

Cross-sectional study on smokeless tobacco use, awareness and expenditure in an urban slum of Bhavnagar, western India

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ABSTRACT

Background. Data are sparse on smokeless tobacco (SLT) use in Bhavnagar. We assessed the prevalence and awareness of and expenditure on SLT use in Bhavnagar.

Methods. We conducted a community-based, cross-sectional study in an urban slum of Bhavnagar on a sample of 260 SLT users for a period of three months in 2017.

Results. The prevalence of SLT use in Bhavnagar was 27.3% (95% CI 25%–30%). Mawa, a preparation of tobacco flakes mixed with areca nut and lime, was the most commonly chewed form of tobacco; commonly kept in the buccal mucosa. The mean age of starting SLT use was 25 years; the mean number of years since chewing was 15 years; the mean time tobacco was kept in the mouth per consumption was 5 minutes and the mean number of packets of tobacco consumed per day was five. The mean expenditure on SLT use per month was ₹536. All SLT users were aware that tobacco consumption led to oral cancer. Peer influence was the most common (75%) reason for starting SLT use, and addiction was the most common (74%) reason for its continued use. Among SLT users, 47% had made at least one attempt to quit; of them, 98% had tried self-control for quitting but did not succeed. The most common (72%) reason given by those not able to quit ($n = 119$) was addiction to SLT use. Among the 260 study participants, 72% had read the warnings on packets of tobacco; 59% wished to chew tobacco even after reading the warnings and 62% opined on banning the sale and consumption of tobacco. Ninety-two per cent of SLT users were not comfortable with the idea that imitating them, their children too would start chewing tobacco.

Conclusions. Every third person in the urban slum of Bhavnagar was a SLT user. Even though SLT users knew about the harmful effects of tobacco, only a handful were able to quit due to addiction to it. This burden on health services, in addition to the expenditure on purchase of tobacco, requires

a comprehensive tobacco cessation programme at the community level.

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INTRODUCTION

India is a tobacco-consuming country, especially smokeless tobacco (SLT). According to the Global Adult Tobacco Survey (GATS) 2009–10, the prevalence of SLT use among adults in India is 25.9%.¹ In Gujarat, the prevalence of SLT use among adults is 21.6%.¹ Tobacco kills one person every 6 seconds.² Tobacco use causes 1 in 10 deaths among adults worldwide—more than five million people a year.² By 2030, the annual death toll due to tobacco will rise to more than 8 million.^{2,3}

A study in Gandhinagar, the capital city of Gujarat, found the prevalence of SLT use to be 14% in urban and 32% in rural areas.⁴ The prevalence of ‘quit attempts’ among SLT users was reported to be 14.7% in Gujarat.⁵ A study from Jamnagar (Gujarat) reported the main reason to quit using SLT was a health problem.⁶ Data on the use of SLT in Bhavnagar city, especially in its urban slums are sparse. We aimed to assess the prevalence and awareness of expenditure on SLT use in an urban slum of Bhavnagar, western India.

METHODS

Study design and setting

We conducted this community-based, cross-sectional study in Vadva, an urban slum settlement in the Urban Health Training Centre (UHTC) field practice area of the Department of Community Medicine in Bhavnagar city. The inhabitants of the area are of diverse ethnicities and belong to the lower socioeconomic groups.

Study duration

The study was done during January–March 2017.

Sample size

A sample size of 260 was calculated using Epi Info software version 7,⁷ considering the prevalence of SLT use in Gujarat to be 21.6%;¹ absolute precision 5% and confidence limits 95%.

Sampling design

We purposively selected the urban slum of Vadva as it was in the UHTC field practice area of our department.

Selection of subjects

We randomly selected one household from the centre of the urban slum. The direction to move forward to further households was

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selected randomly. Random selection was made when more than one eligible person was available in a single household. Data were consecutively collected from subsequent households till the target of 260 respondents was reached.

Data collection tool

The data collection tool was adapted from the GATS (Global Adult Tobacco Survey) Tobacco Questions for Surveys.⁸ Additional information was collected on a pre-tested questionnaire for eliciting sociodemographic information; frequency of SLT use; knowledge and attitude regarding SLT use; reasons for starting consumption; efforts on quitting and expenditure incurred.

