

Tobacco Use Pattern, Dependence, Oral Cancer Awareness and Health Education needs Among Urban Slum Dwellers of Jodhpur City

Abstract

Background: The rapid migration from rural to urban region results in mushrooming of slums in India. Urban-slums are comparatively poor vulnerable groups which are mostly affected with oral cancer due to higher exposure to risk factors like tobacco use. **Aims:** To assess pattern of tobacco consumption, awareness about oral cancer and related health education needs in urban slums of Jodhpur city. **Methods:** Study was conducted during July 2018-Nov 2018 in slum of Jodhpur city. On the basis of cluster sampling strategy data were collected from 1200 participants regarding tobacco use and perception regarding oral cancer to identify health education needs in urban slums. Descriptive statistics, Chi-square test, multivariate logistics analysis were used and $P < 0.05$ was considered statistically significant. **Results:** A total of 1200 participants were surveyed, out of which 48.5% were males. Among the study population, 58.5% ($n = 462/789$) males and 41.45% ($n = 327/789$) females were consuming tobacco in one or more forms. The statistical association between: age and bidi, gutka, zarda consumption; gender and bidi, cigarette, gutka consumption was found to be significant ($P < 0.001$). The younger population (15-30 years) has more willingness to quit tobacco than the older population. (OR = 1.52, 95% CI = 1.092-1.1). Almost 56% were aware of oral cancer. **Conclusions:** An effective information, education and communication (IEC) strategy for tobacco cessation should be designed with focus on different education needs according to age, gender, and education status of slum population.

Keywords: Mouth neoplasm, need assessment, poverty areas, tobacco use

Introduction

World Health Organization (WHO) states that tobacco kills 8 million people in a year globally.^[1] In India, >1 million deaths occur each year due to tobacco use.^[2] Tobacco consumers are at risk of developing noncommunicable diseases like oral cancer.^[3,4] Tobacco control is more complex and challenging in India due to availability of variety of smoking and smokeless tobacco products.^[5] According to Global Adult Tobacco Survey (GATS) study 2016-2017, tobacco is commonly consumed in India in form of khaini/zarda (tobacco and lime mixture: chewing form) followed by bidi (smoked form) and gutka (betel quid with tobacco: chewing form). Khaini and bidi are mostly consumed by males, whereas smokeless tobacco like gutka and khaini are used by females.^[6]

Studies have shown that the tobacco use in India is more prevalent in population with low-socioeconomic status and

low-education level.^[7] This stratum of population is more inclined toward tobacco and is less likely to quit due to lack of motivation.^[7] Many developing countries are facing rapid growth of urbanization which has led to change in lifestyles including unhealthy nutrition, reduced physical activity, and tobacco consumption.^[8] The rapid migration from rural to urban region has resulted in mushrooming of slums in India. Dwellers of urban-slums are comparatively poor and constitute vulnerable groups.^[9,10] Studies have also suggested that the low-socioeconomic groups in India are mostly affected with oral cancer.^[11] This might be attributed to higher exposure to risk factors like tobacco use and lack of accessibility to early screening for identification of oral cancer.^[11]

Available literature shows that it is quite challenging to prevent tobacco consumption among the population living in urban-slum region.^[12] Thus, there is need to develop the health education and communication strategies for increasing awareness about

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tobacco and its related diseases. This study is conducted to assess pattern of tobacco consumption and awareness about oral cancer for identifying the health education needs in urban slums of Jodhpur city.

Methods

A cross-sectional study was conducted during the period of July-November 2019 among slum population of Jodhpur city. Two stage cluster sampling was used. In the first stage 8 different localities of the city were selected based on master plan 20012013 of Town planning department of Jodhpur city. In the second stage 23 slums within each locality were selected randomly. Not >5060 were interviewed in each slum to avoid bias from cross information exchange with the first set of interviewed people. Total 1200 participant were surveyed in this study. The questionnaire was developed based on findings from literature search and observations of behavioural aspects of people living in slum areas of Jodhpur city. Semi-structured questionnaire was used, which comprised of questions on socio-demographics, knowledge about risks involved in tobacco consumption, and awareness for oral cancer. Piloting was done to check feasibility of questionnaire. Prevalence of tobacco usage pattern and descriptive statistics were determined by percentages and numbers. Ethical approval was obtained from relevant authority and informed consent was obtained from participants. Multivariate logistics analysis was done to determine odd ratios and 95% confidence intervals. To assess the health education needs in urban slum population, the Chi-square test of significance was used for analysis whenever it was applicable and *P* value less than 0.05 (*P* < 0.05) was considered statistically significant.

