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PERCEPTION OF SAFETY: A SURVEY ON THE RISKS OF VAPING, HOOKAH, AND CIGARETTE CONSUMPTION

Gurmeet Ahuja[1], Sajda Khan Gajdhar[2], Mohammed Shammas[3], Navin Kumar D[4], Vikram Karande[5], Ajimol Theresa Jose[6], Ritik Kashwani[7], Anukriti Kumari[8]

1. Royaldente, Gurgaon, Haryana, India drgurmeetahuja@gmail.com
2. Lecturer, Division of Oral Pathology and Microbiology, Department of Oral Basic and Clinical Sciences, Ibn Sina National College for Medical Studies, Jeddah, Saudi Arabia. drsajdagajdhar@gmail.com
3. Associate Professor, Division of Prosthodontics, Department of Oral and Maxillofacial Rehabilitation, Ibn Sina National College for Medical Studies, Jeddah, Saudi Arabia. mshammas@ibnsina.edu.sa
4. Postgraduate Trainee, Department of Periodontology, Ragas Dental College, Chennai, Dr. MGR Medical University, Guindy, Chennai, Tamil Nadu, India. navindentistry@gmail.com
5. Professor and Head of Department, Department of Oral and Maxillofacial Surgery, D.Y. Patil Dental School, Lohegaon, Pune, Maharashtra, India. drvikramkarande@gmail.com
6. Senior Lecturer, Department of Prosthodontics & Implantology, Faculty of Dentistry, AIMST University, Kedah, Malaysia. ajimoltheresa@aimst.edu.my
7. Department of Oral and Maxillofacial Radiology, School of Dental Sciences, Sharda University, Greater Noida, Uttar Pradesh, India. docritikkashwani@yahoo.com
8. Department of Oral and Maxillofacial Radiology, School of Dental Sciences, Sharda University, Greater Noida, Uttar Pradesh, India. anukritishrma0@gmail.com

Corresponding author.Vikram Karande, Professor & HOD,Department of Oral & Maxillofacial Surgery, D.Y.Patil Dental School, Lohegaon, Pune, Maharashtra, India.
drvikramkarande@gmail.com

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ABSTRACT

Background: People are increasingly selective about alternative smoking techniques involving vaping and hookah because they consider these methods safer than conventional smoking. Many people continue to believe incorrect things about the medical hazards linked to these smoking methods.

Objective:A research study analyzed how people perceive health risks from both vaping, hookah, and cigarette usage among the surveyed population.

Methods:A survey with structured questions was conducted among 170 participants aged 18 or older. The evaluation instrument assessed how survey participants perceived the safety levels of vaping, hookah, and cigarette smoking. An analysis of the survey data was conducted to identify patterns and elements affecting perceived risk.

Results:A significant number of participants considered vaping, as well as hookah, to cause less harm than traditional cigarettes. Moreover, many people believed e-cigarettes, along with hookah devices, operate by creating chemicals in smaller amounts and lead to decreased health threats in the long run. Risk perception variations linked with age progressions, education completion degrees, and active smoking tendency were found to be significant by analysis.

Conclusion:A wide range of individuals continue to believe that vaping and hookah carry less health risk when compared to cigarette smoking, even though medical research demonstrates otherwise. Public health programs should strive to dismantle faulty beliefs about these products because this initiative could decrease the number of smoking-related health consequences.

Keywords: Cancer, Hookah, Nicotine, Perception, Vaping

1.INTRODUCTION

Many lives across India suffer from tobacco consumption, which creates substantial health risks, including cancer, that add significantly to the national disease burden[1]. All tobacco consumption forms, including cigarettes, bidis, smokeless products,

hookahs, and the new trend of vapes, lead to severe health consequences [2]. The Indian population shows significant tobacco use despite raising awareness, so many people proceed to develop fatal diseases like cancer [3].

