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Incidence of Tobacco Use Among Adults (15-64 Years) in Rural Kerala

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Abstract

We analyzed data from a cohort study in rural Kerala, India, to study the incidence of current smoking and current smokeless tobacco use. At baseline, of 452 individuals aged 15 to 64 years, 385 were current nonsmokers and 402 were current nonusers of smokeless tobacco. Over a mean follow-up of 7.1 ± 0.2 years, 5.5% became current smokers and 9.0% became current smokeless tobacco users. Among men, 21.1% (95% confidence interval [CI] = 11.1-36.4) of younger individuals (15-24 years) became current smokers and 22.2% (CI = 10.6-40.8) of older individuals (55-64 years) became current smokeless tobacco users. No women smoked both at baseline and at follow-up, but 9.7% (CI = 3.4-24.9) of older women (55-64 years) became current smokeless tobacco users. These findings call for effective implementation of India's Cigarettes and Other Tobacco Products Act, 2003.

Keywords

cohort study; incidence; India; Kerala; rural; smokeless tobacco use; smoking

Introduction

Globally, tobacco use is the single most preventable cause of deaths.¹ In India, annually 1 million deaths are attributed to tobacco use.² The Global Adult Tobacco Survey in 2009-2010 shows that more than one third of adults (275 million) in India use some form of tobacco.³ However, there are no data available on incidence of tobacco use. We aimed to study the incidence of current smoking and current smokeless tobacco use in rural Kerala, where the epidemiological transition is more advanced than in other states of India.

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Methods

We conducted a cohort study enrolling 495 individuals (15-64 years) in rural Thiruvananthapuram district, Kerala, in 2003, using the World Health Organization STEPS (STEPwise approach to Surveillance) approach.⁴ In 2010, 452 individuals (91.3%) could be followed up. Of these, 385 (147 men and 238 women) were current nonsmokers and 402 (176 men and 226 women) were current nonusers of smokeless tobacco at baseline. We defined current smokers as those who had smoked cigarettes, *bidis* (hand-rolled cigarettes), cigars, or hookah (water pipe) in the past 30 days. Current smokeless tobacco users were those who had used snuff, betel quid with tobacco, *gutkha* (mixture of tobacco, lime, and areca nut), or *khaini* (tobacco–lime mixture) in the past 30 days. Incidence was calculated by dividing the number of new current smokers/current smokeless tobacco users at follow-up by the number of current nonsmokers/current nonusers of smokeless tobacco among the 452 individuals at baseline. Current nonsmokers include former smokers and similarly current nonusers of smokeless tobacco include former users. Therefore, incidence of current smoking and current smokeless tobacco use is of initiation and/or relapse. Age- and gender-specific analysis was performed. Ethical approval for the study was obtained from the Institutional Ethics Committee of the Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram. All participants gave written informed consent.

Results

The mean follow-up period was 7.1 ± 0.2 years. Mean age at baseline for men was 39.4 ± 14.6 years (range 15-64 years) and for women 39.4 ± 13.6 years (range 15-64 years).

Over the follow-up period, 5.5% (men, 14.3%; [95% confidence interval, CI] = 9.5-20.9; women, 0%) became current smokers and 9.0% (men, 14.2% [95% CI = 9.8-20.1]; women, 4.9% [95% CI = 2.7-8.5]) became current smokeless tobacco users (Table 1). Among men, nearly one quarter (21.1%, 95% CI = 11.1-36.4) of younger individuals (15-24 years) became current smokers and equally (22.2%, 95% CI = 10.6-40.8) older individuals (55-64 years) became current smokeless tobacco users. No women smoked both at baseline and at follow-up, but 9.7% (95% CI = 3.4-24.9) of older women (55-64 years) became current smokeless tobacco users. There was no significant difference in the incidence of current smokeless tobacco use among current smokers (23.9%, 95% CI=13.9-37.9) and current nonsmokers (10.8%, 95% CI=6.5-17.3). Of the 21 new current smokers, 8 (38.1%) were current daily smokers and 13 (61.9%) were current less than daily smokers. Of the 36 new current smokeless tobacco users, 15 (41.7%) were current daily users and 21 (58.3%) were current less than daily users. Among men, of the 25 new current smokeless tobacco users, 11 were current smokers at baseline. Of these 11 current smokers, 6 (54.5%) quit smoking when they took up smokeless tobacco use, whereas 5 (45.5%) continued smoking. Of the 21 new current smokers, 4 were current smokeless tobacco users at baseline. Of these 4 current smokeless tobacco users, none quit smokeless tobacco when they took up smoking.