Results

A total of 1200 participants were surveyed, out of which 48.5% were males and 51.4% were females between age group of 15-90 years. Among the study population, 789 were reported consuming tobacco in one or more forms, out of which 58.5% (*n* = 462/789) were males and 41.45% (*n* = 327/789) were females. Table 1 shows socio-demographic profile of study population. We observed that bidi usage were more prevalent among age groups of 15-30 years and cigarette users were more in age groups between 15 and 30 years. Gutka (*n* = 576) was found to be mostly consumed in study population followed by zarda (*n* = 279), bidi (*n* = 107) and cigarette (*n* = 100). The statistical association between age and bidi, gutka, zarda consumption were found to be significant (*P* < 0.001).

It was found that gutka 61.4% (*n* = 354), bidi 75.7% (*n* = 81), and cigarette 93% (*n* = 93) consumption were more in males as compared with females. A statistically significant association were found between gender and bidi, cigarette, gutka consumption (i.e., *P* < 0.001). Table 2 shows tobacco usage pattern in study population.

Table 1: Socio-Demographic profile of study population

Demographic variables	<i>n</i> =1200	Percentage
1.Age in years		
1530	578	48.16
3045	415	34.58
46 and above	207	17.25
2.Gender		
Males	583	48.58
Females	617	51.42
3.Educational qualification		
Illiterate	442	36.84
Primary	186	15.5
Secondary and above	572	47.67
4.Marital status		
Unmarried	910	75.84
Married	243	20.25
Divorced	15	1.25
Widow	32	2.7
5.Income		
Below 10,000	395	32.92
In between 10,000 and 20,000	415	34.59
Above 20,000	390	32.5

It was evident that bidi and cigarette usage in study population were significantly associated with gender; males had higher odds as compared to females (bidi OR = 3.79, 95% CI = 2.396.03; cigarette OR = 16.48, 95% CI = 7.5635.90). Statistically significant association was found between gutka usage and gender; males had higher odds than females (OR = 2.90, 95% CI = 2.283.69).

In the study, younger population (15-30 years) were more likely to consume bidi compared with older population (OR = 2.80, 95% CI = 1.62-4.84), whereas older population (>30 years) were more likely to consume cigarette. Table 3 shows odd ratios and 95% confidence interval for tobacco usage pattern to selected socio-demographic characteristics. The younger age groups (15-30 years) were 2.1 times more likely to consume zarda (OR = 2.19, 95% CI = 1.50-3.20) and 1.3 times to consume gutka (OR = 1.32, 95% CI = 0.941.85) than the older population.

Table 4 shows that that younger population (15-30 years) has more willingness to quit tobacco than the older population. (OR = 1.52, 95% CI = 1.092.11).

Awareness about oral cancer was seen to be significantly associated with age, education level. and alcohol consumption. The respondents with secondary or higher education had more awareness about oral cancer. The younger population (15-30 years) has 2 times more awareness about oral cancer than older population (OR = 2.03, 95% CI = 1.452.84). Those respondents who were not consuming alcohol had more awareness about oral cancer (OR = 3.43, 95% CI = 2.355.01).