The data shows that tobacco use exists among 28.6% of Indian adults. The adult population comprises more than one quarter of individuals who use tobacco, despite a reduction from previous years. The people of India use tobacco in smoking products as well as non-tobacco smokeless substances. The non-smoking tobacco products, such as gutka, khaini, and betel quid with tobacco, reach about 21% of the adult population throughout India. Such products exist in Indian culture due to deep-rooted tradition, even though research demonstrates their harm to health [4]. Tobacco smoking affects 10.7% of adults in India who use either conventional cigarettes or cheaper bidis tobacco products.

Studies show that the tobacco use problem also affects younger individuals. A proportion of 2% among young individuals between the ages of 10 and 14 smoke actively, but boys exhibit higher smoking rates than girls in this demographic group [5]. Early tobacco use initiation exhibits significant health risks for long-term addiction and develops chronic diseases, which becomes a concerning vital trend [6].

Hookah, along with vaping, has recently become trendy among young Indians who primarily live in cities [7]. Even though hookah enthusiasts might consider it a safe social activity, it actually creates additional health risks [8]. Using a hookah for one hour will expose users to dangerous smoke levels equivalent to smoking two entire packs of cigarettes. The health risks from hookah pipes become worse because of their carbon monoxide and heavy metal emissions. The Indian government implemented a ban on vapes, called e-cigarettes, in 2019 because of health risks and their increasing attraction for teens [9]. The ban has not been able to stop underground sources and online markets that sell these products.

Tobacco consumption leads to the dire outcome of cancer development because of its immediate effects on human health. Based on population demographics, smoking tobacco leads to 27% to 40% of all cancer diagnoses in India. Tobacco usage leads to cancer development among 48.7% of male patients and 16.5% of female patients [10]. People in India develop oral cancer, together with lung cancer, throat cancer, and esophageal cancer, as the primary forms of tobacco-related cancers. As a result, India contributes more than 83,000 cases out of the 120,000 instances of oral cancer that stem from smokeless tobacco and areca nut consumption worldwide [11].

The number of tobacco-related diseases keeps increasing which will lead to an expected rise in India's cancer burden from 1.39 million cases in 2020 to 1.57 million by 2025 [12]. The current increase in cancer cases is directly linked to the persistence of tobacco use, combined with insufficient education campaigns and insufficient stop-smoking programs and weak regulatory measures in different areas. Although COTPA and pictorial warnings have promoted more awareness their enforcement across India maintains an inconsistent distribution.

Strong tobacco control needs to combine regulatory enforcement with community-based awareness delivery and available de-addiction help along with specific prevention measures directed at youth populations [13]. People must understand the life-threatening medical problems which cigarettes along with smokeless tobacco and hookah devices and vapes can trigger. The elimination of combustion through vaping does not stop the delivery of harmful chemicals together with nicotine which makes vaping unsafe for non-smokers and teens.

Tobacco consumption through all its traditional and modern variants in India remains an acute health hazard. The direct connection to cancer, particularly oral and lung cancers, underscores the urgency of tobacco control initiatives. The fight against tobacco addiction together with cancer devastation in India requires stronger health regulations with educational programs that lead to accessible support systems for implementation in upcoming years.

Methodology

Study Design

A descriptive cross-sectional study was conducted to assess the knowledge, attitudes, and practices (KAP) related to the perceived risks and safety of vaping, hookah, and cigarette use among dental students and interns.

Study Setting and Participants

The study was carried out online, targeting undergraduate students (from the second year onward) and interns. A convenience sampling method was employed, resulting in 170 participants being included.

Inclusion and Exclusion Criteria

Students eligible for participation included those enrolled in the Bachelor of Dental Surgery (BDS) program from the second year onward and interns currently undergoing clinical training. Participants

who were absent during the data collection period or declined to provide informed consent were excluded from the study.

Data Collection Instrument

Data were collected using a structured, self-administered questionnaire specifically developed for this study. The questionnaire comprised sections addressing three domains:

Knowledge: Awareness of the health effects and chemical components of vaping, hookah, and cigarette products.

Attitude: Perceptions regarding the safety, acceptability, and social implications associated with these substances.

Practice: Self-reported use, frequency, and behavioral patterns associated with the consumption of tobacco and nicotine products.

The instrument was pretested on a small group of students to ensure clarity and validity. The feedback obtained was used to make minor modifications before its final deployment.

