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Original Research Article

Tobacco consumption pattern and dependence in an urban slum community of Mumbai

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ABSTRACT

Background: Globally India ranks as second highest in terms of tobacco users. As per the GATS survey, 11% of all adults smoke and 21% of all adults are using the smokeless form of tobacco. The aim of the study is to assess the level of dependence on tobacco in the urban slum population aged 18 years and above in Mumbai.
Methods: A descriptive cross-sectional study amongst 100 adults aged 18 years and above, selected sequentially from the sampling frame of tobacco users in the urban slum of Mumbai.
Results: Amongst the 100 respondents 63 were males and 37 were females, 48% were aged 55 years or older and only 12% were below 35 years of age. All females in the study used smokeless form of tobacco, whereas 74.6% of the males used smokeless form of tobacco. 51% respondents reported the age of initiation of tobacco as 20-24 years and 34% reported a family member using tobacco products. Less than Rs. 200 per month was being spent on purchasing tobacco products by 77% of the respondents. High dependency score in Fagerstrom Test for Nicotine Dependence (FTND) was observed in 26.3% and 51.2% of smokers and smokeless tobacco users respectively.
Conclusions: In the urban slum of Mumbai, smokeless form of tobacco is more prevalent than smoke form of tobacco and is highly addictive both in males and females. Family influence played a major role in initiation of tobacco use among females as compared to males.

Keywords: Mumbai, Smokeless tobacco, Tobacco dependence, Tobacco smoking

INTRODUCTION

Globally India ranks as second highest in terms of tobacco users. India has an estimated 253 million tobacco users.[1] According to NFHS survey-5, the percentage of tobacco users in females is 9% and in males, it is 38%.[2]

India sees a dual burden of smoke and smokeless tobacco. Smokeless tobacco is very common in India. The overall prevalence of tobacco use in India is 29% as per the GATS-2 survey in 2016-2017.[3] According to WHO estimates the prevalence of tobacco users is 24% in the year 2022.[(4)] As per the GATS survey, 11 % of all adults smoke and 21% of all adults are using the smokeless form of tobacco.[3] Khaini(11%) and Beedi(8%) are the most common forms of tobacco use.[3]

Tobacco consumption is associated with cancers, non-communicable diseases and communicable diseases.[5] Smoke forms of tobacco include manufactured cigarettes, beedi, hookah, cigars and pipes. Smoking is known to cause cancer of the lungs, oral cavity, nasopharynx, oesophagus, stomach etc.[6] Smokeless tobacco in the form of mishri, gutkha, khaini etc. is known to cause cancers of the mouth, tongue, cheek, gums, oesophagus and pancreas.[7,8] Studies show that there is a relationship between the frequency of tobacco consumption and hypopharyngeal cancer.[9]

The DSM-IV definition of substance dependence is ‘‘a cluster of cognitive, behavioural, and physiological symptoms indicating that the individual continues the use of the substance despite significant substance-related problems. There is a pattern of repeated self-administration that usually results in tolerance, withdrawal, and compulsive drug-taking behaviour’’.[10]

Tobacco users become dependent on tobacco products due to nicotine and are unable to stop themselves from tobacco use despite the knowledge about the harmful effects.[11] Smokeless tobacco is more addictive due to the nitrosamines.[12] A study conducted in Nepal showed nicotine dependence (moderate and severe) to be 80% in smokeless tobacco users and 48% in smokers.[13]

Studies show that individuals who are dependent on tobacco are those who started tobacco consumption at a young age, belong to low socio-economic status, low literacy level and use of smokeless tobacco.[11,12,14,15]

Prolonged tobacco use leads to physical dependence, and also is associated with depression and anxiety.[16-18] Quitting tobacco causes withdrawal symptoms, and is the reason for relapse.

By knowing the level of tobacco dependence, we can provide more individual counselling and pharmacotherapy.[19] The aim of the research study is to assess the level of dependence on tobacco in the urban slum population aged 18 years and above in Mumbai.

The objectives of the study are 1) To study the type of tobacco product consumed (Smoke form, Smokeless), 2) To assess the demographic profile of tobacco users, 3) To study the levels of tobacco dependence amongst tobacco users, 4) To assess the factors associated with tobacco use.

