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# Impact of ban on commercial smokeless tobacco products among users and vendors in West Bengal and Kerala states, India

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# ABSTRACT

*Introduction:* Since 2011, sale of commercially available smokeless tobacco products for chewing such as *gutkha* has been prohibited in many states in India. The current study attempts to understand the effectiveness and perception towards ban on *gutkha* sales in West Bengal and Kerala.

*Methods:* Total six districts from both the states (three districts from each state). From each district, 1 Municipality and 2 Community Development Blocks were selected randomly, representing each cluster. From each cluster, line transect survey was used to identify Point of Sale (POS) of tobacco products. Tobacco consumers and vendors were interviewed from POS.

*Results*: 865 tobacco users (West Bengal = 450, Kerala = 415) and 173 vendors (West Bengal = 90, Kerala = 83) were interviewed for the study. 16.1% of the total users from Kerala were using *gutkha* alone or in combination with other tobacco chewing products while in West Bengal the corresponding figure was 17.3%. Knowledge on ban was high among the consumers (95.7%) and vendors (100%) in Kerala while in West Bengal it was 64% and 62.2% respectively. *Gutkha* was available in 68% of the shops in West Bengal, while in Kerala no sale was reported in shops, though half of the vendors interviewed, admitted its sales in black market.

*Conclusion:* The ban had little impact in West Bengal in the open market, while it had moderate impact in Kerala. However, the black market sales in Kerala are a matter of concern. Strict legislative measures are essential to cut the supply route for effective implementation of the ban.

# 1. Introduction

Tobacco use is often related with smoking, particularly in developed countries, while, the smokeless tobacco burden outweighs smoking in most of the South Asian countries where the youth population is relatively high. The term "smokeless tobacco" (SLT) refers to unburned tobacco commonly used in various forms such as chewing, dipping, snuffing and for application on teeth and gums.<sup>1</sup> People from many regions, especially India, Pakistan and other Asian countries have an extended history of SLT use.<sup>2</sup> An analysis on global burden of disease

due to smokeless tobacco consumption in adults observed that nearly 85% of the total burden attributed to SLT use was in South Asia, with India alone accounting for 74% of the global burden.<sup>3</sup> The current prevalence of smokeless tobacco (SLT) use in India is 21.4% as reported by the Global Adult Tobacco Survey-2 (GATS-2), 2016–17.<sup>4</sup> In India, a significant number of the cancers of the oral cavity and pharynx are caused by SLT use.<sup>5</sup>

SLT products such as *gutkha*, also known as *pan masala* with tobacco (dry mixture of crushed areca nut, tobacco, catechu, lime, aromas and flavourings as well as additives), tobacco with betel quid (mixture of

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betel leaf, areca nut, slaked lime and tobacco), *mishri* (powdered tobacco rubbed on the gums as toothpaste), flavoured tobacco and *pan masala* (generic term for modern areca nut products), that are manufactured industrially and marketed commercially.<sup>4,6</sup> More than 3000 chemicals including 30 carcinogens have been identified in SLT products. Tobacco Specific Nitrosamines (TSNA) is the most prominent carcinogen reported.<sup>1</sup>

Considering the wide popularity of commercially available SLT products in India, where processed tobacco is mixed with flavouring agents and condiments, the Food Safety and Standards (Prohibition and Restriction of Sales) Regulations of India, 2011, issued regulations prohibiting tobacco and nicotine which may be injurious to health in any food products.<sup>8</sup> The apex court of India, the Supreme Court, had made it clear that sale of any form of chewing tobacco including 'gutkha' was to be banned throughout the country as envisaged in the Food Safety Standards Act.<sup>7</sup>

Some studies have highlighted the importance of curbing the black marketing of *gutkha* products to ensure a strict ban of the product.<sup>8</sup> Unless a strict ban is imposed, people addicted to *gutkha* continue its consumption by locating its availability in the black market.<sup>9</sup> Although *gutkha* consumption has been identified as a life threatening disorder with serious health implications,<sup>10</sup> limited attempt has been made on the part of the industry to control and check the abuse.<sup>11</sup>

In 2012, the Government of Kerala, based on the Food Safety and Standards Act, had imposed complete ban on the manufacture, storage and sale of *gutkha* and *pan masala* containing tobacco and/or nicotine in the state,<sup>12</sup> while the same was done in West Bengal in 2013 to address the damaging consequences of tobacco use.<sup>13</sup> For the current study, these two states were selected after taking into consideration the geographical location familiarity of the authors and the presence of field staff to conduct the study.

