Original Article

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Is tobacco 'free' flavored hookah act as a catalyst for starting smoking among young Indian women? - Evidence from a descriptive study.

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Abstract

Background: Trends since last two decades indicates that the prevalence of smoking among women in India is increasing at an alarming rate. We carried out this study with theaim to delineate the lifestyle factors of women smokers. **Methods:** A cross-sectionaldescriptive study was conducted in Bhopal city employing non-probability snowball sampling technique. The total duration of thestudywas ten months. Data was collected from 874 women between the ages of 15-30 years who smoke tobacco with the help of a structured questionnaire. **Results:**Mean age of starting smoking was 21.8 years. Most participants had a history of smoking tobacco free flavored *hookah* before initiating cigarette smoking. Most participants smoked their first cigarette while using tobacco-free hookahs (51.8 %) followed by under influence of alcohol (38.7 %). About 23.0% women believed that occasional cigarette smoking is not harmful. Only about one-third of women had ever thought of quitting smoking. **Conclusion:**Further research in the form of longitudinal study is needed to prove that using tobacco free *hookah* facilitates the initiation of tobacco smoking among women and thus contributing towards increase in the prevalence cigaret smoking among women.

Keywords: Tobacco, Hookah; Women; Smoking,; India

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INTRODUCTION

Atrocities on human health caused by tobacco haveevolved into a hyper pandemic.[1]It is estimated that if the current pattern of tobacco consumption prevailed then,there wouldbe about 1 billion death due to tobacco related diseases during 21st century.[1]Among middle-aged persons, tobacco use is believed to be the single most important risk factor among men and the second most important risk factor among women for premature death.[2-4]Earlier the high burden of tobacco consumption was limited to male gender, but over the time, the prevalence of tobacco use has increased among women.[5]Chewing is still the predominant form of tobacco consumption among women in India, especially among women belonging to lower socioeconomic class.[6]However,trends from the year 1990 onwards very distinctly indicate that the prevalence of tobacco (cigarette) smokingamong Indian woman is steadily increasing, especially among affluent and middle-class women.[6] Although the prevalence of women who smokes dailyis still minuscule(3.3%) in India, yet numerically it translates into an entire different story.[7]It is estimated that there are about 1, 40, 00,000 women who smokecigarettes each day, thus making it an emerging public health problem in India.[7] The situation becomes dire severe when about 2.4% or 690,900 minor girls smoke cigarette on daily basis.[7]If no interventions are done at

present, it is certain that pattern of smoking among woman in India will follow theepidemiological trends of developed nations[1]. Thus, over time prevalence of smoking among woman will increase and a sizable proportion of women will become addictive to smoking as happened in China.[8]This unwarranted trend has caused panic among policymakers, a recent World Health Organization (WHO) framework convention against tobacco has stressed on an urgent need for female-centricstrategies in every country toreduce the prevalence of smoking among women.[8]Factors leading to increased consumption of tobacco among female in India are not completely clear.[9, 10] But it is known that tobacco companies have attempted to popularize smoking among female using strategies such advocatinggender equality, glamorizing smoking by women through movies, enjoyment, slimness, and developing awomen-specificproduct (e.g. flavors and aromas). [11-13] Tobacco companies also employ marketing and advertising technique by targeting female crowds at discotheque, bars, and lounge etc.[13]In the given state of affairs, it becomes a dreadfully important to investigate that how and why young girls/women are picking up the harmful habit of smoking. In order to develop a feasible counter-strategywe need to know with high degree of precision that what all factors are responsible for theincrease in the prevalence of smoking among women in India. Such studies which specifically focus on the factors responsible for smoking among woman in central India have never been undertaken before. Therefore we carried out this study with theobjective to delineate sociodemographic and lifestyle related variable among women smokers aged 15-30 years in the city of Bhopal.