Data Collection Procedure

Participants were briefed on the study's purpose, and informed consent was obtained prior to their involvement. The questionnaire was distributed in print or through a secure online platform, ensuring voluntary participation and confidentiality throughout the process.

Data Analysis

Responses were compiled and analyzed using statistical software. Descriptive statistics were used to summarize demographic information and KAP responses. Associations between participant characteristics and KAP scores were examined using appropriate statistical tests, including chi-square and t-tests where applicable. Based on predefined benchmarks, a scoring rubric was developed to quantify knowledge, attitude, and practice levels.

Ethical Considerations

The Institutional Ethics Committee approved the study. Participation was entirely voluntary, and all responses were maintained in strict anonymity. No personal identifiers were collected.

Results

The analysis included 170 participants, with a gender distribution as follows: 70 (41.18%) participants were female, and 100 (58.82%) were male [Figure 1].

Male = 100
Female = 70

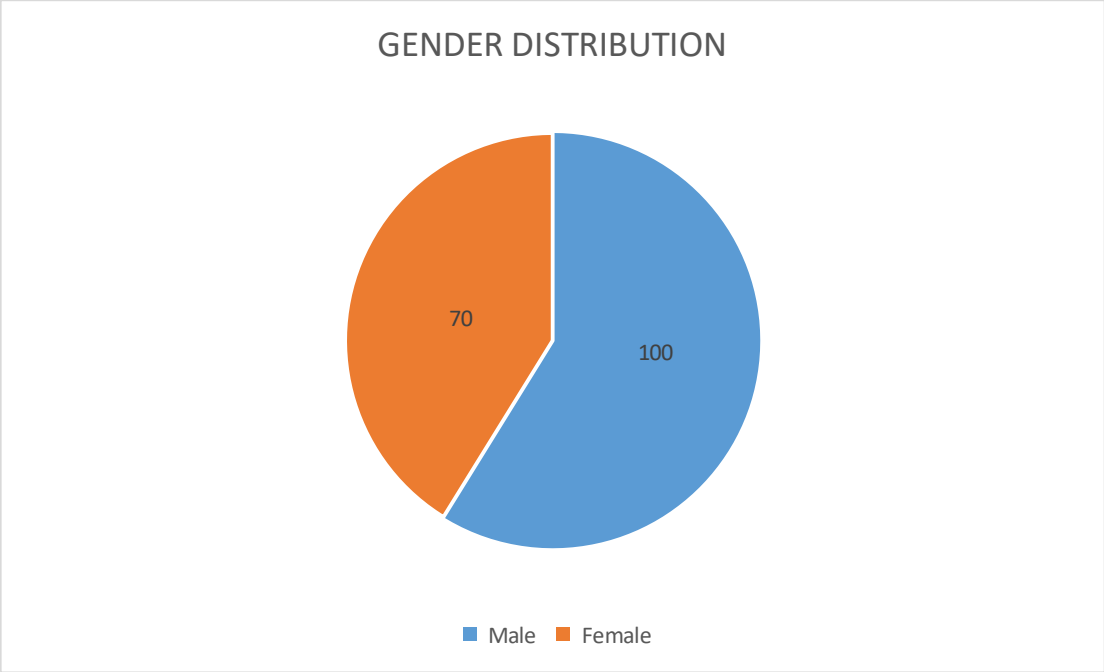

Figure 1. Gender Distribution

Knowledge Section

Is vaping completely risk free as compared to cigarettes- Out of all participants who took the survey 136 people correctly identified that vaping poses risks above zero compared to cigarette smoking yet 34 gave incorrect answers to the question. The study results show that 80% of participants realized vaping has risks beyond smoking while 20% held misleading views about its safety level.
whether hookahs contain nicotine- answer of whether hookahs contain nicotine was provided by 125 participants but 45 participants believe that hookahs don't contain nicotine . Among those interviewed 73.5% correctly identified hookahs contain nicotine while 26.5% either lacked knowledge or wrong information about this fact.

extended vaping leads to cancer development- The majority of 156 people correctly identified that extended vaping leads to cancer development but 14 respondents said that vaping doesn't cause cancer . The research findings show that people comprehended the risk of developing cancer from sustained vaping because 91.4% of participants acknowledged this danger while only 8.6% demonstrated misunderstanding.

