

# Is There an Association between the Duration of Stay in the Medical Colleges and the Smoking Behavior among Medical Students? A Cross-sectional Study

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## Abstract

**Background:** Health-care providers must be at the forefront of tobacco cessation to ensure a downward shift in tobacco use. Medical schools constitute an important site for education and cessation efforts. Health-care professionals play a substantial role in influencing patients' lifestyle choices including tobacco cessation. **Objectives:** To examine the association between the duration of stay in the medical colleges and the smoking behavior among the medical students in Karnataka, India. **Materials and Methods:** One government and four private medical colleges were selected using stratified random sampling technique for this cross-sectional study. Sample size was 3288 medical students. A pretested self-administered questionnaire was used to collect data. SPSS version 12.0 was used for data analysis. The statistical methods used were frequencies, proportions, and Chi-square test. **Results:** Mean age of the study participants was  $20.68 \pm 2.05$  years for males and  $20.20 \pm 1.91$  years for females. Number of smokers among medical students after joining medical college increased 2.7 times. The duration of stay in the medical colleges was positively associated with the smoking behavior ( $P < 0.0001$ ) among medical students, and the increase in the number of smokers reached up to 259.6% during internship. **Conclusion:** Smoking among medical students increases along with their stay in medical college.

**Keywords:** Duration of stay, medical colleges, medical students, smoking

## INTRODUCTION

Reduction in the tobacco-related deaths in the next 30–50 years would be possible only with the adult smokers encouraged to quit tobacco.<sup>[1]</sup> It has been well established that health-care providers must be at the forefront of tobacco cessation to see that a downward shift in tobacco use occurs.<sup>[2]</sup> Indeed, in many developed countries, smoking prevalence among physicians has declined substantially since 1950, resulting in a reduction of smoking prevalence among the general population.<sup>[3,4]</sup> Health professionals are highly respected in developing countries and are generally considered as role models in healthy lifestyle behaviors. Thus, they have the potential to play a substantial role in influencing patients' lifestyle choices in terms of tobacco use and cessation.<sup>[5]</sup> To do so, they need to quit tobacco themselves and ask patients about tobacco use as a routine during medical assessment.<sup>[6]</sup> In developed countries, organized efforts are being made to increase tobacco competencies among medical students.<sup>[7]</sup> In

the absence of any such organized efforts in India, little is known regarding impact of the stay in medical colleges on the pattern of tobacco use including smoking among medical students. Therefore, we conducted this study to determine the association of the duration of the stay in medical colleges and the smoking behavior among medical students in Karnataka, India.

## MATERIALS AND METHODS

This cross-sectional study was conducted in randomly selected medical colleges of Karnataka in India between

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**Table 1: Status of smoking among medical students from the sampled medical colleges**

Smoking status	Medical college					Total (A + B + C + D + E) (n=3288)
	A (n=495)	B (n=566)	C (n=1137)	D (n=457)	E (n=633)	
Age of starting, (mean±SD)	19.3±2.9	18.0±2.45	18.35±2.36	19.39±2.7	18.93±2.3	18.72±2.3
Smoking before joining	22 (4.4)	37 (6.5)	80 (7.0)	20 (4.4)	54 (8.5)	213 (6.5)
Smoking at the time of study	78 (15.8)	84 (14.8)	184 (16.2)	72 (15.8)	155 (24.5)	573 (17.4)
<i>P</i>	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
<b>Changes in smoking pattern after joining medical college</b>						
Started smoking	59 (11.9)	47 (8.3)	116 (10.2)	53 (11.6)	103 (16.27)	378 (11.5)
Quit smoking	4 (0.8)	0	25 (2.2)	3 (0.6)	2 (0.3)	34 (1.0)
Increase in frequency/quantity	14 (2.8)	22 (3.9)	39 (3.4)	13 (2.8)	37 (5.8)	125 (3.8)
Decrease in frequency/quantity	1 (0.2)	0	10 (0.9)	0	0	11 (0.3)
No change in frequency/quantity	9 (1.8)	17 (3.0)	46 (4.0)	5 (1.1)	13 (2.1)	90 (2.7)