Inclusion criteria

All respondents above 18 years of age and current users of SLT were included.

Ethical issues

Written informed consent was taken from the individuals. The names of the respondents (tobacco chewers) were kept confidential and ethical approval was taken from the ethics committee Government Medical College, Bhavnagar.

Statistical methods

Data were entered and analysed in Epi Info software version 7.7. Simple proportions were calculated. Student *t*-test and chi-square test were applied for univariate quantitative and qualitative data, respectively. $p < 0.05$ was considered to be statistically significant.

Socioeconomic and occupation classification

For socioeconomic status, the modified Prasad classification was used taking the All India Consumer Price Index for Industrial Workers value of 274 for January 2017.^{9,10} Occupation was classified according to the National Classification of Occupations (2004) given by the Directorate General of Employment and Training.¹¹

RESULTS

The mean (SD) age of the respondents was 41 (11) years. Of the 260 SLT users, the majority (82%) were in the age group of 25–54 years; 93% were men; 90% were literate; 90% were currently married; 98% were Hindus; and about half of them had an occupation (Table I). Of the 260 respondents, about two-thirds had a nuclear family; one-fourth had an occupation requiring travel; and about half of them belonged to class IV socioeconomic status as per the modified Prasad classification.

The prevalence of SLT use in the urban slum of Bhavnagar was 27.3% (95% CI 25%–30%; a total of 335 SLT users were found among 1227 family members surveyed). Among the 260 respondents, the mean age of starting SLT use was 25 years; the mean number of years since chewing was 15 years; the mean time tobacco was kept in the mouth per consumption was 5 minutes and the mean number of packets of tobacco consumed per day was five (Table II). Mawa, a preparation of tobacco flakes mixed with areca nut and lime, was the most commonly (97%) chewed form of tobacco; followed by miraj (powdered tobacco with slaked lime paste) and zarda (tobacco with lime, spices, vegetable dyes and areca nut).¹³ Most of the SLT users (93%) kept tobacco in their mouth after preparation.

The mean (SD) expenditure on SLT use per month was ₹536 (348). In 44% of respondents, the expenditure on tobacco was impacting expenditure on other needs of the family and 2% had

incurred expenses due to tobacco-related diseases (Table III). Among the 260 SLT users, 95% were aware of the harmful effects of tobacco and all of them knew that tobacco consumption led to oral cancer, while 15% knew that it led to mouth ulcers. Peer influence was the most common (75%) reason for starting SLT use and addiction was the most common (74%) reason for its continued use.

Of the 260 SLT users, 47% had made at least one attempt at quitting; of them, 98% had tried self-control but did not succeed. The most common (72%) reason given by those not able to quit ($n=119$) was addiction to SLT. Anxiety (37%), headache (35%) and lack of concentration (35%) were the most common withdrawal symptoms faced by all 260 SLT users (Table IV). Among the study

TABLE I. Sociodemographic profile of smokeless tobacco users ($n=260$)

Item	Frequency (%)
<i>Age (years)</i>	
<25	13 (5)
25–34	76 (29)
35–44	80 (31)
45–54	56 (22)
55–64	25 (10)
>64	10 (4)
<i>Gender</i>	
Male	243 (93)
Female	17 (7)
<i>Educational status</i>	
Illiterate	25 (10)
Just literate	69 (27)
Primary (V standard)	64 (25)
Middle (VIII standard)	44 (17)
Secondary (X standard)	36 (14)
Higher secondary (XII standard)	19 (7)
Graduate and above	3 (1)
<i>Marital status</i>	
Currently married	235 (90)
Currently single	25 (10)
<i>Religion</i>	
Hindu	254 (98)
Muslim	5 (2)
Sikh	1 (0)
<i>Occupational status</i>	
Professionals	2 (1)
Clerks	13 (5)
Service workers and shop and market sale workers	60 (23)
Craft and related trade workers	15 (6)
Plant and machine operators and assemblers	14 (5)
Elementary occupations	6 (2)
Workers not classified by any occupation	150 (58)
<i>Occupation requiring travel</i>	
Yes	64 (25)
No	196 (75)
<i>Socioeconomic status by modified Prasad classification</i>	
I	0 (0)
II	8 (3)
III	60 (23)
IV	138 (53)
V	54 (21)
<i>Type of family</i>	
Nuclear	156 (60)
Joint	86 (33)
Three generations	18 (7)