Based on GATS-2 report, the states of West Bengal and Kerala possessed striking differences in SLT prevalence. SLT use in West Bengal is relatively high (20.1%) which is near to the current national average of 21.4%.<sup>11</sup> However, a marginal reduction in SLT prevalence was observed in West Bengal as compared to the prevalence of 21.9% reported in GATS-1.<sup>11,12</sup> On the contrary, the prevalence of SLT in Kerala has shown marked reduction (5.4%) compared to the earlier prevalence of 10.7%.<sup>4,14</sup>

Against this backdrop, this study attempted to assess the effectiveness of the ban on sale of commercially available smokeless tobacco products like *gutkha* and also assess the knowledge and perception on the ban, availability of tobacco products and the impact on tobacco sales after the ban as reported by the vendors and consumers.

## 2. Methods

# 2.1. Study area and design

A community based cross-sectional study was conducted from November 2017 to February 2018 in randomly selected six districts (three districts from each state) i.e. Paschim-Medinipur, Bankura and Purulia from West Bengal, and Thiruvananthapuram, Kollam, Alapuzha from Kerala. Further, cluster sampling method was used for representative sampling. From each district, the district headquarters (Municipality) and two Community Development Blocks (lower level of administrative system) were selected, representing individual clusters. The Community Development Blocks were selected randomly from the list of blocks by lottery method. After identifying the cluster, second step was to identify the point of sale (POS) of tobacco products. Mapping of POS was done with the help of community volunteers, health workers, NGO's and health officials. POS within a radius of 5 km from the main bus terminus of the Municipality/Block was identified, from where the investigating team collected information. Line Transect survey<sup>15</sup> method was used in the selection of vendors in the selected clusters. Identified shops were classified into three categories. This includes a)

*pan* shops selling tobacco as the main product for sale but they also sell light snacks and beverages, b) other retail shops where they also sell tobacco, c) portable fast food shops/tea stalls and hotels where tobacco products are also included for sale.

# 2.2. Sample size

#### 2.2.1. Consumers

Approximately, 150 consumers from each district were to be included in the study. The sample size was calculated on the assumption that tobacco users who thought about quitting would be  $40\%^{16}$  and hence the estimated sample size was 384. A 10% oversampling was done, taking into consideration the refusal of a few subjects to take part in the survey that resulted in a sample size of 423 and further rounded to 450. The tobacco users were randomly selected based on the observance at POS. From each POS, 5 consumers were approached for the study. The sample size wass calculated on following assumptions:

Expected Prevalence: 41% (based on other studies done earlier who thought about quitting tobacco use in any form; it ranges from 19 to 63% in different settings so we took 41% in the present study as mean of all rates).<sup>8,17–19</sup>

### 2.2.2Absolute precision (alpha error): 5%

Estimated Sample size : 
$$\frac{4 \times 41 \times 59}{5 \times 5} \approx 387$$

Considering oversampling of 10% to account for refusals at venue = 387 + 39 = 426 that was rounded off to 450.

#### 2.2.3. Vendors

Assuming that maximum 15 tobacco users would approach a tobacco vendor in a day, the estimated sample size for tobacco vendors was 90 (30 from each district) from each state. The assumption was based on the inputs from field staff based in each state.

## 2.3. Inclusion and exclusion criteria

Participants who were willing to give consent and those of the age of 18 years or more able to speak in regional language were included in the study. Migrant labourers from other states were excluded for the study.

