

Assessment of Knowledge, Attitude, and Practice of Shisha among College Students in Kolkata, India

Cochestar Suting¹, Nipanjana Saha²

¹Master of Public Health Scholar, NSHM College of Management & Technology, Kolkata, India

²Assistant Professor, NSHM College of Management & Technology, Kolkata, India

Abstract: Introduction: Shisha commonly known as hookah, water pipe, or narghile, is a method of smoking flavoured and non-flavoured tobacco, where the smoke passes through water before inhalation. It consists of a bowl, stem, water base, hose, and mouthpiece. This traditional form of tobacco consumption is particularly common in Middle Eastern and South Asian countries and often perceived as a safer alternative to traditional cigarettes. Method: This a cross-sectional study design, conducted using a simple random-sampling method at a premier institute, Kolkata. Using a modified version of the WHO GYTS questionnaire to collect samples. A total of 307 complete responses were considered for data analysis, P value <0.05 was considered statistically significant. Result: Out of 307 participants, males (41.1%) and female (59.9%), age group of 18-20 years (46.6%). Reported current smokers (24.4%), daily smokers (19.9%). Product preferred to smoked- Cigarettes (31.3%), shisha (7.8%). Students' awareness of shisha (44%), and had tried shisha (27.7%), and 26.4% have used it for more than three years. Age between 18-20 years was a significant factor shisha consumption ($p < 0.001$). Students believed shisha is less harmful than cigarettes ($p = 0.007$) and considered it safe to smoke for a year or two ($p = 0.006$). Most of female students felt sales of shisha to minor (<18-year-old) should not be banned ($p = 0.009$). Conclusion: Shisha consumption is prevalent among students due to lack of stringent regulation, peer influence and desire of new experience. Many students hold a misconception relating to its health risk, often view it as a safer alternative to cigarettes. Target health campaign is essential to address false beliefs and enforcing a stronger policies and tobacco free campus initiatives can help to reduce access and protect student well-being.

Keywords: Shisha, misconception, attitude, perception, knowledge, smoking behaviour, non-smoking tobacco, and health risk.

1. Introduction

Tobacco usage, both in the form of smoking and non-smoking, remains a significant global public health concern especially in developing and low-income countries. According to the WHO, tobacco-related illnesses cause over 8 million deaths each year.^[2] With the rising popularity of shisha smoking worldwide, it's crucial to assess students' knowledge, attitudes, and perceptions regarding shisha consumption, address their misconceptions, and raise awareness about its health risks.^{[3], [8], [16]} In India, tobacco usage among college students is increasing at an alarming rate. In 2022, an estimated 253 million people (200.2 million males and 53.5 million females) aged 15 and above used tobacco products. India, as the world's second-largest tobacco producer, contributed approximately 772.2 thousand tons of unmanufactured tobacco, accounting for 13.4% of global production, an increase of 11.9% compared to 2010.^{[9], [11]} A study by Anand K. et al. highlighted a high tobacco usage among college-going women in Delhi, with hookah smoking being the most prevalent at 20.4%.^[7]

Shisha often perceived as a safer alternative to traditional cigarettes^[19], however, it poses significant health risks due to the toxic chemicals it contains. The tobacco mixture used in shisha has approximately 1.7 times more nicotine, 6.5 times more carbon monoxide, and up to 46 times more tar than traditional cigarettes, along with other harmful substances used for flavouring.^{[5], [10]} In fact, studies suggest that a 45-minute session of shisha smoking is equivalent to smoking 100 cigarettes or more^[26]. Shisha commonly known as hookah, water pipe, or narghile, is a method of smoking flavoured and non-flavoured tobacco, where the smoke passes through water before inhalation.^[6] It consists of a bowl, stem, water base, hose, and mouthpiece. This traditional form

of tobacco consumption is particularly common in Middle Eastern and South Asian countries. Despite these health risks, shisha smoking continues to gain popularity due to social acceptance, particularly among young adults and college students.^[10]

The study aimed -

- To assess the prevalence of shisha usage among college-going students.
- To assess the knowledge regarding shisha among college-going students.
- To assess the attitude of college going students regarding shisha smoking in a premier institute in Kolkata, India.