TABLE II. Smokeless tobacco consumption patterns (n=260)

Item	Mean (SD)
Age of starting to chew tobacco (years)	25 (8)
Number of years since chewing (years)	15 (10)
Time tobacco kept in mouth per consumption (minutes)	5 (4.5)
Packets of tobacco consumed in a day (packets)	5 (2)
<i>Form of tobacco consumed</i>	<i>n (%)</i>
Mawa (areca nut, tobacco flakes and slaked lime)	253 (97)
Miraj (powdered tobacco and slaked lime paste)	4 (2)
Zarda (tobacco, lime, spices, vegetable dyes and areca nut)	3 (1)
<i>Part of mouth where tobacco kept after preparation</i>	
Buccal mucosa (inside lining of cheeks)	242 (93)
Labial mucosa (inside lining of lips)	3 (1)
Below the tongue	15 (6)

TABLE III. Expenditure, awareness and reasons for starting and continuing tobacco consumption

Item	n (%)
<i>Expenditure on other needs curtailed</i>	
Yes	114 (44)
No	146 (56)
<i>Expenditure due to tobacco-related diseases</i>	
Yes	4 (2)
No	256 (98)
<i>Awareness of harmful effects of tobacco</i>	
Yes	247 (95)
No	13 (5)
<i>Knowledge of harmful effects of tobacco (n=247) (multiple answers)</i>	
Oral cancer	247 (100)
Ulcers in mouth	37 (15)
Staining of teeth/dental caries	66 (27)
Difficulty in opening mouth (submucous fibrosis)	19 (8)
<i>Reasons for starting smokeless tobacco use (multiple answers)</i>	
Father's/relative's influence	19 (7)
Status symbol	8 (3)
Peer pressure/friend's influence	196 (75)
Inspired by role model/celebrity	6 (2)
Due to work pressure (occupational stress)	24 (9)
Wish to reduce appetite	8 (3)
Wish to experiment	9 (4)
<i>Reasons for continuing to use smokeless tobacco (multiple answers)</i>	
Relieves stress (including occupational stress)	44 (17)
Pleasurable	35 (13)
Addicted to it (not able to quit)	193 (74)
Not aware/worried about its harmful effects	18 (7)
Acts as a medication/mouth cleanser	5 (2)

participants, 72% had read warnings on packets of tobacco; 59% wished to chew tobacco even after reading the warnings and 62% opined on banning the sale and consumption of tobacco. At least one family member had advised 88% of them not to consume SLT, spouse being the primary advisor among 58% of them. Ninety-two per cent of SLT users were not comfortable with the idea that imitating them, their children too would start chewing tobacco; whereas 7% of respondents' children had already started chewing.

DISCUSSION

Our study highlights the burden of SLT use in an urban slum of western India. SLT use and subsequent addiction is a public health issue in the entire state of Gujarat (the state is the second largest producer of tobacco). We found a prevalence of 27.3% for SLT

TABLE IV. Information on smokeless tobacco quitting*

Item	Frequency (%)
<i>At least one attempt at quitting</i>	
Yes	122 (47)
No	138 (53)
<i>Means of quitting (n=122)</i>	
Self-control	119 (98)
Spiritual intervention	3 (2)
<i>Successful in quitting (n=122)</i>	
Yes	3 (2)
No	119 (98)
<i>Reasons for not being able to quit (n=119)</i>	
Addicted	86 (72)
Don't feel necessary	17 (14)
Helps in controlling occupational stress	16 (14)
<i>Withdrawal symptoms in case of stopping tobacco (multiple answers)</i>	
Headache	92 (35)
Anxiety	97 (37)
Lack of concentration	91 (35)
Loss of appetite	16 (6)
Constipation	33 (13)
<i>Read warnings on packets of tobacco</i>	
Yes	187 (72)
No	73 (28)
<i>Wish to chew even after knowing harmfulness</i>	
Yes	153 (59)
No	107 (41)
<i>Perception about ban on sale and consumption of tobacco</i>	
Should be banned	161 (62)
Should not be banned	99 (38)
<i>Advised not to consume tobacco by someone</i>	
Yes	228 (88)
No	32 (12)
<i>Advised by whom not to consume tobacco (n=228)</i>	
Spouse	133 (58)
Family members	51 (22)
Friends	11 (5)
Relatives	12 (5)
Mother	21 (9)
<i>Feel if children started chewing</i>	
Will not feel comfortable	238 (92)
Already chewing tobacco	19 (7)
Not concerned/worried	3 (1)

