

Tobacco Cessation Among Youths in Eastern India: Evidence from National Family Health Survey 2015–2016

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Abstract

India is the world's second-largest consumer of tobacco. The country's eastern region, which comprises four states, is more susceptible to tobacco consumption and adverse outcomes than the rest. This study explores the prevalence, regional variation, and correlates of tobacco cessation in the eastern region. This analysis is based on the National Family Health Survey (NFHS 4) data comprising 665 females and 2016 males of the 15–24 age group who tried and/or were advised to quit tobacco. In this study, tobacco cessation is considered an outcome variable, and socioeconomic characteristics are considered a predictor variable. Bivariate and regression analyses are used to correlate tobacco cessation with socioeconomic factors. Variation in tobacco cessation is noticed in the eastern states. Self-attempted to quit tobacco is highest among males in Odisha (39.84%), whereas, in West Bengal, a higher number of females (26.89%) self-attempted to quit. Youth belonging to 20–24 years (OR = 1.19, 95% CI [0.95, 1.49], $p = .604$) are more likely to self-quit tobacco than those 15–19 years of age. Similarly, improving education increases tobacco cessation. Tobacco cessation is higher based on quit advice from healthcare providers than self-quitting behavior. The analysis indicates that youth tobacco consumption in eastern states is quite alarming.

Keywords

Eastern states of India; NFHS; tobacco; tobacco cessation; youth

Introduction

Worldwide approximately 6 million people die each year from preventable causes related to tobacco consumption (Shah et al., 2018). Regular tobacco consumption is the leading cause of non-communicable diseases (NCDs) related deaths like diabetes, several types of cancers, and cardiovascular diseases around the world (Jha et al., 2008; Peto et al., 1996). Smoking among women also raises the risk of infertility, pregnancy concerns, premature birth, low birth weight infants, perinatal mortality, miscarriages, and infant fatalities. Moreover, researchers have pointed out that smoking habits vary from country to country depending on gender, place of residence, age, level of education, occupation, and wealth index (Hosseinpoor et al., 2011).

India, with a considerable burden of tobacco-related morbidity, disability, and mortality (Rani et al., 2003), is the second-largest global tobacco consumer and responsible for half of all cancers in men and a quarter of all cancers in women (International Institute for Population Sciences, 2011). Nearly 1.35 million deaths every year in India are due to diseases related to tobacco use (World Health Organization, 2019). In India, tobacco is consumed by chewing or smokeless (SLT) and in smoking form. Smokeless tobacco is locally termed *khaini*, *gutkha*, *zarda*, *toombak*, *paan masala*, and *gul*, while smoking tobacco includes cigarettes, bidis, pipes, and cigars (Bhisey, 2012; Patidar et al., 2015). Other chewing tobacco are betel quid, tobacco with lime, and tobacco tooth powder, among others. A study analyzed nationally representative data in 2005 and 2009. They found that tobacco use increased in the age group of 15 to 49 years (Mini & Thankappan, 2016). Tobacco consumption in any form is higher among men than women and increases with age for both males and females (Sinha et al., 2015). The National Family Health Survey (NFHS 2) depicted tobacco use as substantially more typical among unaware and less privileged men and women. Likewise, a study conducted among adults in Norway found that higher education was a strong predictor of quitting smoking (Kvaavik & Rise, 2012).

Smoking has been inescapable in India for many years. Socioeconomic status and tobacco use are closely linked (Singh & Ladusingh, 2014; Thakur et al., 2013). Two studies highlighted that socioeconomic disparities exacerbate India's tobacco-related death and morbidity disparities (Bhan et al., 2012; Subramanian et al., 2004). The literature pointed out that the high prevalence of tobacco consumption is mainly owing to ignorance regarding its harmful effects, especially among the rural population in India (Singh, 2014). A study captured the misinformation that women began using tobacco because they believed it had therapeutic benefits (Bloch et al., 2008). Moreover, in an earlier study regarding tobacco use in western India, the Indian Council of Medical Research (ICMR) found that a low percentage of men and women are interested in quitting tobacco (Chaudhry, 2002).

