

# Tobacco use among school going children in Bihar, India

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## ABSTRACT

**Background:** Tobacco use has become prevalent in India and nearly 15% of youth use tobacco in one or other form. However, very few studies have explored the use, knowledge about its hazard, and attitudes of tobacco use among youths. So, this study was done to determine the pattern of use as well as knowledge and perception of tobacco among students attending schools of 8th to 9th grad in Sasaram, Bihar. **Methods:** A cross sectional survey was performed among 515 students in the 8th and 9th grades in 8 schools in Sasaram, Bihar. The study period was from 1st January to 31st December, 2018. **Results:** Ever use of smokeless tobacco was reported by 31 (6.1%) students in the survey. 18 (3.5%) students reported ever using smoked tobacco. Students were more likely to identify cigarettes and bidis as tobacco products compared to smokeless tobacco products like gutkha and khaini. Betel nut products were used by 91 (17.7%) students. **Conclusion:** The high rate of smokeless tobacco and betel nut use along with less levels of knowledge about their contents and harms suggests that tobacco control programs of Government of India targeting youth should ensure that these products are adequately explained and understood by students all over India.

**Keywords:** Tobacco, Betel nut, school going children, smokeless tobacco, Bihar

## INTRODUCTION

Tobacco use is an increasingly important factor effecting morbidity and mortality in world as well as in India. Children and youth are susceptible group for tobacco use initiation due to various causes, peer pressure being one of them.<sup>[1]</sup> Nationally, 14.6% of youth of aged 13–15 years report using tobacco products.<sup>[2]</sup> The majority of youth tobacco users report using products other than cigarettes.<sup>[3]</sup>

Only a few studies in India have studied tobacco use among children and youth, as well as attitudes and beliefs about tobacco use in India. These studies have shown confusing results. For instance, a study of students in Noida found the ever use of smokeless tobacco to be 4.6%.<sup>[4]</sup> A similar study conducted with youth in Delhi and Chennai found 10.8% of students reported smokeless tobacco use.<sup>[5]</sup> A third study conducted in Chennai found students were more likely to report smoking tobacco compared to using smokeless tobacco products.<sup>[6]</sup> Despite the large number of youth who report tobacco use, less than two thirds report being taught about the effects of tobacco use in school.<sup>[7]</sup>

This study seeks to extend the information available on youth tobacco use as well as use of smokeless tobacco in the form of betel nut (areca or supari)

products. So, this study was done to determine the pattern of use as well as knowledge and perception of tobacco among students attending schools of 8th to 9th grades in Sasaram, Bihar

## MATERIALS AND METHODS

A cross-sectional study was conducted in 8 municipal schools in Sasaram, district Rohatas, Bihar from 1st January to 31st December, 2018. Schools were randomly selected and one classroom from the 8th to 9th grade within each school was randomly selected. Every student in all selected classes was invited to participate in the study. Students were surveyed to assess tobacco use, smoked as well as smokeless, knowledge about tobacco and betel nut products, and perceptions of risk associated with each of these products. Current use was defined as use of product within the 30 days preceding the survey. Schools from all areas of Sasaram were included in the survey for fair representation and proper extrapolation of the study results.

The aims and objectives of the study along with the study protocol was explained to the school principal after due ethical clearance from institutional ethical committee. Assent was sought from each student participating in the survey. For the assent process, I along with health workers of department of community medicine explained the purpose of the study, the protocol for the study, and confidentiality

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to the student participants prior to the survey being administrated.

Data were collected and entered into Microsoft Excel following the survey. Data analysis was conducted using free SPSS version 16.0. Logistic regression was used to test difference in tobacco use and awareness levels by gender, age, and the presence of tobacco control program in the selected schools. Odds ratio and confidence interval was calculated. p value was considered significant at less than or equal to 0.05.

## RESULTS

In total, 550 school students were surveyed from 8 municipal schools in Sasaram. Thirty-five students (6.4%) declined to participate in the study, mostly girl students. Of the 515 surveyed students, 300 (58.2%) students were selected from the 8th grade and 215 (41.8%) students were selected from the 9th grade. Among the study participants, 163 (31.7%) were female and 352 (68.3%) were male. The mean age of participants was  $14.5 \pm 1.51$  years (range 11–18 years).

[Table 1] depicts tobacco use as per gender of participants. Overall, 35 (6.8%) of students reported ever using a tobacco product. Thirty-one (6.1%) students reported currently using any tobacco product. Smokeless tobacco was more commonly reported compared to smoked tobacco. Among study participants, 18 (3.5%) reported ever using smoked tobacco, 31 (6.1%) reported ever using smokeless tobacco, and 10 (1.9%) students reported using both. Similarly, 19 (3.7%) students reported current smoked tobacco use and 30 (5.8%) reported current smokeless tobacco use. The survey found 95 (18.4%) students had reported ever trying betel nut products and 65 (12.6%) students were current users. As seen in [Table 1], male students were more likely to report tobacco use compared to their female peers. Male students were significantly more likely to report ever smokeless tobacco use, as well as smoked and smokeless tobacco use within the 30 days preceding the survey. There were no statistically significant associations found between tobacco use and student grade or age.

