or use is found.[17] So a short-term research survey was conducted on how young students of our country's universities, like their school-college students, know about e-cigarettes or how many of them are familiar with it or have developed an addiction to it. The survey was also an attempt to understand how e-cigarettes are being spread by online shops, super malls, friends, relatives, or family members. As a result, the knowledge, experience, and vision of the university students who will lead future Bangladesh will be understood toward e-cigarettes.

II. METHODS

A cross sectional study was made by a semi structured questionnaire among the university student of Bangladesh form April to June 2020. At that time Educational institutions in Bangladesh were closed due to the outbreak of pandemic Covid 19. Due to which it was decided to conduct online survey. For that we were using KoBoToolbox (Harvard Humanitarian Initiative). It was a suite of tools for field data collection for use in challenging environments. This software was free and open source and recognized all parts around the world. Online-only (once per respondent) mode was used for this survey. This allows your web form to only be submitted once per user, using basic protection to prevent the same user (on the same browser & device) from submitting more than once. University students were given a link to the survey form by collecting the mobile number through mutual communication which they provide the survey on-line. The link was https://ee.humanitarianresponse.info/x/P41a6vvs. Students fill up online survey forms at their convenience. We just give them a deadline. After receiving our required number of completed survey forms, we end up the survey work. And save the information obtained from this survey for further analysis.

A. Sample Size Determination

Sample size for this survey was determined using simple random method according to Thrusfield, 2009.[18] In mathematical notation: $n = Z^2\ p\ (1 - p)/d^2$, where n represent the required sample size; Z^2, the Z-score at 95% confidence interval or 1.96; p represented standard deviation. taken a safe choice of standard deviation 0.5 and d, the margin of error. Here, we chosen a 95% confidence level, .5 standard deviation, and a margin of error (confidence interval) of +/- 5%. so, the sample size of 385 was calculated. After further inflation to 5% to account for other errors, a total number of 405 matched triplets were estimated to be the final sample size.

B. Data Management and Analysis

Survey data was exported in Excel worksheets format and descriptive statistics and regression analysis was carried out using Microsoft Excel® tools. 95% confidence interval was used to determine P value through regression analysis.

C. Ethical Issues

The survey questionnaires were prepared in such a way that no respondent was embarrassed

As well as protecting the privacy of the respondents has been given priority. There was an option in the answer to each question so that the respondent could choose that option if he did not want to answer. On the other hand, it was assured that no harassment would be allowed by the law enforcement agencies. Since all the respondents are university students, the questionnaire was prepared in English. As all the respondents were above 18 years of age, there was no obligation to get the consent of the parents. In addition, the consent of each of them has been taken before giving the answer.

III. RESULT

Analyzing the results of the survey, it is seen that a total of 408 respondents participated in the survey. Out of which female respondents were 54.19 percent and male respondents were 45.61 percent. From the religious point of view, 81.27 percent of the respondents were Muslims, 10.1 percent Hindus, 5.17 percent Christians and the remaining 3.45 percent Buddhists. Respondents' religion information is shown in Figure 1. Considering the profession of guardians, 30.05 percent of the respondents 'guardians were in business, 26.7 percent of the respondents' guardians were employed in private sector, 20.69 percent of the guardians were employed in technical profession, 8.39 percent of the guardians were employed in government agencies, 14.03 percent of the respondents were landlord and the remaining 1.46 percent was in other occupations.

©IJRASET: All Rights are Reserved

Detailed information of the parents of the respondents is shown through Figure 2. Of the respondents, 81.1 percent had their homes in urban areas, 15.6 percent had semi-urban houses and 8.75 per cent had their homes in rural areas. 36.45 percent of the respondents had monthly family income between BDT. 75,000 to BDT. 100,000, 31.53 percent of the respondents had family income above BDT 100,000 and 19.7 percent of the respondents had family income between BDT 50000 to BDT 75000 And the remaining 10.84 percent respondents monthly family income was less than BDT 50,000. Analyzing the smoking history data, it was found that 56.37 percent respondents were not involved in smoking at all, 23.4 percent respondents smoked occasionally and 16.24 percent respondents smoked regularly only 0.64 percent respondents did not agree to respond in this question. Of those who smoked regularly or occasionally, 38.7 percent preferred conventional cigarettes and 24.37 percent preferred electric cigarettes, while the remaining 55.6 percent refrained from answering the question. They seem to have thought the question was a private matter that they did not want to reveal. A large proportion of respondents were unfamiliar with e-cigarettes and it was about 67.98 percent. on the other hand, 31.27 percent of respondents were familiar with e-cigarettes and had taken it at least once in their lives.