METHODS

A Descriptive cross-sectional was conducted in the residents of an urban slum community of Mumbai aged 18 years and above. All the male and female residents of the Pratikshananagar slum in Mumbai, aged 18 years and above who are tobacco users, willing to participate in the study and available at the time of the visit constituted the study sample. A sampling frame of the tobacco users in the community was made from the household survey data. Quota sampling wherein 25% of the individuals i.e. 100 individuals listed as tobacco consumers in the sampling frame were selected using sequential sampling method till the desired sample size was reached. The duration of study was one year. A questionnaire validated by two physicians, and translated into local languages Marathi and Hindi were used to assess the frequency, type and duration of tobacco use; level of dependence in users of smoke and smokeless form of tobacco (The Fagerstrom Addiction Scale and Modified Fagerstrom Addiction Scale).[20] and the socio-cultural and socio-demographic factors associated with tobacco use.

From the household survey of the 1500 families, a list of the tobacco users was prepared based on verbal reporting by the family members at the time of the household survey. From the sampling frame, the research investigator sequentially approached the individuals and briefed them about the purpose of the study. After obtaining informed consent, the research investigator interviewed the respondents in the local language. All tobacco users were counselled using the 5 A’s (Ask, Advice, Assess, Assist and Arrange) and 5 R’s (Relevance, Risk, Rewards, Roadblocks, Repetition) of counselling and referred to the Tobacco Cessation Clinic at the tertiary hospital.

Data was entered in excel and descriptive statistics like mean, median, percentage etc. was applied. Nicotine Dependence is categorised based on the Fagerstrom Test for Nicotine Dependence Score as high, moderate and minimal dependence. The relationship between different levels of Nicotine Dependence and the study variables is studied by applying tests of significance.

RESULTS

Amongst the 100 respondents (63 males, 37 females), 48% were aged 55 years or older. Only 12% were below 35 years of age. Mean age of the respondents was 51.57 years with standard deviation of 14.30 and an age range of 20-90 years. In terms of education, 20% of the respondents were illiterate, with a higher proportion among females (37.8%). Occupational data showed an unemployment rate (43%). Nine respondents did not respond to the question on income. Of the total respondents 21% and 35% belonged to B.G. Prasad socio-economic class of I and II respectively. Proportion of respondents living in a nuclear family was 62% (Table 1).

Smokeless tobacco products were used by 84% of the respondents. All females in the study used smokeless form of tobacco, whereas 74.6% of the males used smokeless form of tobacco products (Table 2). Amongst the smokeless form of tobacco consumed, chewing of tobacco (40%), Mishri (24%) and Gutkha 10%) was reported (Table 2). Of the 19 males who consumed smoke forms of tobacco, 15 (78.9%) used cigarettes while 4(21.1%) used beedi.

Amongst the 98 respondents who mentioned the age of initiation, 10.2% of the respondents said that they started consuming tobacco before the age of 20 years. In both the smokeform and smokeless form of tobacco, the percentage of respondents who said that they initiated use of tobacco after the age of 19 years was 89.5% and 89% respectively. The age of initiation of tobacco products in the age range of 20–24 years.was 51% (Figure 1).

34% of respondents reported a family member using tobacco products while 3% were unsure if their family members use tobacco products. The proportion of females who reported a family member using tobacco products was

47.2% as compared to 27.9% in males (Chi square =3.735, df=1, p=0.05).

Respondents reported that they were first introduced to tobacco products by their friends (65%), family members (14%) and relatives (10%). Around 3% reported self-initiation while 8% of respondents could not recall how they were first introduced to tobacco.

Table 1: Socio-demographic profile of respondents.

	Male (n=63), N (%)	Female (n=37), N (%)	Total (n=100), N (%)
Age in years			
18-24	2 (3.17)	1 (2.7)	3 (3)
25-34	5 (7.94)	4 (10.81)	9 (9)
35-44	13 (20.63)	4 (10.81)	17 (17)
45-54	15 (23.81)	8 (21.62)	23 (23)
55 and above	28 (44.44)	20 (54.05)	48 (48)
Education			
Graduate	5 (7.9)	-	5 (5)
Higher secondary	16 (25.4)	-	16 (16)
High school certificate	16 (25.4)	5 (13.5)	21 (21)
Middle school certificate	14 (22.2)	11 (29.7)	25 (25)
Literate but less than middle school certificate	7 (11.1)	6 (16.2)	13 (13)
Illiterate	6 (9.5)	14 (37.8)	20 (20)
Occupation			
Professional	-	-	-
Semi-professional	1 (1.6)	-	1 (1)
Arithmetic (clerical/shop owners)	8 (12.7)	1 (2.7)	9 (9)
Skilled	16 (25.4)	-	16 (16)
Semiskilled	9 (14.3)	1 (2.7)	10 (10)
Unskilled	8 (12.7)	6 (16.2)	14 (14)
Unemployed	15 (23.8)	28 (75.7)	43 (43)
Retired	6 (9.5)	1 (2.7)	7 (7)
Types of family			
Joint	23 (36.5)	15 (40.5)	38 (38)
Nuclear	40 (63.4)	22 (59.4)	62 (62)
B.G. Prasad socio economic class			
Class I	16 (25.4)	5 (56.8)	21 (21)
Class II	23 (36.6)	12 (94.6)	35 (35)
Class III	13 (20.6)	14 (73.0)	27 (27)
Class IV	4 (6.3)	3 (18.9)	7 (7)
Class V	0 (0)	1 (2.7)	1 (1)
Not available	7 (11.1)	2 (24.3)	9 (9)