MATERIAL AND METHODS

Study Design: this was a community-based descriptive cross-sectional study. **Study Setting: P**resentstudy was conducted in the city of Bhopal, the capital city of thestate of Madhya Pradesh, India. As per census 2011, Bhopal had a population of 2.4 million. The overall sex ratio of Bhopal was 918.[14]Other than being a state capital, Bhopal is a major education hub; it has many amenities of a metro city such as shopping mall, pub, discotheque, bars, five-starhotels,and lounge. The present study was conducted covering only the urban part of the Bhopal district. **Duration of study:** Total duration of thestudy was ten months (from September 2015 to June 2016) and the period of data collection was seven months (from November 2015- May 2016).**Sampling technique:**Because of difficulty in finding study participants (women who smoke) among thetotal female population of Bhopal city, thepresent study employed non-probability conveniencesnowball sampling techniqueto recruit study participants.[15] **Study population;** All women aged 15-30 years of age who smokes tobaccoand residing in Bhopal city. **Case definition of smoker:** For the purpose of study we defined 'smoker' as any female who smoked acigaretteat least once on four different days in the last 15 days preceding the date of survey. This definition was finalized after the pilot study for questionnaire to exclude women who smoked only once/rarely or very infrequently. **Participant recruitments:**All popular destinations frequented by youngsters such as discotheques, famous bars, *hookah* lounge, and partyjoints of the city were listed. A total of 16 destinations were selectedfor visitby data collectors. Following the case definition of 'smoker'authors and data collectorsvisited the selected destinations in a pre-determined sequence. Data collectors visited especially on weekends when there are huge gatherings at selected sites. This strategy was finalized after the pilot study of questionnaire and it increased the likelihood of finding study participants. An add displaying the title of thestudy, contact number of authors&data collectors were put at all important points of selected sites so as to improve the likelihood of recruiting study participants. To begin with participant recruitment,authors/data collectors observed the female visitors/customers at listed entities who smoked. When thedesiredparticipant was found,authors/data collectors verbally confirmed that whether female smoked or not. Indirect questions were askedto women such as thename of brands of cigarette, theprice of asinglecigarette, and price of cigarette packets to indirectly know the extent of her knowledge about smoking. Once a participant who fit our 'case-definition' for thestudy was found, and thenauthors/data collectorsexplained the purpose and nature of thepresent study to participants.After this a date and place was decided for conducting interview of all study participants who agreed to participate in the study. This was done to avoid the influence of alcohol, and disturbance from the surroundingson the responses of study participants. Data was collected afterwritten informed consent was obtained from participants. Confidentiality of the information given by the respondent was maintained throughout the survey.**Sample Size:**all women, who fulfilled case definition of 'smoker'

and consented for study during the period of data collection,were recruicted in the study. In this way we approached a total of 1,012 women smokers during the period of data collection.

Data collection: A systematic search for studiesconducted earlier on tobacco smoking was carried out using PubMed.After analysis of the most relevant study, a structured questionnaire was constructed for data collection.[16-18]Global youth tobacco survey questionnaire (GYTS)was also referred in the process of constructing data collection questionnaire.[19]The questionnaire was translated from English to local language (Hindi) by thetranslator. The questionnaire was pilot tested on 30 female smokers.Results of pilot testing were excluded from final data analysis.The final version of questionnaire had a reliability of $\alpha = 0.95$. The study questionnaire had three parts. The first part had 12 items, and it collected information about demographic variables of the participants. The second part of thequestionnaire had 18 items; it collected data about knowledge, current habit and history of tobacco smoking. Third part had eight items; it collected data related to thoughts, plans and efforts towards quitting smoking. **Data Collectors:**As smoking among women is a sensitive topic andto increase the response rate,we recruited femalepost-graduate students studying Psychology from the government college as data collectors. All data collectors were given two days training before starting data collection. After successful completion of training,a timetabledetailing the proposed date of visit to selected destinations was given to data collectors. Two data collectors were assigned one listed sites(lounge, discothèques,etc.) for data collection. The data collection was supervised by thefirst author from time to time basis. In this way, during the entireperiod of data collection, a total of 158 visits were made by data collectors at selected 16 destinations. At the end of theinterview, all women were given health education about the hazards of tobacco use with special emphasis on theadverse effect of tobacco smoking during pregnancy. All women were also givenadvice on quitting tobacco. After the completion of interview with a given participants, they were asked to refer/suggestnew participants for study with the agreement of maintaining confidentiality/anonymityof refereewhen requested.Such study participants who nominated/referred other participants for study were also requested to introduce data collectors to the nominee so as to increase the participation rate among nominee.**Statistical procedures;**To be included in final data analysis women needed to answer all the questions in thequestionnaire. Data were checked for completeness by authors, before entering into SPSS version 20.0 for analysis. Descriptive statistics (percentage & frequency) were used to describe the sample. Measures of central tendency were calculated for continuous variables. A P value below 0.05 was considered statistically significant and aP value less than 0.001 were considered highly significant.

RESULTS

For recruitment of study participants data collectors/authors approached a total of 2198 women. Following the case definition of 'smoker' employed for the presentstudy we found a total of 1,012eligible participants (smokers)during the period of data collection, of which 89 women refused to take part in thestudyciting various reasons. Of the eighty-nine women who declined to participate in thestudy,twenty-six were those who were directly approached by data collector at selected sites and rest sixty-three were those women who were referred by study participants. Forty-nine participantsdid not complete the study questionnaire/refused few questions due to reasons beyond the control of data collectors. Thus, final data analysis was done on a total on 874female. Of the total 874 women included in data analysis,678 women were directly approached by data collectors at selected destination and 196 women were referred by study participants. Table 1 details the socio-demographic profile of the study participants. The meanage of the participants was 23.6 years (not shown in table). Most of the participants were in the age group of 21-25 years. Most of the participants were leaving away from their parents/home either in ahostel or as a paying guest. Most of the participants were financially dependent on others/parentsand were currently studying in college. Table 2 summarizes the history and current smoking habits of participants.Among all study participants, most women started smokingwhen they were between 19-22 years of age. Mean age of starting smoking was 21.8 years (not shown in table). The majority of the participants initiated smoking at a *hookah*lounge (46.8 %) followed by in a party/discotheque(35.9 %). For most participants, their first cigarette was offered by/ shared with a female friend, and only 1.25 percent of women started smoking by themselves. Most common