## 2.4. Tools for the study

Pre-tested semi-structured questionnaires prepared in regional languages were used to explore details from consumers and vendors. The questionnaires were designed to elicit the information on the demographic profile of individual, specification of shop that sells tobacco, earning from tobacco sales, knowledge and perception on tobacco hazards and effectiveness of the ban on sale of commercially available smokeless tobacco/gutkha. Participation to the study was purely voluntary. In order to maintain anonymity of the participant, a unique number was given to each participant. Prior to data collection, written consent from each participant was obtained.

# 2.5. Statistical analysis

Statistical analyses were done using SPSS version 20. Frequency distribution under each category was calculated under univariate analysis. We applied chi-square test and odds ratios (OR) along with 95% confidence intervals (CI) to understand the accessibility and availability of chewing tobacco (*gutkha*) after its ban in the two states based on consumer's perspective.

# 3. Results

A total of 865 tobacco users (West Bengal = 450, Kerala = 415) and

173 vendors (West Bengal = 90 and Kerala = 83) were interviewed for the study at the POS. Majority of the tobacco users in West Bengal (98.9%) and in Kerala (81.2%) were males. The background characteristics of the participants are given in Table 1.

## 3.1. Knowledge, attitude and practice of tobacco consumers

Among the subjects interviewed, 16.1% of the total users from Kerala were using gutkha alone or in combination with other tobacco chewing products, while the corresponding figure for West Bengal was 17.3% (Table 2). A significant difference was observed in the knowledge regarding the ban on commercial SLT's, timing of the ban and sale of tobacco products to minors in both the states from the consumer's point of view (Table 2). Though the awareness regarding the ban on commercial chewing tobacco products was noticed among the consumers in both states (Kerala 95.7% and West Bengal 64%), a significant proportion of the consumers in West Bengal were unaware of the time of ban (p < 0.0001) and the law regarding prohibition of tobacco sale to minors (p < 0.0001). Almost all the consumers from Kerala reported of price escalation of banned tobacco products compared to a little more than half of the respondents from West Bengal (p < 0.0001). Easy access of gutkha in the market was observed to be same in West Bengal as before the ban (84.9%), while the corresponding figure was 43.9% as reported by the consumers in Kerala (p < 0.0001) (Table 2).

## 3.2. Perceptions of tobacco vendors

This study also looked into the impact of the ban from the tobacco vendor's point of view. More than three-fourth of the vendors were male and the proportion of vendors from these states varied in age-group

#### Clinical Epidemiology and Global Health 18 (2022) 101160

(Table 1). Striking differences were also observed among the vendors of the two states in terms of education. Various types of shops such as *pans*hops, retail outlets, and fast food shops including few restaurants located beside the main road surveyed in both the states were found to be selling tobacco (Table 1).

Regarding the enforcement of ban, all vendors in Kerala and nearly two third from West Bengal (62.2%) were aware of the ban. When enquired about the reason behind the ban, 90% of vendors in Kerala knew at-least one of the reasons while the corresponding figure was 5% in West Bengal. In Kerala, majority of the shopkeepers (96.4%) reported of no sale of commercial chewing products like *gutkha* in their shops after the ban. However 3.6% admitted of selling *gutkha* after the ban, but stopped selling, once the law became stringent. Moreover, vendors were of the opinion that *gutkha* was available in Kerala, though not in the open market. However, the scenario was entirely different in West Bengal where *gutkha* was found to be easily available in more than twothird of the shops and only 2.2% of shops were not trading *gutkha*. In West Bengal, 90.5% of the vendors had not asked for any age proof in situations where it was deemed to be so. While in Kerala, 60% of the vendors admitted of not asking for age proof at the POS (Table 3).

Vendor's perception regarding their earnings after the ban on commercial chewing tobacco was also analyzed. There was a striking difference in sale of tobacco products among the two states after the ban was imposed. It was found that nearly 61.4% of the vendors reported a reduction in gross income in Kerala after the ban on *gutkha*, while in case of West Bengal; the effect of ban had limited influence in decreasing the sale of *gutkha* or chewing tobacco (Table 3).

