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Original Research Article

## Effect of Indian women's exposure to warning messages on intention to quit smokeless tobacco

Shahina Begum<sup>1</sup>, Jean J. Schensul<sup>2</sup>, Saritha Nair<sup>3\*</sup>

<sup>1</sup>Department of Biostatistics, ICMR-National Institute for Research in Reproductive Health, Parel, Mumbai, Maharashtra, India

<sup>2</sup>Department of Substance Use and Tobacco Control, Institute for Community Research, Hartford, CT., U.S.A.

<sup>3</sup>ICMR-National Institute of Medical Statistics, Indian Council of Medical Research, Ansari Nagar, New Delhi, India

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**\*Correspondence:**

Dr. Saritha Nair,

E-mail: Saritha\_nair@yahoo.co.uk

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### ABSTRACT

**Background:** Media campaigns have been shown to affect intention to quit the use of smoked tobacco and quit behaviour among men. However, despite warning messages on tobacco packages and delivered via mass media, such campaigns have had limited reach and effect on women's use of smokeless tobacco (SLT) and SLT use among Indian women is increasing. This paper explores the association between selected warning messages conveyed through different media mechanisms and intention to quit smokeless tobacco among women of reproductive age in Mumbai.

**Methods:** A cross-sectional community survey was conducted in a representative sample of 409 daily smokeless tobacco (SLT) women users aged 18- 40 years in a low-income community in Mumbai during 2011-2012. The paper utilizes information on socio-demographic characteristics, types of tobacco use, exposure to different types of warning messages and intention to quit collected through a researcher-administered structured questionnaire. Univariate and bivariate analysis were carried out to examine the influence of warning messages on intention to quit SLT use.

**Results:** Half of the women correctly interpreted the image of scorpion on the SLT product as 'causing cancer'. About 36% women were exposed to warning messages on television and 67% of women intended to quit SLT. Correct interpretation of the significance of the scorpion sign on SLT packets was not significantly associated with intention to quit SLT use. However, the likelihood of intention to quit was significantly higher among those who were exposed to warning messages on television than their counterparts.

**Conclusions:** Since anti-tobacco campaigns on television were significantly associated with the intention to quit but warnings on package tobacco were not, expansion of anti-tobacco messaging on television targeted and tailored to women should further increase quit intentions and over time, with effective cessation programs in place, have an impact on quit behaviour.

**Keywords:** Cancer, Smokeless tobacco, Scorpion image, Warning messages

### INTRODUCTION

Globally, smokeless tobacco use continues to be a serious public health problem. According to WHO estimates tobacco use causes nearly 6 million premature death

annually and if the current rate of tobacco use continues, it will cause more than 8 million death per year by 2030.<sup>1</sup> Tobacco use is also associated with poor maternal and child health outcomes and reproductive health due to initiation and use during pregnancy.<sup>2-6</sup> Current use of

SLT among Indian women nationally ranges from 0.2% to 49.4%.<sup>7</sup> The frequency of SLT use in other smaller studies in Mumbai's low income communities is as high as 24% due to availability, affordability, social and cultural practices, peer pressure, advertisement and low awareness of the harmful effects of SLT.<sup>8-13</sup>

The WHO Framework Convention on Tobacco Control (WHO FCTC) to which India is also signatory, calls for controls on packaging and labelling of tobacco products; promotes education, communication, training and public awareness; and offers guidelines on tobacco advertising, promotion and sponsorship. Even before the WHO FCTC, the dangers and consequences of tobacco were being communicated through labels and graphic images on tobacco products packaging and mass media.<sup>14</sup> Mass media are capable of creating awareness and knowledge for mass audiences. Warning messages are intended to produce fear of health consequences and to encourage SLT users to quit.<sup>15</sup>

India instituted an anti-tobacco campaign that included warning labels on tobacco product packaging with the generic printed message "Tobacco causes cancer" along with an image of scorpion and the same was broadcasted on mass media.<sup>16</sup> Despite these efforts, SLT use among Indian women and especially among low income women, has been increasing, and rates of use are expected to continue to rise.<sup>1,17,18</sup>

This paper attempts to understand how women interpreted the warning messages on SLT packaged products or the mass media messages that they were exposed to during the study period (2010-12) and further explores the impact of these warning messages on women's intention to quit use of SLT.

## METHODS

A cross sectional study was conducted in a low income (slum) community with a population size of approximately 70,000 in the western area of Mumbai, India. A total of 409 married women aged 18-40 years, and daily users of at least one SLT product (mishri: roasted tobacco powder), paan (betel leaf with tobacco), tobacco (packaged or loose) with or without arecanut and slaked lime, gutkha (packaged tobacco with arecanut), gul (tobacco powder) were surveyed using systematic random sampling during 2010-12.