The process of tobacco cessation is described as the gradual reduction of tobacco consumption, either with or without assistance (National Health Service, 2022). Programs address tobacco consumption, such as World Health Organization's (WHO) multifaceted Monitor, Protect, Offer, Warn, Enforce, and Raise (MPOWER) project. The WHO Framework Convention on Tobacco Control (FCTC) has approved the MPOWER initiative to combat tobacco demand and supply in a country (World Health Organization, 2004). In India Cigarettes and Other Tobacco Products Act (COTPA) of 2003 restricts smoking in public areas, the selling of tobacco products to and by minors (under the age of 18), the sale of tobacco products within 100 yards of educational institutions, and enforce to include

graphic warnings on the packaging of all tobacco products (Ministry of Health and Family Welfare, 2003). To strengthen COTPA, the Indian government implemented the National Tobacco Control Programme (NTCP) in 2007–2008, which involved District Tobacco Control Cells to implement and oversee the tobacco control program efficiently. The NTCP has been working rigorously to control tobacco consumption and has adopted the WHO FCTC to promote tobacco cessation and treatment at the ground level (Directorate General of Health Services, 2011a, 2011b). Although several countries signed the memorandum to understand the need for tobacco control, the published data shows that lower-middle-income countries (LMICs) need to take more measures to control tobacco (Ahluwalia et al., 2018). After the Tobacco Control Programme (TCP) implementation, there has been a decline in the prevalence of tobacco usage in India (Shang et al., 2018). A study revealed that the motivation to stop smoking depends significantly on the implemented tobacco control measures (Quadri et al., 2022).

Tobacco consumption affects many of India's youth (ages 15–24). Evidence shows that most smokers start tobacco use before 18, while some start as young as 15 (Patel, 1999). Youths are prone to substance abuse as developmental transition makes them more vulnerable to surrounding influences. Tobacco has an adverse impact on human health for all age groups, including the young population. There is a relationship between respiratory symptoms and smoking in adolescents (Burr et al., 1999). The early initiation of the tobacco habit could be social pressure, peer group impact, tobacco habits among parents, and allowance provided by parents. Historically, tobacco has been regarded as a destructive addiction that shows symptoms of addiction after a while, which can be equated to a ticking timebomb going off (Kendler et al., 2013). Thus, tobacco cessation or quitting is crucial in reducing NCDs and premature deaths. This realization is essential for the young population since this group is more likely to develop the habit early and be more inclined to quit it before any harm is caused (Jindal et al., 2005).

Literature found that quitting tobacco is the most cost-effective intervention compared to other tobacco control programs to curb its consumption (Chaly, 2007; Choudhury, 2004). There is evidence to support the notion that any attempts to quit tobacco are positively associated with various sociodemographic factors such as higher income, increasing age, higher education, advice from doctors, exposure to anti-tobacco messages, and the male gender (Dhumal et al., 2014; Sarkar et al., 2013; Srivastava et al., 2013). It has also been observed that people engaged in non-agricultural occupations show more quitting attempts (Sarkar et al., 2013). The Global Youth Tobacco Survey (GYTS) data depicted that students had expressed a desire to quit tobacco, while most had tried in the previous year. Involving media in promoting social change is crucial for the successful implication of tobacco cessation at all levels (Zhang et al., 2010). According to the Global Adult Tobacco Survey (GATS) (International Institute for Population Sciences, 2011), it is crucial to increase capacity and speed up the implementation of WHO FCTC demand reduction provisions (Song et al., 2016). Thus, quitting tobacco is one of the most crucial pathways to undermine tobacco-related morbidities.

Data from the GYTS and the NFHS have revealed that eastern states (West Bengal, Bihar, Odisha, and Jharkhand) of India have a comparatively higher prevalence of tobacco consumption. According to the NFHS 3 (2005–2006) (IIPS & Macro International, 2007), many adult women and men smoke cigarettes regularly in Jharkhand (Saddichha & Khess, 2010). The eastern region is susceptible to tobacco consumption and its adverse outcomes (Bhawna, 2013). Tobacco consumption is higher among youth in this region, particularly in Odisha and Bihar states. Little is known about the magnitude of quit attempts among the

youth population in the eastern states of India. Against this backdrop, understanding the characteristics and correlates of tobacco cessation attempts in the east region is essential for promoting tobacco control and cessation efforts in India. This study aims to understand the prevalence, regional variation, and correlates of tobacco cessation in eastern India.