When asked if e-cigarettes are readily available in the area, 59.71 percent said they had no idea. 29.31 percent said it was readily available in their area and only 10.74 percent said it was not readily available in their area. Respondents who were familiar with e-cigarettes were asked by whom they first found e-cigarettes, but most respondents (60.34 percent) refrained from answering. Of the rest, 20.2 percent said it was from their friend circle, 8.17 percent said it was from super shopping malls, 4.6 percent said it was due to online marketing, 1.97 percent said it was from family members and 1.48 percent said it was through other means.

When asked if they knew of the harmful effects of e-cigarettes, a significant portion of respondents (63.05 percent) said they did not know of any harmful or beneficial effects.

When asked if they knew of the harmful effects of e-cigarettes, a significant portion of respondents (63.05 percent) said they did not know of any harmful or beneficial effects. A total of 26.84 percent of the respondents more or less agreed that e-cigarettes can have harmful effects while the remaining 9.11 percent of the respondents thought that e-cigarettes have no harmful effects. On Gender wise statistical analysis showed that there was a significant difference ($P<0.05$) in the history of smoking between men and women, e-cigarette experience, and the availability of e-cigarettes. on the other hand, considering the experience and harmful effects of e-cigarettes, there was no significance difference ($P>0.05$) between men and women. Details are shown in table 1. Respondents who thought e-cigarettes were harmful said they had sweatiness, headache, vomiting, feeling sick, aching jaws, throat irritation, difficulty breathing, inflammation or itching in the mouth or respiratory tract, increased risk of cancer, addiction, and depression. On the other hand, those who commented that e-cigarettes were good, noted their fragrance, has helped to stop traditional smoking, satisfied them, cough improved, breathing has improved and also symbol of smartness and aristocracy. Respondents' comments about e-cigarettes are given in detail in Figure 2. However, 35.48 percent of the respondents said that smoking e-cigarettes has caused them to become addicted to themselves or the people around them. It undoubtedly gives us a terrible message that can be explored through in-depth studies.

IV. DISCUSSION

The main objective of this study was to assess the prevalence, perception and views on e-cigarettes among university students. It is difficult to compare the results of such work as it is completely new for Bangladesh. However, since Western culture has a significant impact on our young society, the idea that e-cigarettes have infiltrated our young society.[19,20] Our research finding also favor that it infiltrated our university students. In the case of the survey, the ratio of students to their religious beliefs was similar to that of Bangladesh Education Statistics 2016.[21] Comparing the ratio of women to men in higher education, it can be seen that in some cases, women have made significant progress.[22] Our study also revealed that the number of responses was higher for women than men. According to some statistics, the present presence of women in higher education in Bangladesh is 54.23%.[22,23] Our study found that the number of female respondents was about 54.19% which is close to the conventional statistics. Our study also reflected a picture of urban - rural education. It was found that about 81.1% of the respondents had their homes in Urban. It could also be that the survey we conducted was based on online where there should be internet access. Because of this, the number of urban participants was higher. A review of smoking history found that only 16.24 percent of respondents smoked regularly. Due to the predominance of Muslim population in Bangladesh, religious discipline has played a major role in controlling this number.[24] Smoking is now looked down upon by society. Society and the family view smoking as bad. That is why the number of regular smokers in Bangladesh is so low.[25,26] On the other hand, being a close-knit family, most of the students depend on their parents for their tuition fees. That is why the likes and dislikes of the parents also have an effect on the personal behavior of the students. As a result, working people are more addicted to smoking than educated people. 67.98 percent of respondents said they were not familiar with e-cigarettes, while those who regularly or irregularly smoker, they were preferred to traditional cigarettes than electric cigarettes. These figures supported each other.

