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**Original Research Article**

# Smokeless tobacco and its dependence among the urban-slum population of Jodhpur city

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## ABSTRACT

**Background:** Socio-economic status can be an important determinant for patterns of tobacco consumption and its related health risks. Easy availability and affordable price may lead to the indulgence of smokeless tobacco; this deprived the section of society towards addiction of smokeless tobacco. Therefore, this study was conducted to ascertain smokeless tobacco use and its dependence in urban slum population of Jodhpur city.
**Methods:** A cross-sectional survey was conducted in the urban-slum population of Jodhpur in 2019. A cluster sampling strategy was used to collect data from 1200 participants in different slums of Jodhpur city. The semi-structured questionnaire was used to obtain information on tobacco usage and willingness to quit.
**Results:** Out of surveyed 1200 participants, 48.5% were males and 51.4% were females. 65.7% of the tobacco users reported in study population. Among tobacco user's majority were using smokeless tobacco (75.4%), followed by 14.8% dual tobacco users and 9.8% were smoking tobacco. Out of female and male tobacco users, 95% females and 86.3% males were using smokeless forms of tobacco respectively. The frequency of daily tobacco use, time of tobacco chewing, duration of tobacco use was significantly associated with gender. No significant association was found between willingness to quit and gender.
**Conclusions:** Smokeless tobacco was prevalent as compared to smoking form in urban-slums of Jodhpur city. Younger population and women were more attracted towards smokeless tobacco and willingness to quit tobacco was equally prevalent among males and females. An effective health education strategy for tobacco cessation should be designed according to age and gender of urban-slums.

**Keywords:** Smokeless, Smoking, Tobacco, Urban slum, Willingness to quit

## INTRODUCTION

Different forms and varieties of smokeless tobacco are available and consumed worldwide.[1] As per WHO (World Health Organization), Smokeless tobacco is considered highly addictive and it contains many carcinogens that can cause cancers of the head, neck, throat and oral cavity.[2] Tobacco consumption in smokeless form can act as a major risk factor for oral malignant diseases and head and neck cancers, especially

in south-east regions.[3] In India, GATS-2 reported that around 199.4 million adults were smokeless tobacco users.[4]

Smokeless tobacco (SLT) is consumed in various forms in India including Gutka, mishri, pan masala or areca nut. India has higher disease burden due to tobacco consumption as there is the dual form of tobacco are available (smoking or chewing).[5] Studies showed that SLT form have more than 30 carcinogens (mainly tobacco-specific N-nitrosamines (TSNAs), nitrite, nitrate and heavy metals such as nickel, cadmium and chromium6.

Socioeconomic status can play an important factor in tobacco consumption. Relatively, it was seen that poor or less educated people were more at risk of tobacco use7. Hence, the slum population can more prone to tobacco use as they are under-privileged population in terms of education and socio-economic status.[8,9] Researchers suggested that lower socio-economic people have a comparatively higher dependency on tobacco, lower quitting rate and the withdrawal symptoms are quite common in these population.[10] Recently, it was reported that smokeless tobacco users were tend to more dependent on nicotine; this may be attributed to its easy availability and lack of awareness for health risks related to smokeless tobacco use.[11,12]

The study was conducted to find out the patterns of tobacco use (smoked and chewing), to ascertain smokeless tobacco use and its level of dependence among the urban slum population of Jodhpur.

## METHODS

The cross-sectional survey was conducted in the urban slum population of Jodhpur city in 2019. In this study, we selected slums using two-stage cluster sampling method. In the first stage, we selected 8 different localities of the city based on 2001-2013 of the Town planning department of Jodhpur city. Then, 23 slums within each locality were randomly included in the second stage. We interviewed 1200 participants using a semi-structured questionnaire. The questionnaire comprised of questions including socio-demographics, different forms of tobacco use and information regarding smokeless tobacco dependency and willingness to quit. T

he questionnaire was developed on the basis of different findings that were available from the available literature sources and the observation based on the different behavioural aspects of the slum people who were residing in the different slum areas of Jodhpur district.[4,9] A pilot study of randomly selected 20 individuals was carried out to determine the feasibility of the questionnaire. Both female and male respondents residing in the urban slums of Jodhpur city, within the age group of 15–60 years, were included. Children below 15 yrs of age and participants who were not able to provide their consent were excluded from the study. Firstly, Baseline data were collected through a questionnaire. Then, the collected data were analyzed using Microsoft Excel. The descriptive statistics were performed to find out frequencies, and percentages. The chi-square tests and P-value were performed.