Data and methods

Data source

This study used data from the National Family Health Survey (NFHS 4) survey conducted in 2015–2016 (International Institute for Population Sciences [IIPS] & ICF, 2017). The NFHS is a large-scale multi-level household survey conducted all over India at the state and district levels. The National Family Health Survey provides national and state-level estimates of fertility, mortality, family planning, and maternal and child health. The first round of the NFHS was conducted in 1992; since then, five rounds have been completed. The NFHS uses a two-stage stratified sampling method, wherein the 2011 census was used as the sampling frame for selecting Primary Sampling Units (PSUs). Using computer-assisted personal interviewing (CAPI), 17 regional languages were used to collect the data from the four survey questionnaires (household, woman, man, and biomarker questionnaires).

Study population

The NFHS divides India into six regions. This study focused on the eastern region, including the states of Bihar, Jharkhand, Odisha, and West Bengal. The NFHS 4 collected information from 568,200 households comprising 625,014 women and 95,065 men eligible for the interview. This study considered men and women of the 15–24 age group as youth per the definition in the NFHS. The analytical samples included 2016 males and 665 females who were consuming tobacco and attempted/advised to quit tobacco.

Variable description

Outcome variables

To understand tobacco cessation, self-attempt to quit tobacco and advice by healthcare providers to quit are used as outcome variables. The NFHS has questions like during the past 12 months, have you ever tried to stop smoking or to use tobacco in any other form? And during any doctor's or health professional visits, were you advised to quit smoking or using tobacco in any other form? (IIPS & ICF, 2017). These two questions were used for tobacco cessation. Those who answered "YES" were considered for tobacco cessation.

Predictor variables

Predictor variables used in this study include age (15–19 and 20–24), caste (schedule caste, schedule tribe, other backward castes, and others), religion (Hindu, Muslim, and others), wealth quintile (poorest, poorer, middle, richer, and richest), place of residence (rural and urban), gender (male and female), educational attainment (no education, primary,

secondary, higher) and working status (not working and working). To understand the media exposure of the respondent, whether they read any newspaper/magazine, watch television, listen to the radio, go to movie/theatre, and have internet accessibility are also included in independent variables.

Statistical analysis

The STATA 16 version (Stata Corporation, 2017) was used in this study to analyze the data. Descriptive statistics and bivariate analyses were carried out to study the prevalence and effect of tobacco cessation with other socio-economic factors. Bivariate analysis was used to understand the socioeconomic and demographic differentials. Binary logistic regression examines the association between tobacco cessation and socioeconomic characteristics. Since the sample size of women (15–24 years) consuming tobacco and attempting to quit was less for gender-specific analysis thus, binary logistics regression was carried out by combining both male and female youth.

Results

Results are depicted in tabular format (Table 1), explaining the distribution of tobacco consumption and cessation among youth in the eastern states of India. The prevalence of smoking and chewing tobacco (smokeless tobacco) was higher among males than females. There is an apparent regional variation in tobacco consumption among eastern states. Odisha (30.24%) reported the highest consumption of smokeless tobacco among males, followed by Jharkhand (25.35%), Bihar (23.95%), and West Bengal (16.19%). On the other hand, the consumption of smoking tobacco by female youths was comparatively higher than chewing tobacco. Consumption of tobacco is self-reported, so this might be the reason for the small sample size among females. The probable cause might be that the stigma attached to tobacco consumption often makes it difficult to report or discuss this issue. For males, those who tried to quit tobacco by themselves are high in Odisha (39.84%), while for females, it is highest in West Bengal (26.89%). Earlier studies depicted tobacco consumption leads to cancer, cardiovascular diseases, and long-term addiction. Due to this reason, doctors suggest quitting tobacco for a healthy life. It is evident from Table 1 that tobacco cessation advised by health professionals like doctors is high for both males and females. Interestingly, tobacco cessation recommended by doctors is predominantly high in Jharkhand (44.68%) among males and in Bihar (79.67%) among females. Smokeless tobacco use is higher in the eastern region than the national average, especially among men, pointing to more stringent policy implications for curbing tobacco use in this region.