"Passive smoking (second-hand smoke) can affect health?"- The survey about "Passive smoking (second-hand smoke) can affect health?" showed that 112 people were aware of health hazards but 58 people didn't know the effects of passive smoking . A total of 65.9% participants understood the health risks from passive smoking but 34.1% respondents lacked this knowledge.
whether nicotine could lead to addiction - Out of 170 participants the question about whether nicotine could lead to addiction received 120 correct answers and 50 believed that nicotine doesn't cause any form of addiction. Research findings show that 70.6% of participants realized nicotine is addictive yet 29.4% of respondents were unaware of this fact.
"**Are e-cigarettes FDA approved for smoking cessation?**"- For the question regarding "Are e-cigarettes FDA approved for smoking cessation?" a total of 106 participants provided correct answers but 64 participants displayed incorrect responses. Among those surveyed 37.6% displayed confusion about e-cigarettes being unapproved for smoking cessation by the FDA which contrasts with the 62.4% who understood the fact correctly.
Regarding hookah smoke compared to cigarette smoke- 141 participants were aware of the fact that hookah delivers more smoke whereas 29 people provided an incorrect response. The data indicates hookah delivers more smoke because 83% of respondents understood this fact while 17% did not receive this information.

Table 1: Knowledge assessment of participants

Questions asked	Answered - YES	Answered - NO
Is vaping completely risk-free compared to smoking cigarettes?	136	34
Do hookahs contain nicotine?	125	45
Prolonged vaping can cause: cancer	156	14
Does passive smoking (second-hand smoke) affect health?	112	58
Can nicotine be addictive?	120	50
Are e-cigarettes FDA-approved for smoking cessation?	106	64
Does hookah smoking deliver more smoke than cigarettes?	141	29

Attitude Section

vaping carries less risks than traditional cigarette smoking: The polled individuals expressed their agreement rates as follows: 10 (5.4%) strongly disagreed, while 19 (10.3%) disagreed and 29 (15.7%) stated neutrality, 70 (37.8%) agreed, followed by 42 (22.7%) who strongly agreed.

occasional hookah smoking is safe and not addictive: The respondents gave this statement their opinions 12 (6.5%) strongly disagreed; 15 (8.1%) disagreed; 24 (13.0%) stayed neutral; 78 (42.2%) agreed; and 41 (22.2%) strongly agreed.

Table 2. Attitude assessment participants

Question Text	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I believe vaping is less harmful than smoking cigarettes.	10	19	29	70	42
Occasional hookah smoking is safe and not addictive.	12	15	24	78	41
Cigarette smoking by healthcare professionals sets a poor example for patients.	9	24	13	72	52
I feel peer pressure influences people to start vaping or smoking.	8	21	30	73	38
Dental professionals have a responsibility to discourage tobacco use.	4	18	23	83	42
Vaping is socially more acceptable among youth than cigarette smoking.	13	15	38	69	35
I would feel uncomfortable advising a patient to quit if I use tobacco myself.	7	15	26	67	55
Anti-tobacco awareness campaigns influence people's smoking behavior.	12	19	23	75	41

Cigarette smoking by healthcare professionals sets a poor example for patients: 9 participants (5.29%) strongly disagree , 24 participants (14.11%) disagreed with this statement, 13 participants (7.64%) were neutral with the question, 72 participants (42.35%) agreed , 52 participants (30.58%) strongly agreed.

Peer influences in vaping or smoking initiation: eight participants (4.3%) strongly disagreed with the statement, followed by 21 (11.4%) who disagreed while thirty (16.2%) remained neutral, 73 (39.5%) agreed with it, and 38 (20.5%) strongly agreed.

Dental professionals have a responsibility to discourage tobacco use: 4 respondents (2.35%) strongly disagreed,18 participants (10.58%) disagreed with the question, 23 (13.52%) were neutral , 83 (48.82%) agreed with the question, and 42 (24.70%) strongly agreed .