Discussion

This is the first study on the incidence of tobacco use in India. High incidence of current smoking among young men (15-24 years) supports an earlier comparison of India's 2 nationally representative cross-sectional surveys, which shows that the greatest increase in tobacco use occurred in men aged 15 to 24 years between 1998-1999 and 2005-2006.⁵ Reddy et al⁶ had also warned about an increased tobacco use among young people in India. Traditionally, chewing betel quid with tobacco was more common in Kerala, which is now gradually disappearing. The increased use of smokeless tobacco among older women was also seen in other Southeast Asian countries.⁷ Smokeless tobacco use becomes habitual in older women probably because of their low education, belief that betel nut (with or without tobacco) has medicinal effects, perceiving chewing habit as a custom, and social acceptance of smokeless tobacco use.^{7,8}

Quitting smoking and taking up smokeless tobacco use should not be seen as a success, given that more than 50% of oral cancers in India are attributed to smokeless tobacco use.⁹ This might be a form of self-perceived harm reduction,¹⁰ because of smoking ban in public places,¹¹ or because of less taxation on smokeless tobacco products as compared with smoking products.¹² By banning smoking in public places,¹¹ seems to be only partially effective in controlling smoking. However, this appears to be at the expense of an increase in smokeless tobacco consumption.

Sample sizes for each age stratum are small and the confidence intervals overlap. Therefore, it is difficult to interpret age-related trends. Because of the small sample size, our study lacks sufficient statistical power to identify the predictors of incidence of current tobacco use. Also, the study findings cannot be generalized to urban areas of India. Still, important conclusions can be drawn regarding tobacco control in India.

Recommendation

The findings of this study call for effective implementation of India's Cigarettes and Other Tobacco Products Act, 2003 along with uniform taxation on all forms of tobacco products to control the incidence of current smoking and current smokeless tobacco use and to prevent the shift from smoking to smokeless tobacco use in this rural Indian population.

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Table 1
Incidence of Current Smoking and Current Smokeless Tobacco Use Over 7 Years (%) in Men and Women by Baseline Age Categories.

Age (Years)	Men			Women ^a		
	Current Smoking ^b		Current Smokeless Tobacco Use ^c		Current Smokeless Tobacco Use	
	Sample Size	% (95% CI)	Sample Size	% (95% CI)	Sample Size	% (95% CI)
15-24	38	21.1 (11.1-36.4)	37	13.5 (5.9-28.0)	36	5.6 (1.5-18.1)
25-34	26	3.9 (0.7-18.9)	30	20.0 (9.5-37.3)	61	1.6 (0.3-8.7)
35-44	33	15.2 (6.7-30.9)	47	6.4 (2.2-17.2)	44	6.8 (2.4-18.2)
45-54	28	17.9 (7.9-35.6)	35	14.3 (6.3-29.4)	54	3.7 (1.0-12.5)
55-64	22	9.1 (2.5-27.8)	27	22.2 (10.6-40.8)	31	9.7 (3.4-24.9)
Total	147	14.3 (9.5-20.9)	176	14.2 (9.8-20.1)	226	4.9 (2.7-8.5)

Abbreviation: CI, confidence interval.

^aNo women smoked.

^bSmoked cigarettes, *bidis* (hand-rolled cigarettes), cigars, or hookah (water pipe) in the past 30 days.

^cUsed snuff, betel quid with tobacco, *guthka* (mixture of tobacco, lime, and areca nut), or *khaini* (tobacco–lime mixture) in the past 30 days.