Table 1: Percentage Distribution of Tobacco Consumption and Cessation Among Youth (15–24 Years) in the Eastern States of India (Weighted Data)

	Smoking	Smokeless Tobacco	Self-Attempt to Quit Tobacco	Not Self-Attempt to Quit Tobacco	<i>p</i> value	Advised by Healthcare Providers to Quit	Not Advised by Healthcare Providers to Quit	<i>p</i> value
Male								
Bihar	10.8	23.95	32.58	67.42		40.5	59.50	
Jharkhand	11.54	25.35	30.02	69.98		44.68	55.32	
Odisha	9.18	30.24	39.84	60.16	< .001	38.85	61.15	.213
West Bengal	21.56	16.19	17.97	82.03		37.85	62.15	
Female								
Bihar	0.83	0.14	15.26	84.74		79.67	20.33	
Jharkhand	1.73	0.19	14.64	85.36		54.89	45.11	
Odisha	7.38	0.38	16.51	83.49	.099	41.05	58.95	.015
West Bengal	3.11	0.24	26.89	73.11		28.32	71.68	

Note: Analyzed using NFHS 4 data (IIPS & ICF, 2017)

The prevalence of tobacco cessation by background characteristics is depicted in Table 2. The data indicates gender differentiation in tobacco-quitting behavior. Results show that education, working status, exposure to media, age, and wealth quintile impact tobacco cessation among youth. Among men, smoking and chewing tobacco prevalence increased unanimously across all socioeconomic groups. Age is a significant predictor, and this table depicts that with an increase in age, tobacco cessation (self-quitting and advised by doctors) has increased in males and females. However, education has shown heterogeneity concerning tobacco cessation. Females having the lowest education had higher tobacco cessation advice from healthcare providers.

On the other hand, males having primary and secondary education had higher tobacco cessation. Across different caste categories, youth belonging to OBC reported the highest attempt to quit tobacco by themselves (32.73%), while 44.67% of them were advised to quit by doctors and other health professionals. There are religious differentials in attempts to quit tobacco alone or advised by health care providers to quit as well. Youth (both male and female) belonging to the Muslim community had a high prevalence of tobacco cessation than other religions. Women (44.88%) and men (40.5%) in rural areas had a higher prevalence of tobacco cessation advised by doctors. If we focus on the working status of youth, women had higher tobacco cessation behavior when working; on the other hand, it was vice versa for men. Youth having regular exposure to media has a greater tendency to quit tobacco both by themselves and advised by doctors than those without media exposure.

Table 2: Prevalence of Tobacco Cessation by Background Characteristics Among Youth in the Eastern States of India, 2015–2016 (Weighted Data)

	Male				Female			
	Self-Attempt to Quit Tobacco	Not Self-Attempt to Quit Tobacco	Advised by Healthcare Providers to Quit	Not Advised by Healthcare Providers to Quit	Self-Attempt to Quit Tobacco	Not Self-Attempt to Quit Tobacco	Advised By Healthcare Providers to Quit	Not Advised by Healthcare Providers to Quit
Age								
15–19	30.5	69.50	33.56	66.44	4.55	95.45	26.97	73.03
20–24	31.62	68.38	42.96	57.04	19.15	80.85	44.69	55.31
<i>p</i> value	.229		.824		.038		.274	
Caste								
SC	31.22	68.78	42.07	57.93	18.22	81.78	45.11	54.8
ST	29.13	70.87	36.42	63.58	18	82	40.14	59.86
OBC	32.73	67.27	44.67	55.33	16.6	83.40	47.51	52.49
Others	29.07	70.93	36.15	63.85	17.84	82.16	46.56	53.44
<i>p</i> value	.150		.384		.850		.850	
Religion								
Hindu	31.31	68.69	40.37	59.63	18.65	81.35	40.07	59.93
Muslim	29.46	70.54	41.46	58.54	19.7	80.30	76.08	23.92
Others	36.31	63.69	24.46	75.54	4.84	100*	0*	100*
<i>p</i> value	.929		.438		.093		.093	
Wealth Quintile								
Poorest	30.09	69.91	38.86	61.14	16.67	83.33	41.69	58.31
Poorer	33.92	66.08	49.54	50.46	19.14	80.86	42.06	57.94
Middle	31.44	68.56	26.5	73.50	20.15	79.85	56.69	43.31
Richer	33.1	66.90	37.23	62.77	19.22	80.78	0*	0*
Richest	22.1	22.10	30.33	69.67	100*	0*	0*	0*
<i>p</i> value	.384		.101		.228			
Place of residence								
Urban	28.34	71.66	37.49	62.51	34.79	65.21	36.1	63.90
Rural	31.96	68.04	40.5	59.50	16	84	44.88	55.12
<i>p</i> value	.389		.242		.024		.162	
Media exposure								
Not Exposed								48.34
Regular Exposure	27.79	72.21	35.14	64.86	12.44	87.56	51.66	
<i>p</i> value	.011		.581		.031		.346	62.59
Education								
No education	17.38	82.62	30.26	69.74	17	83	55.07	44.93
Primary	28.81	71.19	52.57	47.43	26.04	73.96	50.8	49.20
Secondary	36.07	63.93	39.33	60.67	14.46	85.54	19.23	80.77
Higher	25.27	74.73	31.41	68.59	0*	100*	0*	0*
<i>p</i> value	< .001		.724		.065		.228	