2. Materials And Methods

2.1 Study design and setting

This is an institutional based Cross-Sectional study conducted using a simple random sampling method at a Premier Institution in Kolkata, India.

2.2 Sampling method and Study participants

For data collection procedure, we adopt a simple random-sampling techniques ensuring equal chance of participation. We approached a total of 450 individuals, comprising both undergraduate and postgraduate students. Out of these, 400 individuals consented to participate in the study and returned the questionnaire. Following data collection process, a rigorous data cleaning was conducted to ensure the accuracy and reliability of the findings. Incomplete and partially filled questionnaires were excluded, resulting in a final sample size of 307 responses that were considered for data analysis. This approach helped to maintain the integrity and quality of the

data and ensuring statistical evaluation and interpretation used only valid and fully completed responses. The potential participants were approached individually during their free time within the campus, and were explain about the aim and objectives of study. Their participation was voluntary, all of the response are recorded anonymously, participants were allowed to opt-out of the survey at any time, responses to all questions were not mandatory.

Inclusion criteria

Students who are 18 years and above.

Students who are willing to participate and who are present during the time of study.

Exclusion criteria

Students who are not willing to participate, those who was not present during the time of study and those who are sick.

2.3 Data collection tool

To fit the requirement of this particular study, a modified version of the WHO GYTS questionnaire was used to collect samples.^[28] The questionnaire contained 3 sections, the first section consists of 12 questions: Socio-demographic information including age, gender, residency, education, mother & father education, occupation, etc, second section consist of 19 questions: constitute of knowledge, behaviour, awareness, and preference of shisha consumption, and third section consist of 10 questions: these are Likert scale survey questions designed to measure students' attitudes and perceptions toward shisha smoking.

2.4 Ethical consideration

Ethical permission was obtained from the concerned Institutional Ethics Committee (IEC). Furthermore, an official permission from the institutional authority was obtained to conduct the study. Students were verbally informed regarding the objectives of the study along with a written consent form was obtained from all the participants followed by distribution of questionnaire.

2.5 Data analysis

Data was manually entered into Excel and then data cleaning was done to exclude all the incomplete data. Data were analysed using the Statistical Package for Social Sciences (version 26.0). Descriptive and inferential(chi-square) analysis was done to find out the prevalence of Shisha usage and associations between socio-demographic variables and shisha using pattern or behaviour. *p*-value of 0.05 or less are considered as significant.

3. Results

3.1. Socio-demography characteristics of the participants-

Of the *n*=307 students who filled and returned the questionnaire, *n*=123 (41.1%) were males, and *n*=184 (59.9%) were females. Participants' ages ranged from 18 and 25 years, with the majority *n*=143 (46.6%) falls in 18-20 age group. Hinduism is the most follow religion among the students *n*=234 (76.2%). A total of *n*=170 (55.4 %) were

undergraduate students and were *n*=137 (44.6 %) postgraduates. Reported *n*=33 (10.7%) was married, while *n*=274(89.3%) were unmarried. The majority reside in urban area *n*=245 (79.8%).

Students reported that *n*=97 (31.6%) are currently smoking and out of which *n*=69 (22.5%) of them smoke on a daily basis. And *n*=96 (31.3%) of the students preferred cigarettes as smoking product and *n*=24 (7.8%) preferred shisha as a smoking product. (Table 0)

3.2. Shisha sections, on knowledge, behaviour and preference -

The result revealed that *n*=135 (44.0%) of the students were aware about shisha. A total of *n*=85 (27.7%) of the students reported to have consumed shisha at least once in their life, *n*=71 (23.1%) smoke shisha occasionally, and *n*=83 (27.0%) consumed shisha, in some social gathering with friends and with some family members. A total of *n*=81 (26.4%) has consumed shisha for a period of 3-6 year or more. Socializing and flavour enjoyment were the main reason for shisha uses, cited by *n*=76 (24.8%) of the students. Mint *n*=65 (21.2%) and mixed fruit *n*=43 (13.7%) were the most preferred flavours.