©IJRASET: All Rights are Reserved

If there was any research on this in Bangladesh, we would be able to make a comparison with our research, but we do not have any such data. When it comes to the e-cigarette market, most of our respondents (59.71%) said they don't know where to find it. Only 29.31 percent said they knew where it was found or that it was in their area. Since the promotion of smoking is legally prohibited, it is normal for them to remain unaware. Since it is a new thing, it is supposed to be unknown to any common man. Our research has revealed that most of the respondents here (63.05%) have no clear idea about it. They could not decide whether it would do any harm or benefit. The kind of difficulty that was seen in e-cigarette smokers e.g. sweatiness, headache, vomiting, feeling sick, aching jaws, throat irritation, difficulty breathing, inflammation or itching in the mouth or respiratory tract, increased risk of cancer, addiction, and depression. These symptoms are similar to those reported in countries where e-cigarettes were studied.[8,27-30]

V. CONCLUSION

Although this is a short-range survey, it was easy to get an idea of the status of e-cigarette in Bangladesh, especially among university students. It undoubtedly gives us a terrible message that E-cigarettes have penetrated in our young generation Whether it is moving in the right direction or not is a matter of research. It can be explored through in-depth studies.

A. Funding

Authors' own funds were used for this purpose. No grants were received from any government or non-government organization

B. Declaration of Interest

The authors declare no conflict of interest.

C. Acknowledgement

Authors would like to thank all the respondents who gave their time and their own opinion to complete the survey form. we would also like to thank the Kobo authorities for making their online service available to everyone. We would like to thank the senior authorities of the Department of Narcotics Control for inspiring us with their views, courage and enthusiasm.

REFERENCES

[1] Leigh NJ, Lawton RI, Hershberger PA, et al. Flavourings significantly affect inhalation toxicity of aerosol generated from electronic nicotine delivery systems (ENDS). Tobacco control. 2016;25(Suppl 2):ii81-ii7.
[2] Regan AK, Promoff G, Dube SR, et al. Electronic nicotine delivery systems: adult use and awareness of the 'e-cigarette'in the USA. Tobacco control. 2013;22(1):19-23.
[3] Huang J, Tauras J, Chaloupka FJ. The impact of price and tobacco control policies on the demand for electronic nicotine delivery systems. Tobacco control. 2014;23(suppl 3):iii41-iii7.
[4] Marsot A, Simon N. Nicotine and cotinine levels with electronic cigarette: a review. International journal of toxicology. 2016;35(2):179-85.
[5] Etter J-F, Bullen C, Flouris AD, et al. Electronic nicotine delivery systems: a research agenda. Tobacco control. 2011;20(3):243-8.
[6] Giovenco DP, Hammond D, Corey CG, et al. E-cigarette market trends in traditional US retail channels, 2012–2013. Nicotine & Tobacco Research. 2014;17(10):1279-83.
[7] Pepper JK, Brewer NT. Electronic nicotine delivery system (electronic cigarette) awareness, use, reactions and beliefs: a systematic review. Tobacco control. 2014;23(5):375-84.
[8] Pearson JL, Richardson A, Niaura RS, et al. e-Cigarette awareness, use, and harm perceptions in US adults. American journal of public health. 2012;102(9):1758-66.
[9] Drope J, Cahn Z, Kennedy R, et al. Key issues surrounding the health impacts of electronic nicotine delivery systems (ENDS) and other sources of nicotine. CA: a cancer journal for clinicians. 2017;67(6):449-71.
[10] Organization WH. WHO report on the global tobacco epidemic 2019: Offer help to quit tobacco use. 2019.
[11] Callahan-Lyon P. Electronic cigarettes: human health effects. Tobacco control. 2014;23(suppl 2):ii36-ii40.
[12] Chun LF, Moazed F, Calfee CS, et al. Pulmonary toxicity of e-cigarettes. American Journal of Physiology-Lung Cellular and Molecular Physiology. 2017;313(2):L193-L206.
[13] Goniewicz ML, Kuma T, Gawron M, et al. Nicotine levels in electronic cigarettes. Nicotine & Tobacco Research. 2013;15(1):158-66.
[14] Czogala J, Goniewicz ML, Fidelus B, et al. Secondhand exposure to vapors from electronic cigarettes. Nicotine & tobacco research. 2014;16(6):655-62.
[15] Chun J, Yu M, Kim J, Kim A. E-Cigarette, Cigarette, and Dual Use in Korean Adolescents: A Test of Problem Behavior Theory. Journal of Psychoactive Drugs. 2020;52(1):27-36.
[16] Lopez A, Eissenberg T, Jaafar M, Afifi R. Now is the time to advocate for interventions designed specifically to prevent and control waterpipe tobacco smoking. Addictive behaviors. 2017;66:41-7.
[17] The Dhaka Tribune. National Daily news paper in Bangladesh. 2019.
[18] Thrusfield M. Veterinary epidemiology: John Wiley & Sons; 2018.
[19] Attwood F. Mainstreaming sex: The sexualization of Western culture: IB Tauris; 2009.