The present study reveals that awareness about commercial SLT product ban in terms of reason for the ban and knowledge on punishable offence among the consumers in Kerala was higher than their

#### Table 1

General information of the consumers and vendors
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Consumers (N = 865)			Vendors (N = 173)				
Variables		Kerala (N = 415)	West Bengal (N = 450)	Variables		Kerala (N = 83)	West Bengal (N = 90)
Age group	18–20 21–40 41–60 Abova 60	47 (11.3) 84 (20.2) 186(44.8) 98 (23.6)	31 (6.9) 197 (43.8) 149 (33.1) 73 (16.2)	Age group	18–20 21–40 41–60	2 (2.4) 4 (4.8) 40 (44.8) 37 (44.6)	2 (2.2) 40 (44.4) 39 (43.3) 9 (10.0)
Gender	Male	337(81.2)	445 (98.9)	Gender	Male	65 (78.3)	86 (95.6)
Education	Female Illiterate Primary Secondary	78 (18.7) 13 (3.1) 184 (44.3) 157 (37.8)	5 (1.1) 25 (5.6) 97 (21.6) 157 (34.9)	Education	Female Illiterate Primary Secondary & Higher secondary	18 (21.7) 8 (9.6) 50 (60.2)	4 (4.4) 7 (7.8) 27 (30.0)
Occupation	Higher secondary Graduation Unemployed Student Casual labour	39 (9.5) 22 (5.3) 69 (16.6) 11 (2.7) 264 (63.6)	90 (20.0) 81 (18.0) 19 (4.2) 23 (5.1) 124 (27.6)	Shop specification	Graduation & above Pan shop Other retail outlets that also sold tobacco Portable fast food shops and	19 (22.9) 6 (7.2) 24 (28.9) 32 (38.6)	44 (48.9) 12 (13.3) 49 (54.4) 39 (43.3)
Income (in rupees)	Agricultural Labour Business Other Services No income Below 2000 2001–5000 5001–8000 8001–10000 10,000 and above	36 (8.7) 25 (6.0) 10 (2.4) 80 (19.3) 238 (57.3) 66 (15.9) 16 (3.9) 8 (1.9) 7 (1.7)	46 (10.2) 158 (35.1) 80 (17.8) 42 (9.3) 12 (2.7) 105 (23.3) 152 (33.8) 93 (20.7) 46 (10.2)	Shop location Functioning of the	At market place Beside main road Near Junction 1–3 years 3–5 years	27 (32.5) 4 (4.9) 57 (68.3) 22 (26.8) 14 (16.9) 16 (19.3)	2 (2.2) 17 (18.9) 72 (80.0) 1 (1.1) 5 (5.6) 10 (11 1)
				shop	3–5 years Above 5 years	16 (19.3) 53 (63.9)	10 (11.1) 75 (83.3)

N= Number of Consumers/Vendors.

#### Table 2

Present use, Accessibility and Availability of chewing tobacco (gutkha) after its ban-the consumer's perspective.

1	1			
Variables	Kerala N = 415	West Bengal N = 450	Odds ratio (95% CI)	p value
Present smokeless	69 (16.6)	78 (17.3)	1.051	0.77
tobacco users including gutkha			(0.737–1.500)	
Awareness				
Knew about <i>gutkha</i> ban	397 (95.7)	288 (64.0)	12.40 (7.44–20.66)	<0.0001*
Year of ban (Kerala: N = 397; West Bengal: N = 288)	97 (24.4)	34 (11.8)	2.415 (1.579–3.694)	<0.0001*
Present tobacco use p	attern			
Everyday	349 (84.1)	312 (69.3)	4.36 (2.64–7.22)	<0.0001*
Not every day, but regularly	45 (10.8)	56 (12.4)	3.138 (1.68–5.82)	0.001*
Occasionally	21 (5.1)	82 (18.2)	Ref.	-
Accessibility and Ava	ilability			
Easy access to banned tobacco products	182 (43.9)	382 (84.9)	7.19 (5.20–9.93)	<0.0001*
Verified age while selling chewing tobacco	14 (3.4)	2 (0.4)	7.82 (1.76–34.6)	<0.0001*
Availability of chewing tobacco is same like before the ban	90 (21.7)	235 (52.2)	3.94 (2.93–5.31)	<0.0001*
Analysis of factors res	ponsible for	quitting the ha	bit of gutkha cons	sumption
(Consumers Perspec	ctive Ban is he	elpful to quit g	utkha	-
Yes	362 (91.65%)	396 (90%)	0.11	<.0001*
No	33 (8.35%)	4 (1.00%)	(0.04–0.32)	
Gutkha ban has an im	pact in societ	у		
Yes	239 (69.28%)	366 (95.07%)	0.12	<.0001*