Table 2: Tobacco usage pattern

Demographic variables	Bidi users n	Cigarette users n (%)	Gutka users n (%)	Zarda users n (%)	Areca Nut Users n (%)	Pan masala n (%)
Age in years						
1530	31 (28.9)	55 (55)	243 (42.18)	89 (31.9)	77 (41.4)	107 (43.4)
3145	45 (42.2)	29 (29)	233 (40.45)	125 (44.8)	80 (43.0)	103 (41.6)
46 and above	31 (28.9)	16 (16)	100 (17.37)	65 (23.3)	29 (15.6)	38 (15.0)
	Total=107, $\chi^2=20.24$, P=0.000	Total=100, $\chi^2=2.14$, P=0.34	Total=576, $\chi^2=19.25$, P=0.000	Total=279, $\chi^2=38.65$, P=0.000	Total=186, $\chi^2=6.96$, P=0.03	Total=247, $\chi^2=8.96$, P=0.06
Gender						
Males	81 (75.7)	93 (93)	354 (61.45)	128 (45.8)	23 (12.4)	119 (48.2)
Females	26 (24.3)	7 (7)	222 (38.55)	151 (54.2)	163 (87.6)	128 (51.8)
	Total=107, $\chi^2=34.58$, P=0.00	Total=100, $\chi^2=86.15$, P=<.000	Total=576, $\chi^2=73.50$, P=0.000	Total=279, $\chi^2=1.06$, P=0.30	Total=186, $\chi^2=115.58$, P=0.000	Total=247, $\chi^2=1.07$, P=0.58
Educational qualification						
Illiterate	45 (42.0)	44 (44)	251 (44.6)	113 (40.6)	83 (44.6)	100 (40.2)
Primary	18 (16.8)	13 (13)	95 (16.4)	55 (19.7)	30 (16.2)	38 (15.3)
Secondary and above	44 (41.2)	43 (43)	230 (39)	111 (39.7)	73 (39.2)	109 (44.5)
	Total=107, $\chi^2=2.05$, P=0.35	Total=100, $\chi^2=2.45$, P=0.29	Total=576, $\chi^2=28.28$, P=0.000	Total=279, $\chi^2=10.22$, P=0.006	Total=186, $\chi^2=6.95$, P=0.03	Total=247, $\chi^2=3.71$, P=0.44
Income						
Below 10,000	38 (35.6)	36 (36)	180 (31.2)	98 (35.1)	65 (35)	85 (34.4)
In between 10,000 and 20,000	33 (30.8)	35 (35)	196 (34.1)	80 (28.6)	64 (34.4)	80 (32.4)
Above 20,000	36 (33.6)	29 (29)	200 (34.7)	101 (36.3)	57 (30.6)	82 (33.2)
	Total=107, $\chi^2=0.764$, P=0.68	Total=100, $\chi^2=0.732$, P=0.69	Total=576, $\chi^2=2.71$, P=0.25	Total=279, $\chi^2=5.74$, P=0.05	Total=186, $\chi^2=0.51$, P=0.77	Total=247, $\chi^2=2.75$, P=0.60

Discussion

In the study more number of males (58.5%) reported using tobacco in one or more forms as compared to females (41.45%). Tobacco consumption among male was slightly higher as compared with Global Adult Tobacco Survey (GATS), 20162017 (42.4%) study but for females it was much higher than GATS survey results (14.2%).^[13] Similar study results on female tobacco consumptions were also reported in a study conducted among Indian women (aged 18–40 years) of Mumbai slum community.^[14] The results of present study showed that tobacco use in smokeless form (gutka/Zarda) is more prevalent in urban slum population, this coincide with the study conducted in Bhopal.^[15] Studies have reported that chewing gutka is mostly common in Indian population and the reason might be misconception that chewing tobacco is less harmful than smoking.^[16,17]

Gutka consumption was more common in males, whereas zarda consumption was more in females. It seems that zarda consumption is socially sanctioned among females. The reason for consuming tobacco among females might also be attributed to the use of tobacco as dentifrice for cleaning the teeth as quoted in various studies conducted in slum of India.^[14,18,19]

The females were more likely to consume areca nut than males, whereas consumption of pan-masala was almost same in both genders. Studies suggested that areca nut or pan-masala chewing could be responsible for development of the precancerous condition like oral sub-mucous fibrosis (OSMF) due to its abrasive nature.^[20-22] Some researchers have quoted that areca nut usage at early age acts as the “stepping stone” to smokeless tobacco consumption.^[23] So, there is need to provide health education regarding areca nut or pan-masala chewing in both genders.

Our study revealed that prevalence of smoked and smokeless tobacco use in urban slums of Jodhpur urban is higher than national statistics. This indicates the need of comprehensive health education program for tobacco cessation in slums. It also emphasize the more focused need of health education intervention in context to: Male as they have more tendency to use bidi cigarette and gutka; younger age group as they have more tendency to use both smoked and smokeless form of tobacco. Tobacco use also seems to be associated with alcohol as alcohol user has 2 times more odds of smoking and chewing tobacco. Studies have suggested that tobacco use act as a gateway for alcohol consumption and people who use tobacco exhibit a significantly greater likelihood of consuming alcohol.^[24,25]

Table 3: Odd ratios and 95% Confidence intervals for tobacco usage to selected socio- demographic characteristics