	Male				Female			
	Self-Attempt to Quit Tobacco	Not Self-Attempt to Quit Tobacco	Advised by Healthcare Providers to Quit	Not Advised by Healthcare Providers to Quit	Self-Attempt to Quit Tobacco	Not Self-Attempt to Quit Tobacco	Advised By Healthcare Providers to Quit	Not Advised by Healthcare Providers to Quit
Working Status								
Working	29.92	70.08	34.36	65.64	27.31	72.69	85.45	14.55
Not Working		66.43						
Working	33.57		42.25	57.75	26.84	73.16	39.1	60.90
<i>p</i> value	.212		.542		.551		.135	

Note: 0* is no cases in that category; 100* is there was only one case in that category, and she tried to quit/was advised to quit smoking and tobacco; Analyzed using NFHS 4 data (IIPS & ICF, 2017)

The association between socioeconomic characteristics and attempts to quit tobacco consumption is highlighted in Table 3. Controlling the effects of other variables included in the model, quitting advice and self-quitting tobacco behavior were not found to vary statistically significantly by wealth quintile, caste, working status, and place of residence of the tobacco users. The odds of tobacco cessation by self-quitting and being advised by a doctor are high with an increase in age. Youths belonging to 20–24 years were 1.19 (OR = 1.19, 95% CI [0.95, 1.49], $p = .604$) times more likely to quit tobacco themselves than those 15–19 years age. Education among youths was significantly associated with tobacco cessation. Considering no education as the reference category, youth having secondary education was 2.3 (OR = 2.377, 95% CI [0.95, 1.49], $p = .000$) times more likely to attempt to quit by themselves and 1.3 (OR = 1.331, 95% CI [0.458, 3.867], $p = .599$) times more likely to be advised by healthcare providers to quit tobacco consumption. Across all socio-economic and demographic factors, education emerged as the most critical factor in tobacco cessation among youth. This highlights that educational awareness programs about the negative impacts of tobacco consumption can lessen the utilization of tobacco in any form.

Table 3: Odds (OR, 95% CI) of Tobacco Cessation Behavior Among Youth (15–24 years) in the Eastern States of India, 2015–2016: Result from Binary Logistic Regression (Unweighted Data)

	Self-Attempt to Quit Tobacco		Advised by Healthcare Providers to Quit	
	95% confidence interval (CI)	$p > z$	95% confidence interval (CI)	$p > z$
Age				
15–19 [®]				
20–24	1.19 (0.95, 81.49)	.604	0.919 (0.507, 1.666)	.781
Caste				
SC [®]				
ST	0.782 (0.551, 1.112)	.17	0.590 (0.228, 1.48)	.211
OBC	1.049 (0.791, 1.391)	.74	0.916(0.458, 1.83)	.805
Other	0.811 (0.552, 1.194)	.29	0.616(0.227, 1.670)	.341
Religion				
Hindu [®]				
Muslim	1.121 (0.80, 1.568)	.50	2.204 (0.921, 5.272)	.076
Others	1.283 (0.762, 2.161)	.35	0.822(0.229, 2.952)	.764
Education				
No education [®]				
Primary	1.630 (1.069, 2.485)	.02	1.331(0.458, 3.867)	.599
Secondary	2.377 (1.647, 3.433)	.00	0.986 (0.376, 2.593)	.978
Higher	1.944 (1.123, 3.367)	.02	1.243 (0.321, 4.813)	.752
Place of residence				
Urban [®]				
Rural	0.989 (0.70, 1.342)	.95	1.024(0.477, 2.201)	.951
Working Status				
Not Working [®]				
Working	0.941 (0.749, 1.183)	.60	1.040 (0.566, 1.914)	.898
Media exposure				
Not exposed [®]				
Regular exposure	1.160 (0.894, 1.505)	.26	1.040 (0.566, 1.914)	.334
Wealth Index				
Poorest [®]				
Poorer	1.037 (0.794, 1.355)	.79	1.447 (0.761, 2.753)	.26
Middle	0.845 (0.602, 1.187)	.33	0.642(0.248, 1.666)	.36
Rich	0.794 (0.491, 1.286)	.35	0.610(0.177, 2.108)	.44
Richest	0.636 (0.326, 1.241)	0.18	0.591 (0.132, 2.646)	.49