No 106 19 (4.93%) (0.07–0.20) (30.72%)

 $N{=}$  Number of Consumers, 95% CI: 95% Confidence Interval, \*: p value  ${\leq}$  0.05.

counterparts in West Bengal (Tables 2 and 3). Table 2 also shows an analysis of factors responsible for quitting gutkha consumption in both the states. Awareness about health hazards of tobacco and awareness about *gutkha* ban were considered to be helpful for quitting consumption of SLT by majority of the consumers in both the states.

# 4. Discussion

To the best of our knowledge, this study is the first of its kind conducted in West Bengal and Kerala to find out the short-term impact of gutkha ban from both the vendor's and the consumer's perspective. The two states illustrated different views in terms of opinion gathered from tobacco vendors and customers on effectiveness of the ban, compliance to law and economic impact in their sales after the ban. The ban has less impact in West Bengal as reported from the perspective of both the vendor and the consumer, where sale and use of gutkha was not affected by the ban. Similar findings were reported from other studies conducted in other states of India viz. Tamil Nadu, Maharashtra, Delhi, Andhra Pradesh and Karnataka.<sup>17,20</sup> However in Kerala, easy access to commercial SLT was reported by less than half of the consumers while considering availability, a quarter of them reported that the availability was not the same as before ban. The corresponding figures in West Bengal were 84.9% and 52.7% respectively. Though none of the vendors in Kerala sold gutkha at the time of study, almost half of the vendors reported that gutkha was available in the market. However, they opined that there was an overall decrease in sale of gutkha in Kerala. The study

## Table 3

Availability of chewing tobacco/gutkha after ban (Vendor's perspective).

Variables	Kerala (N = 83)	West Bengal (N = 90)	p value					
Awareness on packaged smokeless tobacco ban								
Aware of packaged smokeless tobacco ban	83 (100)	56 (62.2)	<0.0001 *					
Sources of information								
News paper	51 (61.4)	11 (12.5)	<0.0001 *					
Television	22 (26.5)	64 (71.4)	<0.0001 *					
Radio	2 (2.4)	8 (8.9)	0.92					
Friends and relatives	6 (7.2)	18 (19.7)	<0.0001 *					
Others	2 (2.4)	0 (0)						
Awareness								
Aware of law against defaulters	79 (95.2)	16 (17.8)	<0.0001 *					
Aware of timing of ban	29 (35.1)	88 (97.8)	<0.0001 *					
Aware of reason for ban	76 (91.6)	3 (3.3)	<0.0001 *					
Availability of gutkha								
Not available at all	41 (48.8)	2 (2.2)	< 0.0001*					
Available, but not so common	19 (22.5)	2 (2.2)						
Infrequently available	21 (25.0)	24 (27.0)						
Easily available	3 (3.7)	62 (68.5)						
Ever asked for age proof								
Yes	33 (40.0)	9 (9.5)	< 0.0001*					
No	50 (60.0)	81 (90.5)						
Vendors who faced raid								
Yes	10 (12.0)	1 (1.1)	< 0.0001*					
No	73 (88.0)	89 (98.9)						
Have incurred loss after gutkha ban								
Yes	51 (61.4)	15 (16.9)	< 0.0001*					
No	32 (38.6)	75 (83.1)						
Wanted to shift in other businesses								
Yes	21 (25.3)	14 (15.7)	0.11					
No	62 (74.7)	76 (84.3)						

N= Number of Vendors, \*: p value  $\leq$  0.05.