**Table 1: Tobacco use by gender (n=515)**

Variable	Female n (%)	Male n (%)	Adjusted OR	95% CI	p
<b>Any Tobacco</b>					
Ever use	7 (4.3)	28 (7.9)	0.44	0.26- 0.81	0.012
Current use	6 (3.7)	25 (7.1)	0.54	0.32- 0.96	0.048*
<b>Smoked Tobacco</b>					
Ever use	3 (1.8)	15 (4.3)	0.47	0.21- 0.97	0.044*
Current use	3 (1.8)	16 (4.5)	0.46	0.22- 0.93	0.045*
<b>Smokeless Tobacco</b>					
Ever use	6 (3.7)	25 (7.1)	0.51	0.27- 0.96	0.043*
Current use	6 (3.7)	24 (6.8)	0.59	0.31- 1.14	0.106
<b>Betel Nut</b>					
Ever use	26 (15.9)	69 (19.6)	0.75	0.54- 1.02	0.104
Current use	16 (9.8)	49 (13.9)	0.65	0.45- 1.03	0.052

**Table 2: Smokeless tobacco use among students (n=515)**

Product	Ever Use		Current Use	
	n	%	n	%
Gutka	12	2.3	11	2.1
Khaini	6	1.2	6	1.2
Saunf	15	2.9	13	2.5
Mishri	13	2.5	11	2.2

Saunf like pass-pass was the most commonly reported form of smokeless tobacco ever used, followed by mishri, gutkha, and khaini. Current use of smokeless tobacco products followed a similar trend. Nearly, one in five students reported ever using betel nut products including supari and pan masala. [Table 2]

Students were more likely to identify cigarettes and bidis as products containing tobacco compared to smokeless products such as mishri, saunf, gutkha, and khaini. Students were most likely to identify cigarettes as a tobacco product, followed by bidis. Less than half of the surveyed students were able to correctly identify mishri, saunf, gutkha, and khaini as products with tobacco as an ingredient. Nearly,

half of the students (45.6%, n = 235) surveyed believed that betel nut products such as pan masala and supari contained tobacco. No statistically significant associations were found between knowledge of tobacco as an ingredient in products and age or gender.

While the majority of students believed that the tobacco products included in the survey were hazardous to health, vast differences were observed in attitudes about smoked and smokeless tobacco. Students were most likely to report a belief that cigarettes (81.9%, n = 422), gutkha (72.8%, n = 375), and bidis (68.9%, n = 355) were harmful to health. Students were far less likely to report believing saunf (60.2%, n = 310) and khaini (54.9%, n = 283) were harmful to health. More than half of the surveyed students (51.8%, n = 267) believed that betel nut products were harmful to health.

There were no statistically significant associations between knowledge that a product contained tobacco and belief that such product was hazardous to health for tobacco products. However, an association was

found between belief that betel nut products contained tobacco and belief that such products were harmful to health (odds ratio: 0.309, confidence interval: 0.25–0.49,  $P < 0.001$ ).

## DISCUSSION

The results of this survey show disturbing evidence about school children and youth tobacco use and the use of products very similar in design to smokeless tobacco. This study found that smokeless tobacco is the predominant form of tobacco used by youth in Sasaram's municipal schools. Students were nearly 80% more likely report ever using smokeless tobacco compared to smoked tobacco.

Overall, students surveyed for this paper seemed confused about the contents of smokeless tobacco and betel nut products and the harms associated with their use. Students were more likely to identify cigarettes and bidis as tobacco products that were harmful to health compared to smokeless tobacco products such as gutkha, khaini, saunf, and mishri.

Nearly twenty percent students surveyed had used betel nut products at least once in their life. Betel nut products share many similarities to smokeless tobacco products. They are marketed in nearly identical ways in India, including low price, similar product packaging designs, and positioning at stores and kiosk frequented by children.<sup>[8]</sup> In addition to being sold on its own as a mouth freshener, scented or flavoured betel nut is added to many smokeless tobacco products including gutkha.<sup>[9]</sup> For these reasons, betel nut products may be the important gateway products for smokeless tobacco use among children and youth.<sup>[10]</sup> Given the large number of students who reported betel nut use in this survey, further studies should be carried out to explore the links between these products more thoroughly.

A surprisingly large proportion of students felt betel nut products such as pan masala and supari contained tobacco. Students were more likely to believe betel nut products contained tobacco than they were to believe smokeless tobacco products such as gutkha, khaini, and saunf. Similarly, students were more likely to believe that betel nut products were hazardous to health than they were to report that khaini and mishri were hazardous to health. Students who felt betel nut products were hazardous to health were significantly more likely to believe that these products were harmful to health – an association that was not seen between knowledge of product contents and attitudes about harm among tobacco products included in the study.

Despite a ban on the sale, manufacture, and distribution of gutkha and scented supari products in Maharashtra, students reported using these

products. At the same time, students were more likely to believe that gutkha was a tobacco harmful to health compared to other forms of smokeless tobacco. These results suggest that students are still able to access and use gutkha. A study done in Mumbai showed similar results.<sup>[7]</sup>

India is the second largest producer and the third largest consumer of tobacco. According to the Global Adult Tobacco Survey India Report (2009–2010), there are more than twice as many users of smokeless tobacco (26%) as cigarette smokers. This has to stop somewhere.<sup>[11]</sup> The Indian Government must introduce policies to control production, import, and sale of illicit STP but we also call for a coordinated international solution.<sup>[12]</sup>

## CONCLUSION

The high rate of smokeless tobacco and betel nut use along with less levels of knowledge about their contents and harms suggests that tobacco control programs of targeting youth should ensure that these products are adequately explained and understood by students especially their hazards. We must spread awareness among school children.

### Limitations

A few limitations of this study should be acknowledged. First, this study relied on self-reported data collected by students. Social desirability bias may have affected students' willingness to report tobacco use in the survey. Second, since data on the students who declined to participate in the study were not collected, it is not possible to ascertain whether those students' were different in a meaningful way from students who agreed to participate.

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