* (n=260), unless specified

use among adults in Bhavnagar. A study in Jamnagar city of Gujarat found a prevalence of 32.9% for current tobacco chewers,⁶ whereas a study in Gandhinagar found a prevalence of 14% in urban areas.⁴ Another study in Gujarat found a prevalence of 24%,¹² while the GATS survey found a prevalence of 21.6% for SLT use in Gujarat.² A study in rural areas of Gujarat found a prevalence of 9.4% for SLT use.¹³

We found mawa to be the most common form of tobacco chewed in Bhavnagar, which was also the most common form consumed in Jamnagar.^{6,14} Gutkha was the most often consumed SLT in a study conducted in Gujarat in 2011, a time when Gutkha was not banned in Gujarat.^{12,14} The mean age of initiation of chewing tobacco was 25 years in Bhavnagar (similar to the study from Gandhinagar),⁴ while it was 23.6 years in Jamnagar⁶ and 20.1 years according to the GATS survey.¹ We found that the economically productive group of 25–54 years had the most tobacco chewers. Most tobacco chewers in the study in Jamnagar

were in the age group of 35–55 years, while the age group of 25–44 years was the most common tobacco chewers in another study in Gujarat.^{6,12}

Almost half the tobacco chewers in Bhavnagar had made at least one attempt to quit SLT use, while the study in Jamnagar reported that 28.4% of users were willing to quit their habit.⁶ Another study from Gujarat reported that 14.7% of SLT users made attempts to quit tobacco in the past year.⁵ The GATS survey found that 46% of SLT users planned to quit or thought of quitting.¹ The survey also reported that 42% of SLT users thought about quitting after reading the warning labels.¹ The present study highlights that 72% of SLT users read the warning labels but 59% still wished to continue its use. Health problems were the reasons for quitting SLT use in 72% of chewers in Jamnagar,⁶ while only 2% were able to quit SLT use in Bhavnagar. The primary reason reported in the present study for inability to quit was addiction to SLT. Ironically, the present study also reported that 95% of SLT users were aware of the harmful effects of tobacco; all of them knowing that tobacco consumption might lead to oral cancer. This finding was supported by a study conducted in all districts of Gujarat, with 90% of SLT users knowing about the threat of oral cancer.¹³ In contrast, just above half the SLT users knew about the harmful effects of tobacco in the study in Jamnagar.⁶ The GATS survey highlighted that 91% of SLT users believed that its use causes serious illness.¹ The survey also stated that 32% of SLT users were advised to quit by a healthcare provider.¹ Our study found that the spouse was the primary advisor to quit tobacco use, a potentially important person who can be included in tobacco cessation programmes for motivating consumers to quit.

The mean expenditure on SLT per month in Bhavnagar was ₹536 (with 44% of SLT users curtailing expenditure on other needs). In addition to expenditure on tobacco-related diseases, this habit puts an economic burden on them. A report of the Government of India estimated that tobacco use and its associated costs are creating an enormous burden for the nation, and tobacco control laws will go a long way in preventing the rise of tobacco-attributable, non-communicable diseases in India.^{15,16} Tobacco control should be a top priority not only as a health issue but also as a means to reduce poverty.

Conclusions

The prevalence of SLT use in Bhavnagar is higher than the national average as well as the state average.¹ Every third person in Bhavnagar is an SLT user. Even though SLT users knew about the harmful effects of tobacco (including oral cancer), only a handful were able to quit. This suggests the need for a comprehensive tobacco cessation programme at the community level.

Conflicts of interest. None declared

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