Out of all the respondents *n*=113 (36.8%) were aware of the health risk associated with shisha and *n*=29 (9.4%) of them had experience some health effects from shisha (e.g., dizziness, nausea and shortness of breath). A small number of the students have friends who smoke shisha *n*=31 (10.1%), and students reported that shisha was fairly easy to purchase shisha from the supermarket or other store *n*=52 (16.9%). (Table 0)

3.3 Attitude and perceptions of shisha section

Reported *n*=135 (44.0%) of the students believe that shisha is safer alternative to traditional cigarettes, and *n*=114 (37.1%) believe, water inside shisha help to filter out toxin. A total of *n*=98 (31.9%) students believes that shisha smokers have more friends, while *n*=71 (23.1%) felt that if you smoke shisha, you look more attractive, and *n*=78 (25.4%) think that smoking shisha is an important part of social gathering. Although *n*=132 (43.6%) believed that there should be more public awareness about the health associated with shisha, *n*=119 (38.7%) believe sale of shisha to minor (<18 years) should not be banned. (Table 0)

3.4 Age and gender difference

This study revealed that age was significant factor for smoking behavior and consumption of Shisha, (*p* =0.001), and a significant factor to influence the daily smoking habit of the respondents (*p* <0.001), with cigarettes being the most consumed tobacco product (*p* <0.002). Reported students have tried consuming shisha (*p* =0.011). Students believed shisha is less harmful than traditional cigarettes (*p* 0.007), and also believe shisha is safe to smoke if you quit after a couple of years (*p* 0.006).

Reported male students were more likely to engage in daily smoking (*p*<0.006). Mostly female students believed, Sales of shisha to <18-year-old should not be banned (*p* 0.009).

Table 1: Socio-demography characteristics of the participants

		Frequencies (n)	Percentage (%)
Age (years)	18-20	143	46.6 %
	21-23	128	41.7 %
	24>	36	11.7 %
Sex	Male	123	40.1 %
	Female	184	59.9 %
Religion	Hinduism	234	76.2 %
	Islam	42	13.7 %
	Christianity	20	6.5 %
	Buddhism	7	2.3 %
	Others	4	1.3 %
Education	Under-graduate	170	55.4 %
	Post-graduate	137	44.6 %
Courses	Science courses	179	58.3
	Non-Science courses	128	41.7
Marital status	Married	33	10.7 %
	Unmarried	274	89.3 %
Residency	Urban area	245	79.8 %
	Rural area	62	20.2 %
Current smoker	Yes	97	31.6 %
	No	210	68.4 %
Daily smoker	Yes	69	22.5 %
	No	238	77.5 %

Table 2: Shisha sections on knowledge, behaviour and preference

		Frequencies (n)	Percentage (%)
Shisha awareness	Yes	135	44.0 %
	No	172	56.0 %
Have consuming Shisha	Yes	85	27.7 %
	No	222	72.3 %
Preferred smoking product	Cigarette	96	31.3 %
	Cigar	24	7.8 %
	Waterpipe	13	4.2 %
	Bidi	7	2.3 %
	E-cigarette	12	3.9 %
	Others/NO	155	50.5 %
Reason for smoking shisha	Relaxation	20	6.5 %
	Socializing	27	8.8 %
	Flavour Enjoyment	49	16.0 %
	Habit	34	11.1 %
	Never	169	55.0 %
	Other	8	2.6 %
Preferred shisha product	Traditional (Unflavoured)	12	3.9 %
	Flavoured	65	21.2 %
	Herbal (non-flavoured)	43	14.0 %
	None	187	60.9 %
	Others	12	3.9 %
What is your favourite shisha flavour	Mint	65	21.2 %
	Apple	13	4.2 %
	Watermelon	18	5.9 %
	Mixed fruit	43	13.7 %
	Never smoke	168	54.7 %
How long have you been smoking shisha	Less than 6 months	9	2.9 %
	6 months to 1 year	16	5.2 %
	1-2 years	15	4.9 %
	2-3 years	18	5.9 %
	More than 3 years	81	26.4 %
	Never smoke	168	54.7 %
Place where you smoke shisha	At home	5	1.6 %
	Social gathering (friends & family member)	83	27%
	Shisha lounge or cafe	13	4.2 %
	Others	206	67.1 %
Awareness of health risk associated with shisha	Yes	113	36.8 %
	No	194	63.2 %
	Yes	29	9.4 %