©IJRASET: All Rights are Reserved

[20] Lake AJ, Staiger PK, Glowinski H. Effect of Western culture on women's attitudes to eating and perceptions of body shape. International Journal of Eating Disorders. 2000;27(1):83-9.
[21] Hamid MO, Erling EJ. English-in-education policy and planning in Bangladesh: A critical examination. English language education policy in Asia: Springer; 2016. p. 25-48.
[22] Prodhan M. the present situation of education system in Bangladesh and scope for improvement. Journal of Education and Social Sciences. 2016;4:1-11.
[23] Ahmad M. Madrassa education in Pakistan and Bangladesh. 2004.
[24] Gankovsky YV. The social structure of society in the People's Republic of Bangladesh. Asian Survey. 1974;14(3):220-30.
[25] Rahman M, Chowdhury AS, Fukui T, Hira K, Shimbo T. Association of thromboangiitis obliterans with cigarette and bidi smoking in Bangladesh: a case-control study. International journal of epidemiology. 2000;29(2):266-70.
[26] Khan MMH, Khan A, Kraemer A, Mori M. Prevalence and correlates of smoking among urban adult men in Bangladesh: slum versus non-slum comparison. BMC Public Health. 2009;9(1):149.
[27] Pokhrel P, Fagan P, Kehl L, Herzog TA. Receptivity to e-cigarette marketing, harm perceptions, and e-cigarette use. American journal of health behavior. 2015;39(1):121-31.
[28] Pepper J, Ribisl K, Brewer N. Adolescents' interest in trying flavoured e-cigarettes. Tobacco Control. 2016;25(Suppl 2):ii62-ii6.
[29] Sleiman M, Logue JM, Montesinos VN, Russell ML, Litter MI, Gundel LA, et al. Emissions from electronic cigarettes: key parameters affecting the release of harmful chemicals. Environmental science & technology. 2016;50(17):9644-51.
[30] Javed F, Kellesarian SV, Sundar IK, Romanos GE, Rahman I. Recent updates on electronic cigarette aerosol and inhaled nicotine effects on periodontal and pulmonary tissues. Oral diseases. 2017;23(8):1052-7.

©IJRASET: All Rights are Reserved

Table 1: Gender wise distribution of smoking history, type, and E-cigarettes consciousness

Interventions	Whole sample		Male		Female		P value	Remarks
	n	%	n	%	n	%		
Smoking History N=406, M=186, F=220								
Not at all	234	57.64	60	32.26	174	79.09	0.522	Have significance difference
Occasional	94	23.15	61	32.80	33	15.00		
Regular	70	17.24	57	30.65	13	5.91		
Did not answer	8	1.97	8	4.30	0	0		
Smoking type N=257, M=116, F=141								
Traditional cigarettes	153	59.53	73	62.93	80	56.74	0.19	Have significance difference
E-cigarettes	99	38.52	38	32.76	61	43.26		
Hand made	5	1.95	5	4.31	0	0		
Have experience on E-cigarettes N=403, M=186, F=220								
Yes	127	31.51	56	30.11	71	32.27	0.04	No significance differences
No	276	68.49	130	69.89	149	67.73		
Not prefer to answer	3	0.74	3	1.61	0	0		
Availability of E-cigarette in area N=404, M=186, F=218								
No	249	61.63	78	41.94	171	78.44	0.72	Have significance difference
Yes	144	35.64	106	56.99	38	17.43		
Not prefer to answer	11	2.72	2	1.08	9	4.13		
Harmful ness N=392, M=186, F=206								
Strongly agree	15	3.83	7	3.76	8	3.88	0.000	No significance differences
Agree	57	14.54	27	14.52	30	14.56		
Somewhat agree	37	9.41	20	10.75	17	8.25		
Neither agree nor disagree	256	65.31	124	66.67	132	64.08		
somewhat disagree	14	3.57	4	2.15	10	4.85		
Disagree	10	2.55	3	1.61	7	3.40		
Strongly disagree	3	0.77	1	0.54	2	0.97		

N= Total respondent number, M= Male respondent number, F= Female respondent number

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IX Sep 2020- Available at www.ijraset.com