Table 1: Distribution of study participants by demographic variables (n=874)

Demographic variable	Frequency (n)	Percent (%)
Age(in years)		
15-20	83	9.5
21-25	573	65.6
26-30	218	24.9
Education status		
School	67	7.7
College-undergraduate	699	80.0
College- postgraduate	108	12.4
Living arrangement		
Alone	76	8.7
With parents/family/siblings	118	13.5
With roommates/friends	680	77.8
Place of living		
Home	158	18.1
Hostel	227	26.0
Room on rent/paying guest	489	55.9
Marital Status		
Unmarried	605	69.2
Married	204	23.3
Divorced/widow	65	7.4
Other addictions###		
Alcohol	697	79.7
Marijuana	35	4.0
Others	08	0.9
Financial status		
Independent	243	27.8
Dependent	631	72.2
Employment status		
Employed	243	27.8
Studying/student	578	66.1
Unemployed/housewife	53	6.1

###- Multiple response

Table 2: Distribution of study participants by past and current smoking pattern

Variable	Frequency (n)	Percent (%)
Age of starting smoking		
15-18	108	12.4
19-22	431	49.3
23-25	258	29.5
>25	77	8.8
Place of smoking first cigarette		
Home	09	1.0
Hostel/rented alone	57	6.5
Bar	45	5.1
Party/discotheque	314	35.9

Hookah Lounge	409	46.8
Friends House	40	4.6
Who offered you the first cigarette to smoke		
Self	11	1.25
Female friend	467	53.4
Male friend	117	13.3
Sibling/relative/family cousin	279	31.9
How did first episode of smoking took place		
Under influence of alcohol	338	38.7
Along/after non- tobacco hookah	453	51.8
Others	83	9.5
Reason for smoking first cigarette		
For Thrill/enjoyment	489	55.9
Depressed /stressed	311	35.6
Peer suggestion	74	8.5
Do your parents know you smoke/smoked		
Yes	29	3.3
No	845	96.7
Does your brother/sister know you smoke		
Yes	189	21.6
No	685	78.4
Family members who smoke###		
None	90	10.3
Father	432	49.4
Mother	14	1.6
Brother	388	44.4
Sister	91	10.4
Ever smoked at workplace/college/school		
Yes	378	43.2
No	496	56.8
Smoking frequency		
Daily	219	25.1
Frequently but not daily (weekly)	578	66.1
Occasionally	77	8.8
Last smoked cigarette***		
Yesterday	279	31.9
Within this week	402	46.0
Within last two week	193	22.1
Have you used tobacco-less hookah$$$ before starting smoking		
Yes	713	81.6
No	161	18.4
Duration of 'tobacco free' use before starting smoking cigarette (n=713)		
< 1 months		
>1- <3 months		
>3- < 6 months		
>6- < 12 months		
>12 months		
Started drinking alcohol before starting smoking		
Yes	589	67.4
No	285	32.6
Reason to continue smoking		

Habitual/addicted	289	33.1
Fun/enjoyment	189	21.6
Work/study stress	195	22.3
Occasional smoking not harmful	201	23.0

###- Multiple responses, *** - other than the day of interview $^{\$\$\$}$- Flavored tobacco-free hookah

Table 3: Access to cigarette, and attitude towards quitting among study participants

Variable	Frequency (n)	Percent (%)
Do you know any other female friend /women who smokes		
Yes	**607**	69.5
No	**267**	30.5
Any male friend who smokes		
Yes	**792**	90.6
No	**82**	9.4
From where you get/buy cigarette		
Never buy	287	32.8
Bar/lounge/discotheque	92	10.5
Shop	187	21.4
Buy from friend	190	21.7
Borrow from Friend	118	13.5
Nature of buying cigarette(n=469)		
Loose	208	44.3
Packet	261	55.7
Ease of getting/buying cigarette		
Get cigarette whenever I want	157	18.0
Don't always get cigarette	717	82.0
Have you ever decided on quitting smoking		
Yes	286	32.7
No	588	67.3
Have you ever tried quitting smoking(n=286)		
Yes	190	66.4
No	96	33.6
Method adopted for quitting(n=190)		
None/simple abstinence	130	68.4
Nicotine chewing gum	56	29.5
Medications	4	2.1