A structured questionnaire was used to collect information on socio-demographic characteristics, tobacco use patterns exposure and responses to warning messages and intention to quit. A detailed description of the methodology has been published elsewhere.<sup>6,8</sup>

### Variables

The variables under study were constructed as follows:

- To measure how women interpreted the scorpion image on SLT packets, women were asked "Do you know the meaning of the scorpion on smokeless tobacco packets? If yes, what does it signify (high quality/good for health/ give energy/cause cold/cause cancer/other/don't know)". Those who responded as causing cancer were coded as 1 otherwise 0.
- To measure whether SLT users read the text warning messages on SLT packets, women were asked 'In past 30 days did you read closely the health warnings on smokeless tobacco products? (yes/no/can't read)'.
- To measure exposure to warning message delivered via mass media women were asked two questions: a) In the last 30 days have you noticed anything about the dangers of using SLT or any message that encourages quitting in any of the following places (in newspaper/television/magazine/radio/hoarding/billboards/other). Exposure to one or more of these media sources was coded as 1 otherwise 0. Further, exposure to warning/quitting messages specifically on TV was coded as 1 otherwise 0.
- Intention to quit any SLT was defined as a yes response to the intention to quit any form of tobacco (yes as 1 otherwise 0).

### Analytic procedures

Descriptive statistics are presented in Table 1. Chi-square test was conducted to identify significant associations between socio-demographic characteristics and interpretation of image of scorpion on tobacco products;  $p < 0.05$  was considered as significant. Odds ratio and 95% confidence interval were calculated to see the effect of exposure to warning messages on intention to quit SLT among women.

## RESULTS

### Background characteristic of the women in the study

The median age of women in the study was 30 years. About 54.5% of women were illiterate, 12.5% had education less than primary school, 20.3% had completed primary school and 12.7% women had completed at least middle school. The median age at initiation of any SLT products ranged from 19 to 21 years (*mishri*: 19 years, *paan* with tobacco: 21 years, *gutkha*: 20 years, loose tobacco: 19 years and *Gul*: 21 years). Approx. half of the women were using non-loose tobacco (pan with tobacco and loose tobacco). A little more than three-fifths (67%) of women expressed their intention to quit any form of SLT.

### Warning message on SLT product

Table 1 presents results on correct interpretation of the image of scorpion as 'causing cancer' by selected background characteristics. Approximately half of the women (52.1%) interpreted the image of scorpion on the SLT packets as tobacco causing cancer.

**Table 1: Percentage of women who correctly interpreted the picture of scorpion on smokeless tobacco products by background characteristics.**

Background characteristics	% Correctly interpreted the image of scorpion	N	P value
<b>Current age (years)</b>			
≤20	57.1	28	0.42
21-30	54.5	189	
>30	49.0	192	
<b>Can read</b>			
No	42.9	231	0.001
Yes	64.0	178	
<b>Exposure to SLT as a child</b>			
No	45.8	72	0.24
Yes	53.4	337	
<b>Duration of SLT use (years)</b>			
≤10	50.8	240	0.55
>10	53.8	169	
<b>Ever attended cancer screening program</b>			
No	51.6	384	0.43
Yes	60.0	25	
<b>Read closely at health warnings on SLT products in the last 30 days</b>			
No	43.9	214	0.0001
Yes	87.9	66	
Can't read	47.3	129	
<b>Exposed to SLT warning messages on television</b>			
No	46.7	261	0.004
Yes	61.5	148	
<b>Type of SLT users*</b>			
Mishri	53.2	111	NA
Pan with tobacco (loose tobacco)	51.0	196	
Gutkha	58.7	75	
Packed tobacco	58.1	86	
Loose tobacco	42.1	19	
Gul	45.4	108	
<b>Total</b>	<b>52.1</b>	<b>409</b>	

note:\* not mutually exclusive

Women who could read were significantly more likely to correctly interpret the meaning of the scorpion sign on tobacco products than those who could not read.

Women who read warning messages on SLT products in the past 30 days were more likely to correctly interpret the significance of scorpion on the packets than those who had not. Those who used gutkha or other forms of packaged SLT were more likely to interpret the warning messages correctly than those who used non-package tobacco.

**Warning/quitting messages communicated through mass media**

Women were exposed to warning/quitting SLT messages through different media sources at differential rates with

television reported most frequently (36.2%) followed by radio and billboards on bus/hospital at 9% each and lastly newspaper (6.8%). Forty-four percent of women were exposed to anti-tobacco messages on any mass media. Exposure to warning messages on television was significantly associated with the correct interpretation of the scorpion image while exposure to any other mass media was not (Table 1).

**Association between exposure to warning messages and intention to quit**

Table 2 presents the association of exposure to warning messages with intention to quit SLT use. A warning message on SLT products in the form of text or an image of the scorpion was not significantly associated with intention to quit. However, women exposed to quitting/warning messages on television were 71% (OR: 1.71; 95% CI: 1.10-2.68) more likely to intent to quit any SLT than those not exposed to warning messages on television.