Figure 1. Respondents' religion information

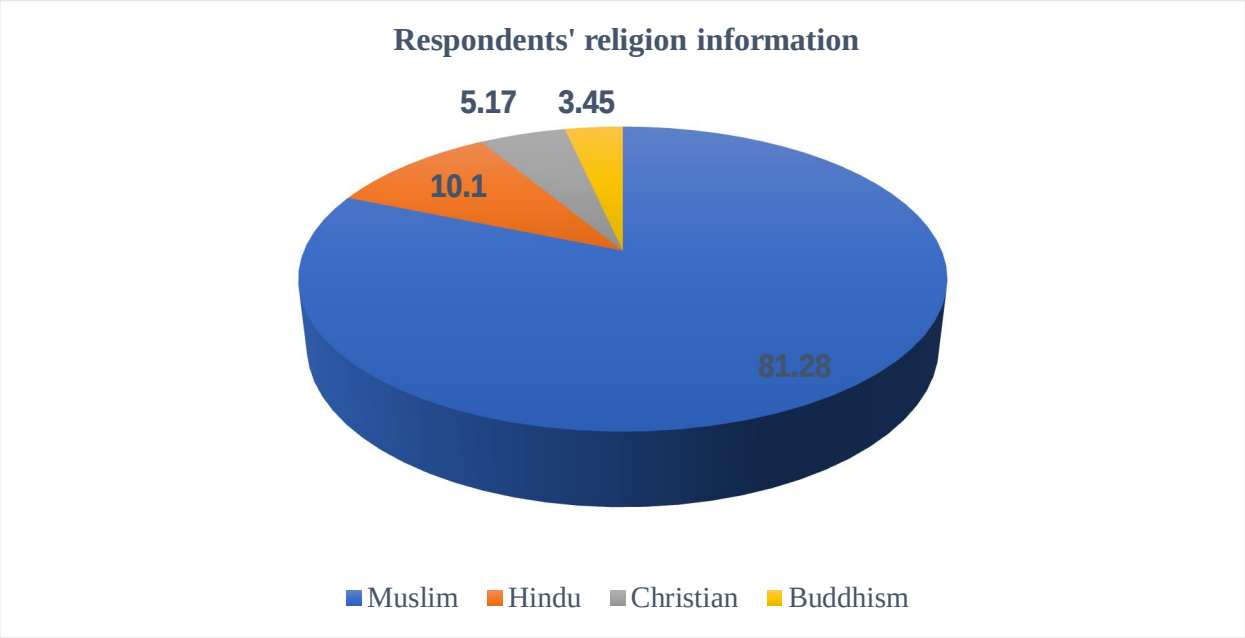
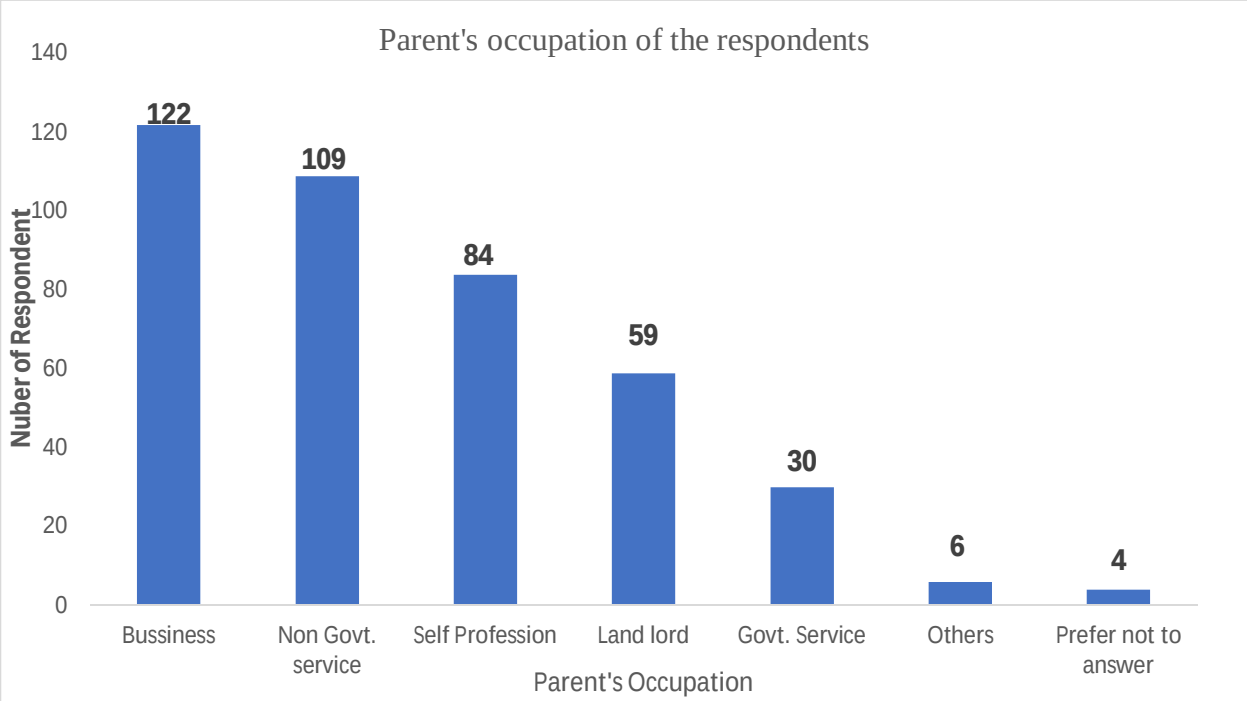