Vaping is socially more acceptable among youth than cigarette smoking: 13 participants (7.64) strongly disagree , 15 participants (8.82%) disagreed , 38 (22.35%) were neutral , 69 participants (40.58%) agreed where as 35 (20.58%) strongly agree.

When it comes to tobacco use in patients I advise on quitting: the results showed that seven respondents (3.8%) strongly disagreed, fifteen (8.1%) disagreed, twenty-six (14.1%) remained neutral, sixty-seven (36.4%) agreed and finally fifty-five (29.7%) strongly agreed with this statement.

"**Anti-tobacco awareness campaigns influence people's smoking behavior":** 12 participants (6.5%) strongly disagreed, 19 (10.3%) disagreed, 23 (12.4%) kept a neutral stance, 75 (40.5%) agreed, and 41 (22.2%) strongly agreed.

Practice Section

Have you ever tried cigarettes? Out of all participants, 31 people (18.2%) attempted cigarette use, but 139 (81.8%) had no experience with them.

Do you currently use any tobacco products? The survey revealed that 32 participants (18.8%) were currently using tobacco products among the total 170 respondents. Additionally, 138 participants (81.2%) did not use tobacco products.

Have you ever tried vaping (e-cigarettes) - If asked if they had ever tried vaping e-cigarettes through the survey 38 participants (21.6%) spoke yes but 132 participants (78.4%) reported no.

Have you used a hookah/shisha in the past 6 months - Out of the total participants, 29 individuals (16.5%) presently used hookah/shisha yet 141 (83.5%) disclaimed such usage in the last six months.

Do you read health warnings on cigarette/vape packaging - The Healthy Choices Adolescents Conduct Survey revealed that 125 participants (67.6%) regularly pay attention to health warnings on cigarette and vape packaging while 29 (15.7%) read them occasionally and 16 (8.7%) failed to do so.
Have you advised a peer to quit smoking or vaping - Among participants 134 (78.8%) reported having suggested former classmates stop smoking or vaping while 28 people (16.5%) stated they had not made such recommendations and 8 individuals (4.7%) remained undecided.
Do you believe you could confidently counsel a patient on tobacco risks - Among the respondents who were asked if they believed they could provide confident patient counseling on tobacco risks, 120 (70.2%) answered positively and 32 (18.7%) answered negatively while 18 (10.5%) were unsure.
Have you participated in any tobacco awareness campaigns or workshops - A total of 130 respondents (76.0%) reported taking part in tobacco awareness campaigns or workshops followed by 29 individuals (17.0%) who said no and 11 participants (6.4%) who were unsure.

Table 3. Practice assessment of participants

Question Text	Yes	No	Always	Sometimes	Never	Not sure
Have you ever tried cigarettes?	31	139	_	_	_	_
Do you currently use any tobacco products?	32	138	_	_	_	_
Have you ever tried vaping (e-cigarettes)?	38	132	_	_	_	_
Have you used a hookah/shisha in the past 6 months?	29	141	_	_	_	_
Do you read health warnings on cigarette/vape packaging?	_	_	125	29	16	_
Have you advised a peer to quit smoking or vaping?	134	28	_	_	_	8
Do you believe you could confidently counsel a patient on tobacco risks?	120	32	_	_	_	18
Have you participated in any tobacco awareness campaigns or workshops?	130	29	_	_	_	11

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Table 4. Constituents of hookah, cigarettes and vapes