## RESULTS

We surveyed 1200 participants of age group between 15-90 years, out of which 48.5% (n=583) were males and 51.4% (n=617) were females. There were 65.7% (n=789) of tobacco users among study population, out of which 58.5% (n=462) were males and 41.45% (n=327) were females. Most of the (n=595; 75.4%) study population using smokeless tobacco, 9.8% (n=77) were smoking tobacco and 14.8% (n=117) were using both forms.

Out of female tobacco users, 95% of females (n=313) were using the smokeless form of tobacco either alone or in combination of smoking tobacco.

Similarly, out of male tobacco users, 86.3% (n=399) of males were using the smokeless form of tobacco either alone or combined with smoking tobacco. Among the male and female tobacco users, more number of males (n=100) were reported as dual users of tobacco (smoked and smokeless) as compared to females (n=17).

**Table 1: Forms of tobacco usage (smoked or smokeless) in urban slum population.**

| Demographic variable | Tobacco users N (%) | Smoked tobacco N (%) | Smokeless tobacco N (%) | Dual users N (%) |
|---|---|---|---|---|
| **Gender** | | | | |
| Male | 462 (58.5) | 63 (13.6) | 299 (64.7) | 100 (21.7) |
| Female | 327 (41.5) | 14 (4.3) | 296 (90.5) | 17 (5.2) |
| **Age groups (years)** | | | | |
| 15-30 | 345 (43.7) | 46 (13.4) | 264 (76.5) | 35 (10.1) |
| 31-45 | 304 (38.6) | 15 (4.9) | 235 (77.4) | 54 (17.7) |
| 46 and above | 140 (17.7) | 16 (11.4) | 96 (68.6) | 28 (20) |
| **Educational qualification** | | | | |
| Illiterate | 347 (43.9) | 35 (10.1) | 262 (75.5) | 50 (14.4) |
| Primary | 129 (16.4) | 8 (6.3) | 101 (78.2) | 20 (15.5) |

Continued.

| Demographic variable | Tobacco users N (%) | Smoked tobacco N (%) | Smokeless tobacco N (%) | Dual users N (%) |
|---|---|---|---|---|
| Secondary and above | 313 (39.7) | 34 (10.8) | 232 (74.1) | 47 (15.1) |
| **Income** | | | | |
| Below 10,000 | 254 (32.3) | 24 (9.4) | 185 (72.8) | 45 (17.8) |
| In between 10,000-20,000 | 267 (33.8) | 30 (11.2) | 203 (76.1) | 34 (12.7) |
| Above 20,000 | 268 (33.9) | 23 (8.6) | 207 (77.2) | 38 (14.2) |
| **Consume alcohol** | | | | |
| Yes | 528 (66.9) | 65 (12.3) | 354 (67.1) | 109 (20.6) |
| No | 261 (33.1) | 12 (4.6) | 241 (92.4) | 8 (3.0) |

**Table 2: Pattern of smokeless tobacco consumption (either alone or in dual form) in urban slum population.**

| | Males (%) (n=399) | Females (%) (n=313) | P value |
|---|---|---|---|
| **Frequency of smokeless tobacco use** | | | |
| Daily users | 217 (54.4%) | 158 (50.5%) | x2= 1.073, P value >0.05 |
| Non-daily users | 182 (45.6 %) | 155 (49.5%) | |
| **Frequency of smokeless tobacco use in a day** | | | |
| Once in a day | 25 (11.5%) | 64 (40.5%) | x2=103.05, P value <0.05 |
| 2-3 times a day | 33 (15.2%) | 61 (38.6%) | |
| 3-4 times a day | 85 (39.1%) | 23 (14.6%) | |
| More than 5times | 74 (34.2%) | 10 (6.3%) | |
| **How soon you will consume smokeless tobacco after wake up** | | | |
| Within 5 min | 87 (40.1%) | 40 (25.3%) | x2=19.74, P value <0.05 |
| 6-30 min | 61 (28.11%) | 36 (22.8%) | |
| 31- 60 min | 41 (18.89%) | 36 (22.8%) | |
| After 60 min | 28 (12.9%) | 46 (29.1%) | |
| **Duration of smokeless tobacco usage in years** | | | |
| Less than a year | 70 (17.5%) | 69 (22.05%) | x2=10.08, P value<0.05 |
| 1-2 years | 76 (19.1%) | 73 (23.3%) | |
| 2-3 years | 81 (20.3%) | 63 (20.1%) | |
| 3-4 years | 82 (20.5%) | 64 (20.5%) | |
| More than 5 years | 90 (22.6%) | 44 (14.05%) | |
| **Willingness to quit tobacco** | | | |
| Ever tried to quit tobacco | 191 (47.8%) | 164 (52.3%) | x2=1.43, P value>0.05 |
| Ever tried to quit a tobacco for a week | 191 (47.8%) | 155 (49.5%) | x2=0.6, P value>0.05 |
| Ever participate in tobacco cessation program. | 192 (48.1%) | 159 (50.8%) | x2=0.47, P-value>0.05 |

Overall, it was observed that smokeless tobacco use is predominant in all the age groups of tobacco consumers. Around 77% and 76% of the tobacco users who consumed only smokeless tobacco were from age groups of 15-30 years and 31-45 years respectively. Most of the tobacco users had a habit of alcohol use (66.9%). Table 1 illustrates the different forms of tobacco usage in urban slum population.