depicted that majority of the consumers and vendors knew of the chewing tobacco ban in both the states. A study conducted on gutkha ban among the migrants of Karnataka revealed that more than 90% users were aware of the ban and similar finding was reported by another study conducted in Maharashtra.<sup>17,20</sup> In contrast, a study from Rangareddy district of Telengana reported that only 50% users were aware of the ban.<sup>21</sup> Similar findings were also reported from other states where the ban had been imposed.<sup>17,22</sup> One study reported that ban on gutkha caused reduction of gutkha consumption, however switching over to other tobacco products for lack of availability of gutkha posed a new concern.<sup>17</sup> Due to easy availability of a range of tobacco products at an affordable cost, consumers could shift to other forms of tobacco products which again struck a major challenge to the policy makers. Users have brand preferences; they switch to other products considering cost, availability, and their level of addiction.<sup>17</sup> Awareness on the reason for ban also had striking dissimilarities between the states. Although West Bengal is the 6th largest state economy in the country, Kerala's overall human development index particularly the distinction of being the highest literate state in the country would have contributed more to health promotion campaigns leading to better awareness.<sup>21</sup> Similar findings were reported from the state of Telangana where greater awareness on the ban and punishment for violation of law was observed among sellers.<sup>22</sup> NFHS-4 (2015–2016) data pointed to the gender-wise prevalence of tobacco use in the two states and particularly in the state of Kerala where the prevalence was relatively lower than West Bengal.<sup>23</sup> The results could be attributed to improvement in awareness on tobacco hazards and enhanced enforcement measures.

In West Bengal the picture is not so rosy, but there is a need to enforce the ban in its letter and spirit. Unlike *bidi* or cigarettes, *gutkha* is not manufactured in the State. Illegal supplies and vending of *gutha* need to be addressed as a priority in the state. It could be safely said that the ban has to be actualized at the ground level through information campaign and regular enforcement, and in this regard clear cut guide-lines on the implementation of rules and training of the stakeholders might come in handy. Hence, to make the ban more effective, regular and sustained enforcement is needed. A study conducted in Chennai, in South-India, reported a reduction in sale after the ban and there was no open display of *gutkha* products in the shops due to the fear of shops being raided for illicit trade.<sup>9</sup>

# 5. Conclusion

Gutkha ban had little impact in West Bengal so far as sale in the open market was concerned, while the ban had a moderate impact in Kerala. However, black market sale in Kerala is concerning. Post-ban availability of gutkha products to customers was not affected. A comprehensive approach is essential to reduce demand and supply of these products by arranging sensitization campaigns and strengthening legislation in the community. Overall, this study points to the immediate and stringent action in cutting the route of supply of gutkha. Information campaign through media and strict enforcement of the Food Safety Standards Act are required. Finally, a coordinated and orchestrated action from the State Health Department, State Police Department, State Excise Department, Municipal Affairs Department and Local Self Governments would help in implementing the ban obviously.

#### 6. Limitations of the study

As females usually were not buying tobacco products directly from the vendors, particularly in West Bengal (male members do it), we were unable to interview females directly at shops. Secondly, different perspectives of the two states especially in terms of level of enforcement of the ban on *gutkha* also restricted the data for comparison. Lastly, this study was completed four years back (November'2017 to February'2018), so, the present scenario of *gutkha* consumption, current availability and perceptible variation of consumers and vendors in West Bengal and Kerala may vary now.

# 7. Policy implications

The information gained from this study will be useful for identifying the most effective interventions to prevent people from generating tobacco habit and to assess the effectiveness and perception towards tobacco product ban. The study indicates that there should be need-based comprehensive tobacco control programme/policy to be implemented with focus on vulnerable group.

## 8. Future scope

It is very important to carry out such type of assessment of the status of *gutkha* ban intermittently across the states in India. This would help to evaluate the effectiveness of the ban and the existing prevalence of the product in black market. More research is also necessary to comprehend such restrictions on sale of *gutkha* and the steps that must be taken to ensure that these laws are strictly enforced. These studies would help to design evidence-based intervention programmes and future policies to control tobacco consumption in general and SLT use in particular.

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## Ethical standards disclosure

The study protocol has been endorsed by the Human Ethical Committee of MANT.

## Declaration of competing interest

There are no conflicts of interest.

# Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.cegh.2022.101160.

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