Table 2: Forms of tobacco use.

	Male (n=63), N (%)	Female (n=37), N (%)	Total (n=100), N (%)
Forms of tobacco use			
Both (smoking+smokeless)	3 (4.7)	-	3 (3)
Only smokeless	44 (69.8)	37 (100)	81 (81)
Only smoke form	16 (25.3)	-	16 (16)
Tobacco product			
Chewing tobacco	33 (52.4)	7 (18.9)	40 (40)
Mawa	2 (3.2)	0 (0%)	2 (2%)
Gutkha	7 (11.2)	3 (8.1)	10 (10)
Paan with tobacco	3 (4.8)	6 (16.2)	9 (9)
Mishri	2 (3.2)	22 (59.5)	24 (24)
Cigarettes	15 (23.8)	0 (0)	15 (15)
Beedis	4 (6.3)	0 (0)	4 (4)

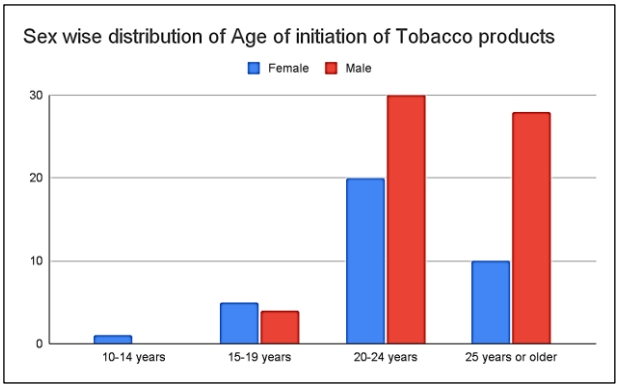

Figure 1: Sex wise distribution of age of initiation of tobacco products.

Curiosity (82%) and peer pressure (69%) were cited by the respondents as the reasons for starting tobacco use. Family influence is reported more by females (38%) as compared to males (5%). There was a statistically significant difference in the reasons cited by males and females (Table 3).

Table 3: Reasons for initiating tobacco use.

Reason	Male (n=63), N (%)	Female (n=37), N (%)	Total (n=100), N (%)	P value
Curiosity	52 (82)	30 (81)	82 (82)	Chi square = 23.48 df=3 p=0.00003
Peer pressure	53 (84)	16 (43)	69 (69)	
Family influence	3 (5)	14 (38)	17 (17)	
Stress relief	8 (13)	1 (3)	9 (9)	

Of the total respondents 69% reported use of tobacco as a routine habit. The respondents also stated that they used

tobacco products while working or studying (49%), when alone at home (26%) or while commuting (21%).

Use of tobacco products due to stress or anxiety was reported by 12% of the respondents (Table 4).

Table 4: Situations/circumstances under which tobacco is used.

Situation of tobacco use	Male (n=63), N (%)	Female (n=37), N (%)	Total (n=100), N (%)	P value
As a routine	38 (60.3)	31 (83.8)	69 (69.0)	χ 2 = 6.001, p = 0.01430
At social gatherings/parties	9 (14.3)	7 (18.9)	16 (16.0)	χ 2 = 0.3723, p = 0.5417
When alone at home	16 (25.4)	10 (27.0)	26 (26.0)	χ 2 = 0.0322, p =0.8576
While working/studying	30 (47.6)	19 (51.4)	49 (49.0)	χ 2 = 0.1299, p = 0.7185
While commuting	16 (25.4)	5 (13.5)	21 (21.0)	χ 2 = 1.984, p = 0.1591
When stressed or anxious	7 (11.1)	5 (13.5)	12 (12.0)	Fisher exact test, p=0.9523
While drinking alcohol	3 (4.8%)	0 (0%)	3 (3.0%)	Fisher exact test, p = 0.4912
While drinking tea/coffee	10 (15.9)	9 (24.3)	19 (19.0)	χ 2 = 1.082, p = 0.3000