**Table 2: Association between intention to quit any smokeless tobacco product and exposed to warning messages.**

Category	% of women intended to quit	Odds ratio (95% CI)
<b>Correctly interpreted Scorpion image</b>		
No	67.3	1.00
Yes	66.7	0.97 (0.64-1.47)
<b>Read closely at health warnings on SLT products in the last 30 days</b>		
No	65.6	1.00
Yes	74.2	1.51 (0.83-2.74)
<b>Exposed to warning messages on television</b>		
No	62.8	1.00
Yes	74.3	1.71 (1.10-2.68)

**DISCUSSION**

The aim of warning messages on SLT packages is to alert users to the dangers and consequences of tobacco use in order to promote the reduction of SLT use or cessation.<sup>14</sup> Our study shows that among daily users of at least one form of SLT, half of the women could not relate the image of the scorpion on tobacco packages or the text messages associated with it to the idea that tobacco causes cancer. The use of text to link tobacco and cancer such as ‘tobacco causes cancer’ helps to make the connection for literate women only.<sup>16,19,20</sup> Even among literate women, not all of them could interpret the text correctly. This may be explained by the fact that the warning text message is written predominantly in English and Hindi and not in any local language. India is a multilingual nation and only 45% of the population speak and read Hindi.<sup>21,22</sup> The majority of women know only their local language.<sup>16,19</sup> In Mumbai, most low-income women speak Hindi or Marathi or both but they may not know how to read in English or Hindi. In present study

population 27.6%, 13.9% and 5.4% women could read Hindi, Marathi and English respectively.

Present analysis shows that those who were using packaged tobacco or gutkha were more likely to interpret correctly the image of scorpion than those who used loose tobacco. This is readily explained by the fact that warning messages are placed only on packaged forms of SLT; thus those who use primarily or only loose tobacco leaves or mishri/gul were less likely to be exposed to warning messages on package.<sup>9,19,20</sup> Other studies reported that users were either not aware of the fact that packages contained health warning message or never paid attention to packaging.<sup>9,16,23</sup> Hence, there is a clear need to display the same warning messages at point of sale in English, Hindi and the local language so that all types of SLT users would notice it each time they buy tobacco.

Some women in this study interpreted the meaning of the scorpion as a company's logo, poison, not good for health, high quality, and scorpion's ashes inside the packet. These confusions and misunderstandings signify that the image of the scorpion on tobacco products was not self-explanatory especially for illiterate women or those speaking/reading Marathi or other language.

In December 2011, the text messages tobacco causes cancer was replaced by Warning: Tobacco Kills' and scorpion image was replaced by new graphic images of cancer of the mouth and other parts of the body. A study conducted in Maharashtra, Bihar, Madhya Pradesh, and West Bengal during 2010-2013 showed no significant increase in awareness of health warnings on SLT packages from the time pre, to post introduction of new text and graphic images, or in intention to quit.<sup>9</sup> Again in 2016 the message 'Warning: Tobacco Kills' was replaced by 'Warning: Tobacco Causes Mouth Cancer' with this message occupying a minimum of 85% of the front and back of a pack.<sup>24</sup> The pictorial warning alone takes up 60% of the space and the written message the remaining 25%.<sup>25-27</sup> The impact of the new health warning labels is yet to be evaluated. Regardless, women, who continue to use non packaged forms of SLT will not be exposed to the new packaging or may avoid products with new packaging.

Anti-tobacco campaigns through mass media play an important role in conveying warning messages to a large population including literate and illiterate SLT users as well as non-users.<sup>20</sup> Present study shows a significant difference between those women exposed to warning messages on TV (61.5%) and those who were not (46.7%) in correct linkage of the scorpion image with 'causing cancer'. Though 81.3% of households in Maharashtra have television, and television ownership is very common (87%) in slum communities only 36.2% of women in present study were exposed to warning messages on TV.<sup>28,29</sup> Explanations for non-exposure to warning messages on TV may include channel preference, or frequency and timing of broadcasting the

messages in line with women's daily viewing schedules. Further, the warning messages broadcasted were generic and not tailored for specific populations such as youth or women. These messages are also concentrated on cancer but don't necessarily take into consideration consumption during pregnancy and its effect on foetus or infants.

Though the present study indicates that 67% of SLT users intended to quit, warning messages on SLT packages was not found to be significantly associated with women's intention to quit. This may be because of half of women did not understand the warning messages on SLT products clearly and those who understood that tobacco causes cancer did not see themselves at risk for it.<sup>23</sup> In contrast, the likelihood of intention to quit was significantly higher among those who were exposed to warning messages on television than their counterparts. Similar findings were observed in another study.<sup>19</sup> This finding signifies that mass media, especially, television plays a key role in creating awareness about warning messages as well as in promoting intention to quit SLT. Warning messages tailored specifically to women's health concerns may increase the impact of television on intentions to quit and subsequently quit behavior.

## CONCLUSION

Warning messages on SLT packages were not significantly associated with women's intention to quit smokeless tobacco use. Anti-tobacco campaigns on television were significantly associated with creating warning and the intention to quit SLT, reinforcing the importance of television in influencing women to consider reducing or quitting their own SLT use.

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