Note: Analyzed using NFHS 4 data (IIPS & ICF, 2017)

Discussion

The present study has discussed tobacco cessation among youth (both male and female) in the eastern region. The prevalence of smoking and chewing tobacco (smokeless tobacco)

are seen to be unanimously higher among male than female youth (Ruchita & Kisan, 2022). There is regional variation in tobacco consumption, wherein Odisha has the highest smokeless tobacco consumption. Tobacco consumption and cessation get influenced by socioeconomic determinants like age, working status, and wealth quintile (Panda et al., 2014).

Better education positively influences tobacco cessation through self-quitting behavior and is advisable by doctors (Quadri et al., 2022). Improvement in education and increasing age escalate cessation behavior among youths (Haziandreu et al., 1990). Age is a dominant factor influencing tobacco cessation, and this study depicted that with increasing age quitting behavior improves (Lee & Kahende, 2007). Exposure to media often has both positive and negative consequences on youth. However, this study found that media exposure increased tobacco cessation among youth. Similar findings were found in a study from Bangladesh using GATS, which revealed exposure to anti-smoking advertisements helped quit tobacco (Hakim et al., 2018). Quitting advice from healthcare providers was higher than self-quitting behavior (Rigotti, 2012). The probable reason might be an increase in health problems and morbidities that intends people to attend doctors, and during their visits, they are advised to quit tobacco use. Lack of knowledge about the ill effects of tobacco, cultural influences, and lack of promotion of tobacco cessation might act as barriers to tobacco cessation (Murthy & Sahoo, 2010).

Quitting advice and self-quitting tobacco behavior are not found to vary statistically significantly across wealth quintiles, caste, working status, and place of residence of the tobacco users. The study based on NFHS 4 had similar findings (Pradhan & Patel, 2019). The probable reason is the easy accessibility and affordability of tobacco, especially chewing tobacco makes it difficult to quit even if they are willing to. Although tobacco is prohibited in several areas of eastern India, it is widely available (Ruchita & Kisan, 2022). Tobacco cessation by self-quitting behavior is more among men than women except in West Bengal, depicting the need for more awareness engagement programs focused on women. Eastern region has a high disease and mortality from tobacco use. To address this burden, the impact of policy and domestic factors on the onset of youth tobacco use is necessary (Mistry et al., 2018).

This study has intrinsic limitations because it is cross-sectional and cannot determine a temporal relationship between independent and dependent factors. Moreover, questions on tobacco cessation were self-reported; therefore, there are chances of underreporting. The sample size is low for both men and women, and the probable reason is due to the age bar covering 15-24 years. However, research shows that early tobacco cessation results in curbing NCDs in later life. Besides the limitations, this study has depicted an overall picture of tobacco cessation among the youth population in the eastern region of India.

Conclusion

Based on the analysis, it can be contended that tobacco consumption in eastern states among youth though lower than the national average, is alarming. Though the NFHS 4 data reveals a decrease in tobacco consumption, tobacco is still a significant contributor to cancer, cardiovascular disease, and respiratory ailments that result in morbidity and mortality. Grassroots-level analysis and the reason for the low sample of women need to be reviewed. This study leaves many gaps for future investigation and research. There is an ardent need

to expand programs and efforts to control the tobacco epidemic. Predictor variables can be considered when developing interventions to encourage quitting smoking through tobacco control policies and programs. Public health awareness, health education, and community engagement can reduce tobacco consumption and related morbidities and further enhance cessation activities among youth in the eastern states of India.

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