54% felt that use of tobacco products by a family member/close friends influenced them, while 16% of them were unsure of the influence the family members had on them. Of the 100 respondents, 27% responded that their peers pressured them to use tobacco products very often while 53% said that they sometimes faced peer pressure. Only 4% said that tobacco use is seen as a sign of social status or maturity. 80% felt that tobacco use is more common at social gatherings like parties or celebrations (Table 5). Only 12.7% of the men reported use of alcohol. The amount of money spent on purchasing tobacco products was less than Rs. 500 per month, with 77% stating that the amount spent is less than Rs. 200 per month.

Table 5: Factors influencing tobacco use.

	Number of respondents (100)
Do you feel that your friends or peers encourage or pressurise you to use tobacco?	
Never	13
Rarely	7
Sometimes	53
Yes, often	27
In your community or friend circle, is tobacco use seen as a sign of social status or maturity?	
I'm not sure	27
No	69
Yes	4
Do you think tobacco use is more common in certain social settings (e.g. at parties, or celebrations)?	
No, I haven't noticed	14
Not sure	6
Yes, it is very common in social gatherings	80
Do you believe that tobacco use in your family or among close friends has influenced your tobacco consumption?	
No, it hasn't	30
Not sure	16
Yes, it has influenced me	54

Only 17% attempted to quit tobacco, of whom 52.9% had attempted more than once. Two of them had attempted to quit in the past six months while three of them attempted a year back.

The various strategies adopted for quitting were completely stopping the use of tobacco (9), seeking help of health care professionals (5), reducing frequency/quantity (5), focussing on hobbies (2), and relied on friends and families for support (1). Four of them were able to quit for a duration of one year while three of them could quit for 1-2 months and the rest of the 17 respondents the period was less than a month.

The reasons that made the respondents quit tobacco were health issues (12) and pregnancy (3). Two of the respondents who quit did not cite any specific reason and stated that it was their decision to quit. Eleven of the

respondents said that they experienced physical or emotional symptoms when they were trying to quit. Cravings was the most common symptom experienced by the respondents (12) followed by restlessness (6).

Of the 63 males, 19 males reported to be using smoke form of tobacco, 21.1% of the smokers reported that they smoked within first 5 minutes of waking up. 73.7% smoked 10 or fewer cigarettes per day. 68.4% of the smokers found it difficult to refrain from smoking in forbidden places. 89.5% of the smokers said that they would hate giving up the first cigarette in the morning and also said they smoked more frequently during the first hours of waking up. 78.9% said that they do not smoke when they are very sick (Table 6).

Table 6: FTND scores amongst users of smoke form of tobacco.

Question	Response	No. using smoke form of tobacco (n=19), N (%)
1. How soon after you wake up do you smoke your first cigarette*	After 60 minutes (Score =0)	4 (21.1)
	31-60 minutes (Score =1)	0 (0%)
	6-30 minutes (Score = 2)	11 (57.9)
	Within 5 minutes (Score = 3)	4 (21.1)
2. How many cigarettes* do you smoke per day?	10 or fewer (Score = 0)	14 (73.7)
	11-20 (Score = 1)	3 (15.8)
	21-30 (Score = 2)	1 (5.3)
	31 or more (Score = 3)	1 (5.3)
3. Do you find it difficult to refrain from smoking in places where it is forbidden, such as in religious places, at the library, or the movies?	No (Score = 0)	6 (47.4)
	Yes (Score = 1)	13 (68.4)
4. Which cigarette* would you hate most to give up?	Any other (Score = 0)	2 (10.5)
	The first one in the morning (Score= 1)	17 (89.5)
5. Do you smoke more frequently during the first hours of waking up?	No (Score = 0)	2 (10.5)
	Yes (Score = 1)	17 (89.5)
6. Do you smoke when you are so ill that you are in bed most of the day?	No (Score = 0)	15 (78.9)
	Yes (Score = 1)	4 (21.1)

Note: *cigarette and other smoke forms of tobacco.