SD: Standard deviation

March 2012 and March 2013 as a part of the Indian Council of Medical Research funded project wide IRIS Cell No. 2011-16210 dated 28/12/2011. Out of 41 medical colleges in the state of Karnataka, five medical colleges which had <5 years of existence and had not brought out a single batch of MBBS were excluded from the study. From the remaining 36 medical colleges, 1 out of 7 government medical colleges and 4 out of 29 private medical colleges were selected for this study using proportion probability to size and stratified random sampling technique. All the 4083 medical students enrolled in various years of MBBS course and the MBBS interns from the selected medical colleges were a part of the sampling frame. The MBBS students who were either absent on the day of data collection or those who did not give their consent for the study were excluded from the study. Study sample size was 3288 medical students. Clearance was obtained from the ethics committee of the institution. The participants were explained in detail about the research, and written informed consent was obtained. The participating colleges and students were ensured that a complete confidentiality and anonymity shall be maintained. Data were collected by a research team trained to collect the data in a uniform pattern. A pretested self-administered multiple choice type questionnaire was used to collect data. Information regarding sociodemographic profile, MBBS batch, and current and past smoking behavior was collected. Data thus collected were analyzed using SPSS 12.0 version (Chicago, SPSS Inc.) statistical software for frequencies, proportions, and Chi-square test.  $P < 0.05$  was considered as the level of statistical significance.

## RESULTS

Of the 3288 students, 1573 (47.8%) were males and 1715 (52.2%) were females. Mean age of the respondents was  $20.68 \pm 2.05$  for males and  $20.20 \pm 1.91$  for females.

Two hundred and thirteen (6.5%) medical students had initiated smoking before joining the medical college and 573 (17.4%) were current smokers ( $<0.001$ ). Average age at initiation of smoking was  $18.72 (\pm 2.3)$  years [Table 1].

**Table 2: Gender-wise distribution of the changes (proportional change) in the smoking behavior of medical students before and after joining medical college**

Changes in the smoking	Male (n=1573)	Female (n=1715)	Total (n=3288)	<i>P</i>
Smoking before joining medical college	182 (11.6)	31 (1.8)	213 (6.5)	<0.001
Smoking at the time of study	442 (28.1)	131 (7.6)	573 (17.4)	
Proportional change from base (%)	142.2	322.2	167.7	

It was observed that smoking among medical students had increased almost by 2.7 times ( $P < 0.001$ ) after joining medical college [Table 2]. College-wise increase in the number of smokers varied between 2.3 times and 3.6 times ( $P < 0.001$ ). Smoking among the supplementary batches of students was higher when compared to those from regular batches ( $P < 0.02$ ). There was no association between religion, caste, place of residence (urban/rural) and management of college (government/private), and changes in the smoking behavior of the medical students after joining the medical college.

The duration of stay in the medical college was positively associated ( $P < 0.0001$ ) with smoking behavior among medical students [Table 3], and the increase in the number of smokers reached up to 259.6% during internship.

## DISCUSSION

With more than one-third of adult population using tobacco products, it becomes imperative to implement effective tobacco control strategies.<sup>[8]</sup> It has been estimated that if adult consumption decreases by 50% by the year 2020, approximately 180 million tobacco-related deaths can be avoided.<sup>[9]</sup> A second premise is that to have a downward shift in tobacco use, health-care providers must be at the forefront of tobacco cessation efforts.<sup>[10]</sup> Cochrane review of 31 trials including over 26,000 smokers in primary care, hospital wards, outpatient clinics, and industrial clinics found that a brief advice

**Table 3: Changes (proportional change) in the smoking behavior of medical students before and after joining medical college based on the year of study**