reason cited by participants for initiating smoking was for 'fun/thrill' followed by due to 'stress/depression' in life. Most common reason cited for continuing smoking by study participants was that they have become habitual/ addicted to smoking (33.1 %) followed by the reason that occasional smoking was not harmful (23.0 %). For themost participants first episode of smoking came

simultaneously while using tobacco-free hookahs (51.8 %) followed by drinking alcohol (38.7 %). Almost all participants accepted that their parents did not know about their smoking status and most of the participants smoke on aweekly basis.Table 3 highlight factors related to ease of access to cigarette and attitude of women about quitting cigarette smoking. Among 874 participants only about one-third (286 women) had ever thought of quitting smoking, of this only 190 participants had tried to quit but were unsuccessful.

DISCUSSIONS

Women who smokes tobacco faces adverse health consequences as compared to aman who smokes. There are numerous factors which predisposea woman towards initiating and continuing tobacco smoking. The motive behind thepresent study was to investigate the various factors related to women smokers such as living arrangement, stress related to study/job/personal life, visit to thebar/ pubs/lounge, and smoking by friends/colleagues.

In our study,we observed that the most women smokers had ahistory of smoking 'tobacco-free' flavored hookahbefore starting tobacco smoking. Flavored tobacco-free hookah as the name suggestsis a water vapor/smoke based scented hookah (water pipe) which does not contain tobacco.[20]Many studies conducted in different parts of theworld had reported a parallel addiction pattern between cigarette and hookah smoking. All such studies have reported that hookah smoking is a major predictor for starting cigarette smoking by youth in later life. [21,22]The striking contrast highlighted by ourstudy is thatin our case, it is the smoking of "tobacco-free"flavored hookah which is predisposing/promotingtobacco smoking among women. This linkage can be theoretically explainedin the following way. Inhaling smoke/vapors of tobacco-free *hookah* might create a sense of excitement so as to try/experiment with the real thing (tobacco) and increases the acceptance of tobacco smoke among women. This dangeroustrend needs immediate attention of both the government and health agencies because of rising popularity and increased availability of such

flavored hookah at various places which are frequented by youth such as malls, pubs, lounges and resorts. Being tobacco free, the usual restrictions which are applicable to tobacco product are not applicable to these hookahs hence further increasing their availability. Other than smoking tobacco free hookah, most women had a history of drinking alcohol. Alcohol consumption reduces natural inhibition and creates sense euphoria, thus, it is possible that intake of alcohol makes it easy on thepart of women to start tobacco smoking.Most of those who smoked daily/frequently were either living alone or were living withfriend/s whereas occasional smoking was more common among those living with their parents.Living in hostels and as paying guests removes the social restriction that comes from living with parents in a family. Among family related variable two factors were highly prevalent among study participants namely smoking by asiblings (especially female) and unawareness of parents about the smoking status of participant. These two findings represent two different sides of Indian family value. The first finding represent ahigher risk and secret sharing between siblings and the second finding suggests the social unacceptance of smoking by women among Indian households. In our study, we found that a considerable proportion of women initiated smoking after they were offered cigarette by one of their female friend/s. Similar findings are reported by Bricker and othersin their study conducted in different countries. [23-26]All these studies indicated that smoking among friends strongly influences both the initiation andcontinuation of smoking among individual of both genders. In our study, we observed that a very minute proportion of women started smoking by themselves. Both of above finding prove the significant role of peer pressure/support in initiating of smoking among women. The probably most disturbing finding of our study is that about one-fourth of study participants did not consider that occasional smoking is harmful and hence they continue to smoke on and off. In our study most women who smoked occasionally expressed difficulty in buying cigarette every time they needed it, thus prompting many such women to buy packets of cigarette at a time. This behavior might increase the degree of addiction among occasional smokers. In our study, we noticed that most of those who were frequent smokers do not haveany difficulty in accessing/buyingcigarettes. It indicates that those who have become addictedtotobacco have developed aneasy cigarette delivery system for themselves.

LIMITATIONS

In our view following were limitations of thepresent study. The present study is not a representative of all young women, and thus, the result cannot be generalizes to women belonging to different sections of society. We did notverify the extent of addiction/ smoking among women

because we did not measured nicotine levels in saliva or exhaled carbon monoxide in breath or employed any other biomarkers. Lastly, recall biases could have altered the responses from awoman.

FURTHER RESEARCH

A prospective longitudinal study is needed to study youth who frequently visits to hookah lounge and trace their progress from being a tobacco free *hookah* smoker to tobacco smoker. Also a qualitative study is needed to better understand the factors which lead to smoking among school going and female population.

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