Have experience health risk associated with shisha (shortness of breath, dizziness & nausea)	No	278	90.6 %
Any closest friends' who smoke shisha	None Of them	160	52.1 %
	Some of them	85	27.7 %
	Most of them	31	10.1 %
	All of them	31	10.1 %
Shisha is important part of social gathering	Yes	78	25.4 %
	No	229	74.6 %
How easy or difficult would it be for you to get shisha if you wanted some	Very difficult	15	4.9 %
	Fairly difficult	21	6.8 %
	Fairly easy	52	16.9 %
	Very easy	30	9.8 %
	I don't know	189	61.6 %

Table 3: Likert scale measurement of Attitude and perceptions of shisha section

		Frequencies(n)	Percentage (%)
I believe Shisha is less harmful than traditional cigarettes	Strongly Agree	57	18.6 %
	Agree	78	25.4 %
	Neutral	90	29.3 %
	Disagree	31	10.1 %
	Strongly Disagree	51	16.6 %
I believe water inside shisha help to filter out toxin	Strongly Agree	55	17.9 %
	Agree	59	19.2 %
	Neutral	109	35.5 %
	Disagree	40	13.0 %
	Strongly Disagree	44	14.3 %
Sales of shisha to minor (<18 years) should be banned	Strongly Agree	148	48.2 %
	Agree	40	13.0 %
	Neutral	66	21.5 %
	Disagree	25	8.1 %
	Strongly Disagree	28	9.1 %
It is safe to smoke shisha for a year or two as long as you quit	Strongly Agree	54	17.6 %
	Agree	43	14.0 %
	Neutral	103	33.6 %
	Disagree	44	14.3 %
	Strongly Disagree	63	20.5 %
Would consider never smoke shisha, if you more about its health risk	Strongly Agree	109	35.5 %
	Agree	63	20.5 %
	Neutral	89	29.0 %
	Disagree	31	10.1 %
	Strongly Disagree	15	4.9 %
It is easy to buy shisha from the store and supermarket	Strongly Agree	58	18.9 %
	Agree	77	25.1 %
	Neutral	111	36.2 %
	Disagree	34	11.1 %
	Strongly Disagree	27	8.8 %
People who smoke shisha look more attractive	Strongly Agree	19	6.2 %
	Agree	71	23.2 %
	Neutral	60	19.5 %
	Disagree	55	17.9 %
	Strongly Disagree	102	33.2 %
There should be more public health awareness	Strongly Agree	23	7.5 %
	Agree	134	43.6 %
	Neutral	59	19.2 %
	Disagree	74	24.1 %
	Strongly Disagree	17	5.5 %

4. Discussion

This study examined the socio-demographic characteristics, knowledge, behaviours, and perceptions related to shisha use among college going students. The prevalence of shisha smoking found in this study aligns with the of the previous studies conducted in Delhi, United Arab Emirates, Qatar, and Ethiopia, indicating a widespread and growing pattern. Our study revealed that (44.0%) of the students were aware about

shisha, which is a concerning number, and of which (27.7%) of students having used shisha at least once in their life.^{[13], [17], [18], [22]} Additionally, (23.1%) reported to have used shisha occasionally and (27.0%) reported to consumed shisha during social gatherings with friends or with some of the family members. These findings reflect the increasing normalization and social acceptance of shisha smoking among the students.^[20] Smoking behaviours were largely motivated by factors such as socializing and flavours enjoyment cited by (24.8%)

the students. The flavour preferences such as mint (21.2%) and mixed fruit (13.7%) were the most enjoyed by the students, the availability and variety of flavoured shisha tobacco products may further enhance the appeal of shisha smoking, especially among youth.