Table 7: FTND scores amongst male and female smokeless tobacco users.

Question	Response	Male (n=47), N (%)	Female (n=37), N (%)	Total (n=84), N (%)	P value
1. How soon after you wake up do you place your first dip?**	After 60 minutes (Score = 0)	0 (0)	1 (2.7)	1 (1.2)	(Chi-square test: $\chi^2 = 5.66$, df = 3, p = 0.129; Fisher's exact test with Monte Carlo simulation, p = 0.100).
	31-60 minutes (Score =1)	0 (0)	3 (8.1)	3 (3.6)	
	6-30 minutes (Score = 2)	23 (48.9)	14 (37.8)	37 (44.0)	
	Within 5 minutes (Score=3)	24 (51.1)	19 (51.4)	43 (51.2)	
2.How often do you intentionally swallow tobacco juice?	ever (Score = 0)	41(87.2)	28 (75.6)	69 (82.1)	(Chi-square test: $\chi^2 = 2.25$, df = 2, p = 0.325; Fisher's exact test with Monte Carlo simulation, p = 0.356).
	Sometimes (Score = 1)	4 (8.5)	6 (16.2)	10 (11.9)	
	Always (Score = 2)	2 (4.3)	3 (8.1)	5 (6.0)	
3.Which chew would you hate to give up most?**	Any other (Score = 0)	0 (0)	2 (5.4)	2 (2.4)	(Chi-square test: $\chi^2 = 2.55$, df = 1, p = 0.110; Fisher's exact test with Monte Carlo simulation, p = 0.153)
	The first one in the morning (Score = 1)	7 (100)	35 (94.6)	82 (97.6)	
4. How many packets/pouches per week do you use?	1 (Score = 0)	1 (2.1)	4 (10.8)	5 (6.0)	(Chi-square test: $\chi^2 = 4.02$, df = 2, p = 0.134; Fisher's exact test with Monte Carlo simulation, p=0.146
	2-3 (Score = 1)	14 (29.8)	16 (43.2)	30 (35.7)	
	More than 3 (Score = 2)	32 (68.1)	17 (45.9)	49 (58.3)	
5. Do you chew more frequently during the first hours after awakening than	No (Score = 0)	1 (2.1)	1 (2.7)	2 (2.4)	(Chi-square test: $\chi^2 = 0.00$, df = 1, p = 0.889; Fisher's exact test with Monte Carlo simulation, p = 1.000).
	Yes (Score = 1)	46 (97.9)	36 (97.3)	82 (97.6)	

Continued.

Question	Response	Male (n=47), N (%)	Female (n=37), N (%)	Total (n=84), N (%)	P value
during the rest of the day ?					
6. Do you chew if you are so ill that you are in bed most of the day?	No (Score = 0)	40 (85.1)	28 (75.7)	68 (80.9)	(Chi-square test: $\chi^2 = 1.07$, df = 1, p = 0.300; Fisher's exact test with Monte Carlo simulation, p = 0.333).
	Yes (Score = 1)	7 (14.9)	9 (24.4)	16 (19.0)	

Note: ** smokeless form of tobacco.

Table 8: FTND score amongst smoke and smokeless tobacco users.

FTND	Form of tobacco		P value
	Smoke form (n=19), N (%)	Smokeless form (n=84), N (%)	
Minimal (< 4)	4 (21.1)	2 (2.4)	Chi-square test: $\chi^2 = 9.38$, df = 2, p = 0.009; Fisher's exact test with Monte Carlo simulation, p = 0.010)
Medium (4-6)	10 (52.6)	39 (46.4)	
High (7-10)	5 (26.3)	43 (51.2)	

Table 9: FTND score amongst male and female smokeless tobacco users.

FTND score for smokeless tobacco	Male (n=47), N (%)	Female (n=37), N (%)	P value
Minimal (< 4)	-	2 (5.4)	Fisher's exact test with Monte Carlo simulation, p = 0.248)
Medium (4-6)	21 (44.7)	18 (48.6)	
High (7-10)	26 (55.3)	17 (45.9)	

The proportion of males and females using smokeless tobacco within 5 minutes of waking up was 51.1 and 51.4%. Use of smokeless tobacco between 6 to 30 minutes of waking up was reported by 48.9% males and 37.8% females. 12.8% males and 24.3% females reported intentionally swallowing tobacco juice always or sometimes.