Year of MBBS	1 <sup>st</sup> year (n=694)	2 <sup>nd</sup> year (n=659)	3 <sup>rd</sup> year (n=597)	4 <sup>th</sup> year (n=546)	5 <sup>th</sup> year (n=408)	Interns (n=384)	Total (n=3288)	P
Smoking before joining medical college	48 (6.9)	30 (4.6)	41 (6.9)	34 (6.2)	26 (6.4)	34 (8.9)	213 (6.5)	<0.0001
Smoking at the time of study	55 (7.9)	57 (8.7)	105 (17.6)	147 (26.9)	86 (21.1)	123 (32.0)	573 (17.4)	
Proportional change from base (%)	14.5	89.1	155.1	333.8	229.7	259.6	167.7	

from doctors increased the quit rate (odds ratio 1.69, 95% confidence interval 1.45–1.98), and an intensive advice was slightly more effective.<sup>[11]</sup> To do so, they need to ask patients about tobacco use as a part routine of medical assessment.<sup>[4]</sup> A study conducted among physicians in Kerala (India) found that 67% of doctors did not routinely screen patients for tobacco use and 90% of doctors did not offer patients information on how to quit.<sup>[12]</sup> Another study from Karnataka (India) reported that only 5.1% of physicians assisted tobacco users to quit.<sup>[13]</sup> It has been reported that physicians who are smokers themselves are less likely to ask their patients about smoking and to offer advice on how to quit.<sup>[14]</sup>

In India, 48% of the medical practitioners and 29% of the medical students reported to be ever smokers.<sup>[2]</sup> Medical schools are an important site for education and cessation efforts, and medical students are better placed to understand and practice the latest developments in health care. The longer duration of stay in the medical colleges was associated with increase in the smoking behavior among the medical students ( $P < 0.0001$ ) in our study. This increase was much more than the reported increase of seven percentile points in a study conducted among Asian Medical Schools.<sup>[15]</sup> About two and half times increase in the number of male smokers after entering medical college in our study is much higher than over one-third male ever users who had started tobacco use in medical colleges of Orissa.<sup>[16]</sup> Our study revealed an alarmingly high rate of increase (4.2 times) among female smokers after joining medical college as compared to the increase reported by other studies.<sup>[16,17]</sup>

Medical students are expected to have a better level of awareness regarding hazardous effects of tobacco use, but our observations suggest that increasing knowledge had not translated into decrease in tobacco use among medical students. In developed countries such as the USA, organized efforts are being made to increase tobacco competencies among medical students.<sup>[7]</sup> Therefore, it is important to understand the factors that are affecting tobacco use among medical students in India and to know whether medical students perceive tobacco use as a public health problem. The basic skills for providing appropriate preventive counseling for smoking cessation are supposed to be acquired during medical school training and residency. This assumes critical importance, given that, as future physicians, they are expected to lead tobacco control efforts, especially with regard to the provision of cessation services to patients and thus contribute considerably to the prevention of tobacco-related morbidity.

## CONCLUSION AND RECOMMENDATIONS

Smoking among medical students increases along with their stay in medical college. There is an urgent need to evaluate the current status of support strategies and develop wherever the situation demands to put an organized effort to inculcate the smoking-related health promoting behavior among those entering as well, already in the profession. It is suggested that professional bodies and medical councils consider tobacco use an ethical issue and notify tobacco use by health professional as an unethical practice.

## Limitations

Our analysis of data compared the smokers before the entry to medical colleges with the current smokers at the time of study. This may be biased as the current smokers also include those who initiated smoking before joining. Other factors responsible for this trend were not studied or controlled during analysis. A longitudinal study design may help in overcoming this limitation. Although an overall increasing trend was seen, for reasons unknown to the researchers, the trend peaked at the 4<sup>th</sup> year and then slight decline later.

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## Conflicts of interest

There are no conflicts of interest.

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