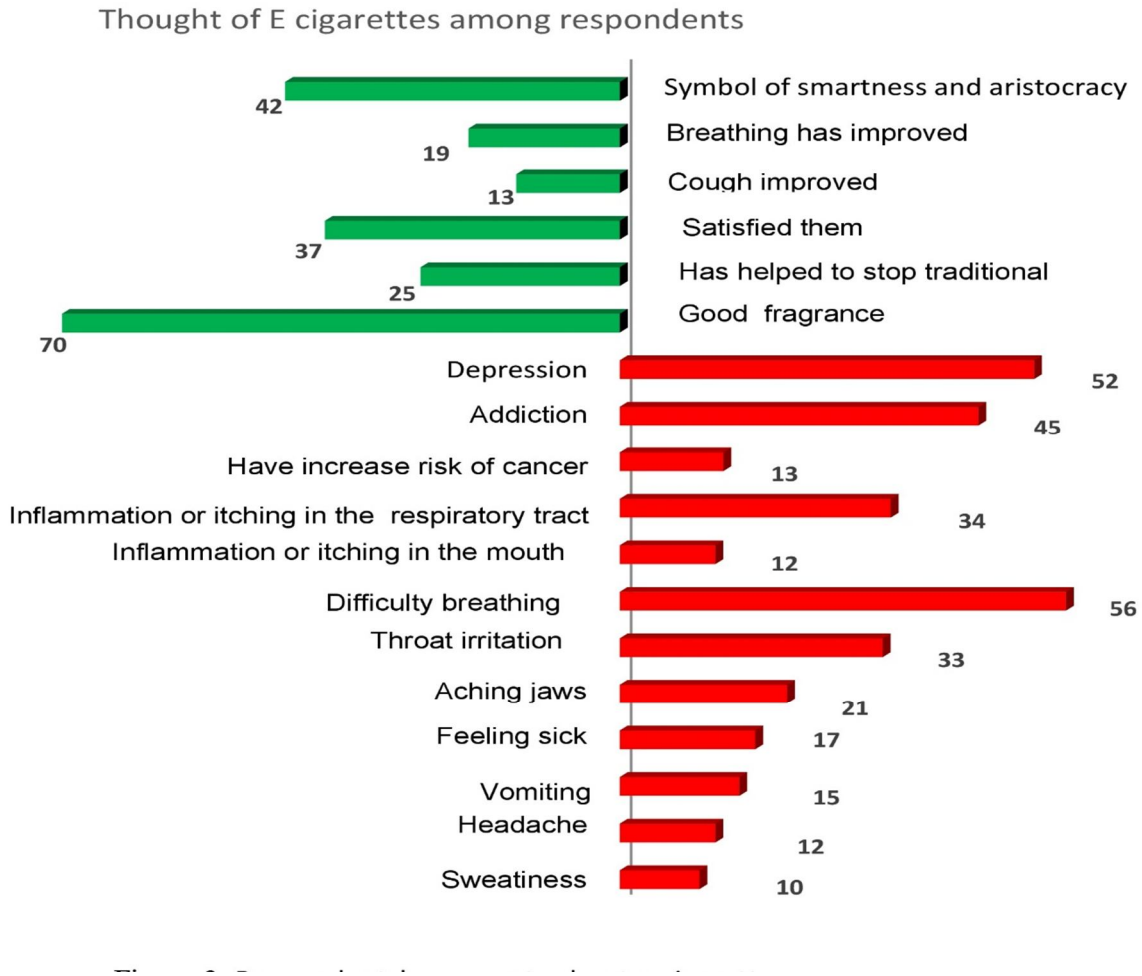
Figure 2. Parent's occupation of the respondents