Variable	Multivariate logistic regression							
	Bidi		Cigarette		Zarda		Gutka	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Gender								
Male	3.79	2.396.03	16.48	7.5635.90	0.86	0.651.13	2.90	2.283.69
Female	1	Reference	1	reference	1	reference	1	Reference
<i>P</i>	0.000		0.000		0.29		0.000	
Educational qualifications								
Illiterate	0.79	0.501.25	0.77	0.481.23	0.76	0.561.03	0.51	0.390.67
Primary	0.79	0.371.44	1.11	0.562.16	0.53	0.360.79	0.67	0.470.95
Secondary and above	1	reference	1	reference	1	reference	1	Reference
<i>P</i>	0.56		0.44		0.007		0.000	
Age								
1530	2.80	1.624.84	0.69	0.371.28	2.19	1.503.20	1.32	0.941.85
3145	1.40	0.842.32	1.04	0.542.03	1.06	0.731.53	0.73	0.511.03
46 and above	1	reference	1	reference	1	reference	1	Reference
<i>P</i>	0.000		0.20		0.000		0.000	
Consume alcohol								
Yes	2.56	1.145.74	2.16	1.064.38	2.65	1.634.32	0.92	0.661.27
No	1	reference	1	reference	1	reference	1	reference
<i>P</i>	0.02		0.02		0.000		0.63	
Income								
Above 20,000	1.02	0.621.67	1.13	0.661.93	0.96	0.68-1.33	0.76	0.561.02
Between 10,000 and 20,000	1.24	0.752.05	1.09	0.651.81	1.39	0.981.96	0.92	0.681.23
Below 10,000	1	reference	1	reference	1	reference	1	reference
<i>P</i>	0.65		0.89		0.06		0.18	

The study findings revealed that the general awareness about oral cancer was observed to be more in younger populations (1530 years) as compared with older populations. It is also seen that respondents who were illiterate has less awareness about oral cancer. Similarly, the study conducted in Gorakhpur showed that the awareness about the oral cancer was more in younger age groups and also increased with the increased education level.^[26] According to the results of study, the need of health education for oral cancer is require to be more in older age groups (>30 years) and in those respondents who has low literacy level. It is also required to focus more on health education for oral cancer among the population who were consuming alcohol along with tobacco. Studies have shown that consumption of both tobacco and alcohol is more addictive and increases the risk of developing oral cancer as compared with tobacco use alone.^[27] Moreover, targeting alcohol use cessation in adolescents could likely be beneficial for prevention of the development of other substance use disorders later in life. Evidence about benefit of this targeted intervention has been shown in study done by Thatcher in 2008.^[28]

Another finding of this study showed that the increase in willingness for quitting tobacco was more in younger age groups (1530 years). As adolescent and early adulthood are more susceptible for initiation of tobacco consumption in India, need for focused health education intervention in this

group becomes crucial.^[29] In later stages of life, tobacco users might face more difficulties to quit this habit because they will more dependent on tobacco consumption with increase in time. It was seen that the population with low literacy level in urban slums lacks motivation to quit tobacco use. The health communication methods like local media, technology, billboards, and print could consider as effective way for providing motivation to quit tobacco among these population.^[30] Sustainable tobacco cessation programs for de-addiction including intensive counselling and nicotine replacement therapy (NRT) should be implemented for lowering the dependency level.^[28] Being a cross sectional study, major limitation of this study was that we were only able to interview people who present at the time of survey and we might have missed those who were out for some work. However, this study provided an overview of health education needs which could be useful for developing tobacco related health promotion program in slums of Jodhpur city.

Conclusions

There is need of effective health education strategies to increase the knowledge and awareness about harmful effects of tobacco in slums of Jodhpur city. An effective customized information, education and communication (IEC) strategy for tobacco cessation should be designed with focus on different education needs according to age, gender and education status of slum population.

Table 4: Odd ratios and 95% confidence intervals for tobacco dependency, oral cancer awareness and willingness to quit tobacco to selected socio-demographic characteristics

Variable	Multivariate logistic regression					
	Tobacco dependence		Oral cancer awareness		Willingness to quit	
	OR	95% CI	OR	95% CI	OR	95% CI
Gender						
Male	1.09	0.561.40	1.19	0.941.52	0.94	0.741.19
Female	1	reference	1	reference	1	reference
P	0.44		0.13		0.62	
Educational qualifications						
Illiterate	1.12	0.861.46	0.65	0.500.84	0.70	0.540.91
Primary	0.86	0.611.26	0.60	0.420.86	0.77	0.551.09
Secondary and above	1	reference	1	reference	1	reference
P	0.40		0.001		0.02	
Age						
1530	1.05	0.741.49	2.03	1.452.84	1.52	1.092.11
3145	0.99	0.691.42	0.96	0.681.36	0.92	0.651.29
46 and above	1	reference	1	reference	1	reference
P	0.89		0.000		0.08	
Consume alcohol						
No	0.70	0.500.99	3.43	2.355.01	1.33	0.961.84
Yes	1	reference	1	reference	1	reference
P	0.04		0.000		0.08	
Income						
Above 20,000	1.19	0.881.61	1.23	0.911.66	0.87	0.651.16
Between 10,000 and 20,000	1.09	0.811.47	1.00	0.751.34	1.10	0.831.46
Below 10,000	1	reference	1	reference	1	reference
P	0.50		0.275		0.28	

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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