Feature/Substance	Hookah (Hukkah)	Cigarettes	Vapes(E-cigarettes)
Nicotine	Yes (in tobacco)	Yes (main addictive component)	Often present (varies by product)
Tar	Yes (from tobacco combustion)	Yes	No (no combustion, but some harmful chemicals)
Carbon Monoxide (CO)	High (from charcoal)	Moderate (from burning tobacco)	Low or none, unless defective
Heavy Metals	Yes (from charcoal & pipe)	Yes (from tobacco and paper)	Yes (from heating coil: lead, nickel, etc.)
Carcinogens	Yes	Yes (over 70 known carcinogens)	Some (formaldehyde, acrolein may form when heated)
Other Chemicals	Glycerin, molasses, flavoring, PAHs	Over 7,000 chemicals (e.g., benzene, ammonia)	PG, VG, flavoring agents, additives
Flavors	Yes	Sometimes (menthol, clove, etc.)	Yes (wide variety: fruit, mint, candy, etc.)
Addiction potential	High (due to nicotine + social appeal)	Very High	Moderate to High (depends on nicotine level)
Smoke/Vapor Volume	Very high (denser and longer sessions)	Moderate	High (especially with sub-ohm devices)
Immediate Effects	Dizziness, headache, increased heart rate	Same as hookah; also shortness of breath	Cough, throat irritation, dry mouth
Long-Term Health Risks	Heart/lung disease, cancer, CO poisoning	Cancer, heart disease, stroke, lung damage	Unknown (still being studied), but risk exists

DISCUSSION

Tobacco consumption in India remains a significant public health concern, contributing to a substantial number of deaths annually.

Tobacco-Related Deaths in India - Annual Deaths: Tobacco use is responsible for over 1 million deaths each year in India [14]. Cancer Burden: Oral cancer is the third most common cancer in India, with over 77,000 new cases diagnosed in 2012. Studies estimate over five deaths per hour due to oral cancer in the country [15]. Tuberculosis and Beedi Smoking: Smoking beedis has been linked to 200,000 deaths caused by tuberculosis in India [16].

The study establishes vital findings about how people understand the safety risks between vaping and hookah compared to cigarettes [17].

The majority of participants admitted traditional cigarettes were risky yet numerous others believed vaping and hookah carried reduced health risks. Research indicates vaping receives global acceptance as a safer option though scientists continue to show that

e-cigarettes contribute to cardiovascular harm and respiratory issues [18]. Many participants failed to recognize the dangers in occasional hookah smoking because they unknowingly believed the myths that filtered hookah smoke is better than cigarette smoke despite evidence that demonstrates the same or worse toxic compounds in both substances [19].

Studies revealed that peer relationships proved to greatly impact subject behaviors [20]. The majority of participants acknowledged that peer pressure strongly affects the initiation of both smoking and vaping practices throughout the youth population [21]. Social dynamics show that acceptance from peers determines adolescent risky behavior choices. Research findings are encouraging because participants showed support for helping peers stop using tobacco by delivering advice while displaying consistent reading habits of package warnings.

Some healthcare professionals who use tobacco products risk encountering obstacles when counseling patients since they should act as modeling examples to the public. Many students have taken part in tobacco awareness education yet false beliefs about e-cigarettes and hookah demonstrate deficiencies in today's prevention approach [22].

Research data shows that antismoking campaigns achieved successful reduction of cigarette stigma yet e-cigarettes and hookahs have not received similar attention. Future academic interventions must address these alternative tobacco products while debunking safety myths and teaching healthcare students to become better tobacco life advocates.

CONCLUSION

This research delivers crucial knowledge about how individuals perceive and act regarding vaping along with hookah and cigarette use. The majority of individuals recognized broad hazards related to tobacco yet there were multiple widespread misinterpretations about hookah and vaping safety. Research subjects saw vaping as providing reduced risk than cigarette smoking while they considered hookah use risk-free yet understanding about its dangers remains essential. Most of the participants showed they wanted to avoid peer-to-peer tobacco dissemination and patient tobacco prevention while actively taking part in tobacco education activities.

Some healthcare workers who use tobacco products demonstrated inconsistent competence when it came to providing smoking cessation counseling. The positive effects of awareness initiatives toward tobacco education have been observed yet confusion about newer tobacco usage patterns persists. Healthcare providers must receive targeted education along with ongoing professional training for policy measures to assist patients and healthcare staff in developing tobacco-free lifestyles through better education of these practices.

DECLARATIONS

Ethical approval and consent to participate

Not Applicable

Availability of data and material

All data generated or analyzed during this study are included in the published article.

Competing interest

The authors declare that there are no competing interests.

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