This study revealed that smokeless tobacco was consumed in the form of gutka, zarda or both and these were frequently consumed in slums. Arecanut (n=186) or pan-masala (n=248) users either alone or in combination form were also reported in slum population.

Overall, 52.7% (n=375) were daily tobacco chewers, out of which 54% (n=217) males and 50% (n=158) females' chewers were consuming smokeless tobacco on a daily basis. Around 39% of tobacco male chewers were consuming tobacco three or four times in a day, 40% had a habit of chewing tobacco in 5 minutes after wake up in the morning and 22% of the chewers were either consuming tobacco daily or occasionally for more than 5 years.

As compared to males, females were less dependent on smokeless tobacco in terms of frequency of tobacco chewing in a day, time of consumption after wake up, duration in years.

Around 47% (n=191) male and 52% (n=164) female tobacco chewers had tried to quit the habit of tobacco in their lifetime. Table 2 illustrates the pattern of smokeless tobacco consumption either alone or with the smoked form of tobacco in the urban-slum population.

## DISCUSSION

In this study, we observed that smokeless tobacco use was higher in selected urban slums followed by dual tobacco use as compared to smoking form. Similar findings reported in urban slums of Shillong city that prevalence of smokeless tobacco use was more than other forms of tobacco consumption.[13] This may be attributed to the availability of different forms of smokeless tobacco at an affordable cost in India and this will make the smokeless tobacco easily available for socially underprivileged people.[14] Additionally, a significant number of dual tobacco users in the study was reported that could responsible for higher disease burden as they have a lack of willingness to quit as compared to single tobacco users.[15] It was also observed that most of tobacco users have a habit of alcohol consumption. Similarly, the studies suggested that the consumption of alcohol and tobacco can lead to risky sexual behaviour and addiction.[16,17] Therefore, it is required to develop health promotional strategies especially focused on alcohol and dual tobacco users as they are more at risk of tobacco dependence.

As compared to males, females were consuming more smokeless form of tobacco in study population. The women are more socially deprived in terms of literacy, lower socioeconomic status and stressful conditions; this may be reasons for smokeless tobacco widely consumed by them.[18] Due to socio-cultural differences, women are more attracted towards chewing tobacco as smoking is considered as non-acceptable.[19] Mishri (form of smokeless tobacco) was widely used for cleaning of teeth or gums among women as reported in past studies.[18,19] So, it is important to develop female-centric health education and tobacco cessation programs especially focused on socially deprived women. The frequency of daily tobacco use, time of tobacco chewing, duration of tobacco use was significantly associated with gender. Therefore, there is a need to develop a gender-based health promotional strategies for tobacco cessation accordingly in terms of frequency of daily tobacco use, time of chewing after wake up and duration of tobacco use.

This study documented that males and females have similar willingness to quit and there was no significant relationship between willingness to quit and gender. Among the study population, willingness to quit ranged from 47% to 52%. This finding of our study coincides with GATS conducted in 2016-2017 which reported that willingness to quit among tobacco users was 52%.[4] Though various studies conducted in India in past decades illustrated that there is a varied level of willingness to quit in different regions of India.[20,21]

Comparatively, the younger population were more likely to consume smokeless tobacco in this study. A similar study reported that smokeless tobacco was prevalent in younger age groups.[22] Researchers suggested the factors like an initiation of tobacco use in the early age, lower socioeconomic status, lower literacy level and use of smokeless tobacco make people more attributed to nicotine dependence.[10] Therefore, it is important to plan health education programs for tobacco cessation especially focused on the younger population as they are prone to tobacco addiction.

## CONCLUSION

This study showed the smokeless tobacco was prevalent as compared to smoking form in urban-slums of Jodhpur city. Zarda and Gutka were most frequently used form of smokeless tobacco. Younger population and women were more attracted towards smokeless form of tobacco and willingness to quit tobacco was equally prevalent among males and females. An effective health education strategy for tobacco cessation should be designed according to age and gender of urban-slums.