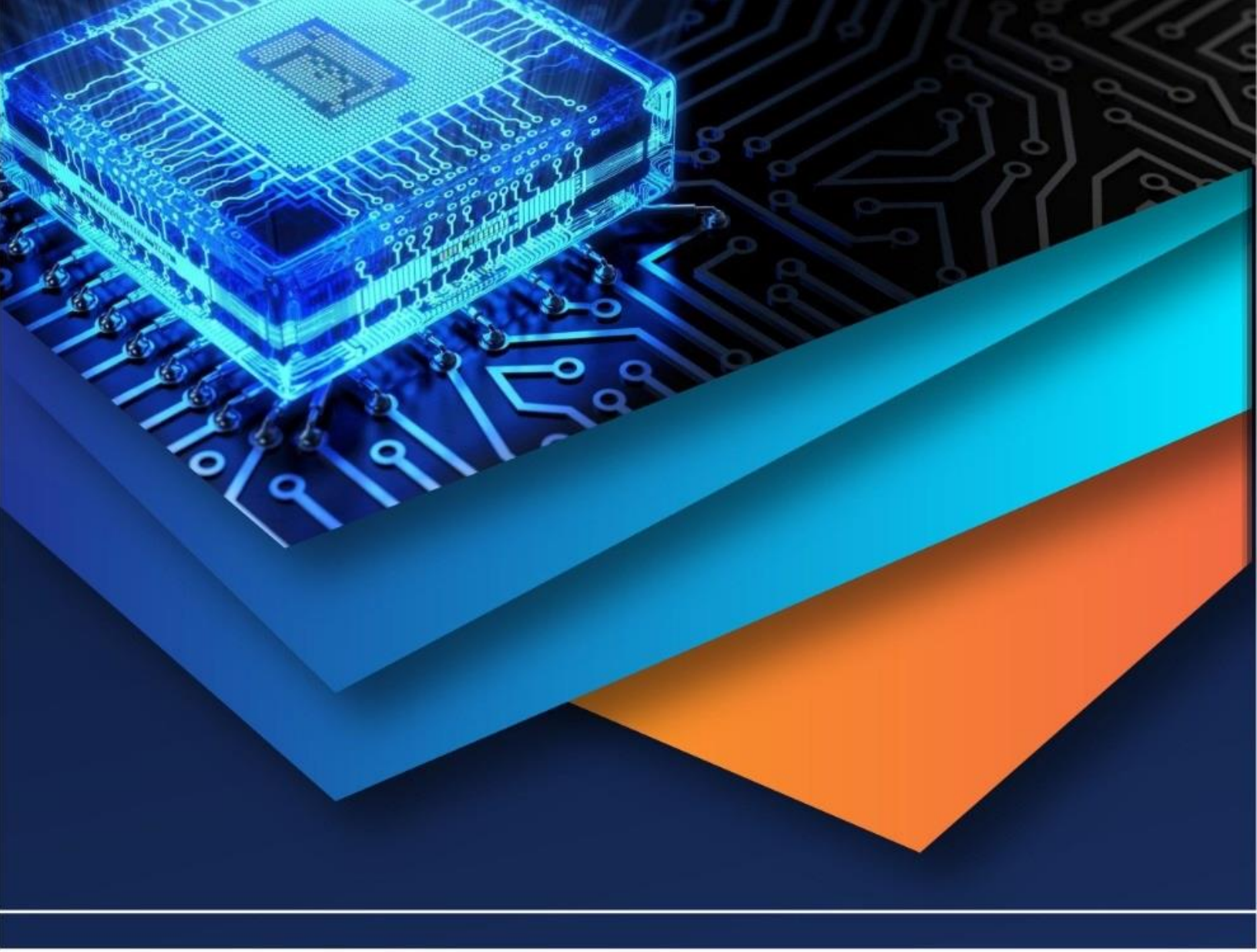
©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IX Sep 2020- Available at www.ijraset.com

Figure 3. Respondents' comments about e-cigarettes



©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)