All males and 94.6% of the females said they would hate to give up the first morning smokeless tobacco that they use. 68.1% of the males and 45.9% of the females used more than 3 packets in a day. Of the males, 97.9% and of the females 97.3% reported that they frequently chewed tobacco in the morning. Also 14.9% males and 24.4% of the females said they use tobacco even when they are sick (Table 7).

Amongst the users of smoke form of tobacco, 26.3% had a high FTND score while 51.2% of the smokeless form of tobacco users had a high FTND score (Table 8). Minimal dependence was found in 21.1% of smokers and 2.4% amongst the smokeless tobacco users. The results showed a statistically significant difference in the FTND scores between smoke and smokeless forms of tobacco users (Table 8).

In the users of smokeless tobacco, only 2 females had minimal dependence. Medium dependency was observed in 44.7% males and 48.6% females. High dependency was observed in 55.3% and 45.9% males and females respectively. There was no statistically significant difference in the level of dependence amongst the male and female users of smokeless tobacco (Table 9).

DISCUSSION

The majority of the respondents were males. Overall educational status of respondents was low, with only 5% completing graduation. Unemployment rate was very high. Three-fifth of the respondents were living in a nuclear family.

The smokeless form of tobacco was being predominantly used by the respondents (84%). Only 19% of the respondents were smokers, all being male. The findings of the study are different from the findings of the study conducted in Nepal where they find a higher proportion of smokers.[13] In this study none of the females reported smoking, which is in contrast to the study by Subedi et al.[13] Tobacco chewing and Mishri was the predominant form of smokeless tobacco in the present study. Only 10% of the respondents said that they started using tobacco when they were less than 19 years of age. Almost one third of the respondents reported having a family member who uses tobacco, a finding that is much lower than that reported by Subedi et al.[13] Use of alcohol was reported by only 12% which is lower than the figures reported in the Nepal Study.[13]

Majority of the respondents were introduced to tobacco by friends, and a large proportion used it out of curiosity and peer pressure. Family influence played a major role in

initiation of tobacco use among females (38%) as compared to males. Use of tobacco appears to be more of a routine habit (69%). Also, nearly 50% reported using tobacco while studying or working. Surprisingly only 12% reported stress as a reason for using tobacco. 80% felt that tobacco is used more often at social gatherings like parties or celebrations.

Less than Rs. 200 per month was being spent on tobacco by majority of the respondents, which indicates that the smokeless form of tobacco predominantly being used by the respondents is quite affordable even by the low socio-economic group. The proportion attempting to quit tobacco was less than one fifth which was much lower than the study by Subedi et al.[13] Health was the primary reason behind their attempt to quit tobacco.

One fifth of the smokers reported using tobacco within five minutes of waking up which is slightly lower than the findings of the Nepal study.[13]

One fifth of the smokers reported minimal level of dependency in contrast to the Nepal study which reported 50% respondents as having minimal dependency as per the FTND score.

In the present study, we found that 79% of smokers and 95% of smokeless tobacco users used tobacco within half an hour of waking up, which is quite higher the GATS survey findings (58.5%).[3]

The proportion trying to quit tobacco (17%) was much lower than the findings of the GATS survey where 38.5% smokers and 33.2% users of smokeless tobacco made an attempt to quit tobacco.[3]

A study in Puducherry found a medium level of dependence in a slightly higher proportion of smokers (61%) as compared to the present study (53%).[7] In case of smokeless tobacco users, medium level of dependency was observed in 41% which is slightly less than the present study findings of 46%.[7]

More than half of the respondents reported using smokeless tobacco within 5 minutes of waking up, a finding which is quite higher than the Nepal study. Almost one fourth of the women reported that they would use tobacco even when are sick. The results showed a statistically significant difference in the FTND scores between smoke and smokeless forms of tobacco users indicating that smokeless tobacco is highly addictive. This finding is similar to the Nepal study.[13]

68.4% of the smokers found it difficult to refrain from smoking in forbidden places, a finding similar to that of the study conducted in Delhi.[11] The study conducted in construction workers in Delhi showed 55% of the workers used tobacco within first hour of waking up, which is quite lower than findings of the present study where 80% and 99% said that they used tobacco within one hour of waking up.[11]

CONCLUSION

In the urban slum community of Mumbai, smokeless form of tobacco is more prevalent than smoke form of tobacco. Smokeless form of tobacco is quite affordable even by the low socio-economic groups. However, the smokeless form of tobacco is highly addictive both in males and females. Friends and families greatly influence the use of tobacco in the community.

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