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## REFERENCES

1. Thakur JS, Paika R. Determinants of smokeless tobacco use in India. Indian J Med Res. 2018;148(1):41-5.
2. Tobacco. Who.int. 2020. Available at: https://www.who.int/news-room/fact-sheets/detail/tobacco. Accessed on 15 December 2020.
3. Khan Z, Tonnies J, Muller S. Smokeless Tobacco and Oral Cancer in South Asia: A Systematic Review with Meta-Analysis. J Canc Epidemiol. 2014.
4. Tata Institute of Social Sciences (TISS), Mumbai and Ministry of Health and Family Welfare, Government of India. Global Adult Tobacco Survey GATS 2 India 2016-17.
5. Singh A, Ladusingh L. Prevalence and Determinants of Tobacco Use in India: Evidence from Recent Global Adult Tobacco Survey Data. PLoS ONE. 2014;9(12).
6. Kumar A, Bhartiya D, Kaur J, Kumari S, Singh H, Saraf D et al. Regulation of toxic contents of

smokeless tobacco products. Ind J Medic Res. 2018;148(1):14.
7. Rooban T, Joshua E, Rao UK, Ranganathan K. Prevalence and correlates of tobacco use among urban adult men in India: A comparison of slum dwellers vs non-slum dwellers. Indian J Dent Res. 2012; 23:31-8.
8. Sharma A, Gupta SK, Agrawal S, Gupta SK, Sarouthia S. A Health Education Intervention Study on Tobacco Consumption among the Urban Slum Residents of Central India. Int J Prev Med. 2019;10:96.
9. Joshi V, Joshi NK, Bajaj K et.al. Developing information, education and communication (IEC) strategies for tobacco cessation and HIV prevention in urban slums of Jodhpur city. Int J Health Sci Res. 2020;10(7):311-5
10. Kar S, Naik B, Majella M, Parthibane S. Level of tobacco dependence among tobacco users in an urban slum of Puducherry: A pilot study. J Fam Med Prim Care. 2017;6(2):336.
11. Parashar M, Agarwalla R, Mallik P, Dwivedi S, Patvagekar B, Pathak R. Prevalence and correlates of nicotine dependence among construction site workers: A cross-sectional study in Delhi. Lung India .2016;33:496-501.
12. Joshi NK, Joshi V. Assessment of Level of Dependence and Awareness among Tobacco Users in Jodhpur, Rajasthan. J Dent Med Sci. 2014;13(8):49-51.
13. Sarkar A, Roy D, Nongpiur A. A population-based study on tobacco consumption in urban slums: Its prevalence, pattern, and determinants. J Fam Med Prim Care. 2019;8:892-8.
14. Gupta PC, Arora M, Sinha DN, Asma S, Parascandola M (eds.). Smokeless Tobacco and Public Health in India. Ministry of Health & Family Welfare, Government of India, New Delhi. 2016.
15. Singh P, Yadav A, Lal P, Sinha D, Gupta P, Swasticharan L et al. Dual Burden of Smoked and Smokeless Tobacco Use in India, 2009–2017: A Repeated Cross-Sectional Analysis Based on Global Adult Tobacco Survey. Nicotine Toba Res. 2020;22(12):2196-202.
16. Joshi V, Joshi NK, Bajaj K, Bhardwaj P. HIV/AIDS awareness and related health education needs among slum dwellers of Jodhpur city. Ind J Comm Heal. 2020;32(1):167-9.
17. Ashtankar H, Talapalliwar M. Felt Need and Treatment-seeking Barriers among Substance Abusers in Urban Slum Area in Central India. Ind Psychol Med. 2017;39(4):436-40.
18. Bandyopadhyay T, Som K, Thakur I, Paul R. Factors associated with tobacco use in female subjects: a study from Eastern India. J Clinic Diagnost Res. 2019;13(2):28-33.
19. Mishra G, Kulkarni S, Gupta S, Shastri S. Smokeless tobacco use in Urban Indian women: Prevalence and predictors. Ind J Med Paediat Oncol. 2015;36(3):176.
20. Surani NS, Gupta PC, Fong TG, Pednekar MS, Quah AC, Bansal-Travers M. Intention to quit among Indian tobacco users: Findings from International Tobacco Control Policy evaluation India pilot survey. Ind J Cancer. 2012;49:431–7.
21. Kar SS, Sivananthan P, Rehman T, Chinnakali P. Willingness to quit tobacco and its correlates among Indian tobacco users- Findings from the Global Adult Tobacco Survey India, 2016-17. J Postgrad Med. 2020; 66:141-8.
22. Rooban T, Joshua E, Rao UK, Ranganathan K. Prevalence and correlates of tobacco use among urban adult men in India: A comparison of slum dwellers vs non-slum dwellers. Indian J Dent Res. 2012;23:31-8.

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