Misconceptions regarding the safety of shisha were prevalent. Approximately (44.0%) of students believed that shisha is a safer alternative to traditional cigarettes, ^{[[12]]} believing that water inside the shisha apparatus help to filter the toxic substances when inhaling the smoke and that beliefs was held by (37.1%) of the students. However, this is not factually true, as studies have shown that shisha is still very harmful and toxic, and further shows their low of knowledge regarding shisha and its health risk associated with it. ^{[[14]]} Shisha smoke contains high concentrations of harmful substances, even higher than the traditional cigarettes, including—carbon monoxide, nicotine, tar and other chemical substance that are used for flavouring the tobacco. Study suggest peer influence may not be a strong factor, as only 10.1% of students cited to have friends who smoke shisha. This result may show that peer usage may still have an influence in personal behaviour through normalization and desire to be social accepted, as most youth fear being left out. ^{[[30]]} Due to lack of stringent regulatory enforcement regarding the sale of shisha products, ^{[[4], [21]]} Accessing it is relatively easy as reported by (16.9%) of students, particularly through supermarkets and local stores.

Out of all the respondents, (36.8%) of the students were aware of the health risk associated with shisha, and only a mere (9.4%) of them have experienced some negative effects from using it, such as dizziness, nausea, and shortness of breath. Additionally, (31.9%) of the students believed people who smoke shisha tend to have more friends, while (23.1%) felt that those who smoke shisha look more attractive, and (25.4%) thought that shisha smoking is an important part of social gatherings. Students think this way because shisha is often smoked in groups, making look like a social and friendly and fun activity to do among peers. ^{[[29]]} Although (43.6%) believed that there should be more public awareness campaign about shisha and its health risks, (38.7%) did not support on the idea to banned to sales oof shisha product to under 18 years minor.

Our study confirmed that age significantly influenced shisha smoking behaviour, with younger age group more likely to engage in smoking ($p=0.001$). ^{[[25]]} Cigarettes is still the most use smoking product ($p<0.002$), ^{[[24]]} A significant number of students believe that shisha is a safer alternative to traditional cigarette ($p=0.007$). In addition, a notable portion of students reported too having tried consuming shisha ($p=0.011$)

Gender-specific trends finds that male students were more likely to engage in daily smoking ($p<0.006$). But regarding the attitudes toward shisha regulation, female students are less likely to support the banned of sales to under 18 minors ($p=0.009$). The finding of this study suggest the need of intervention strategies specifically tailored by age and gender to be more successful.

From a socio-demographic perspective, the majority of participants were female (59.9%) and those resided in urban areas (79.8%). Most students were between 18 and 20 years

(46.6%), an age group often associated with new social experiences, peer bonding, and experimental activities a factor that may contribute to increased shisha use. ^{[[23]]}

5. Limitation

Due to reliance on self-reported data, the study may be subjected to social desirability bias, and since the study was conducted in a single urban setting, the finding cannot be generalized to the broader population.

6. Conclusion

The findings of this study indicate a substantial prevalence of shisha smoking among college students, alongside a widespread misconception regarding its health risks. ^{[[15]]} The appeal of flavoured tobacco, peer influence, social acceptability, and lack of stringent regulatory control contribute to normalization of shisha consumption. Theres a need for targeted health education programs that address the misconceptions regarding shisha held by the students. Public health campaigns should aim to correct false beliefs about shisha's safety and highlight its potential health consequences. Tobacco-free campus initiatives should be imposed to create a healthier academic environment and overall health. ^{[[27]]} Additionally, policy intervention should enforce age restrictions and limit the access to shisha products to combat usage among youth population.

Conflict of interest for any other investigator(s): NIL

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