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Prevalence of Nicotine Dependency among Dental and Medical Under Gradaute Students of Eastern India

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Abstract: ***Introduction: The prevalence of nicotine and its various forms in the lives of medical and dental health professionals is not untouched. Objective: To assess the level of nicotine dependency among the Medical and Dental undergraduate students. Methodology: A cross sectional questionnaire survey was conducted among the undergraduate Dental and Medical students of Bihar and Jharkhand states of Eastern India. Nicotine dependency was assessed using the Fragerstorm's Test for Nicotine dependence (FTND) for smoking and Fragerstorm's Test for Nicotine dependence on smokeless tobacco (FTND-ST) and a preformed questionnaire was used to get information on demographic details of students. Data was analyzed using SPSS software version 17.0. Results: A total of 2000 students participated in the study and among them, 1000 students were Medical students and remaining 1000 were dental students. Out of the total sample size about 57% of them agreed to have been using nicotine products the students accepted of nicotine dependency of nicotine or some sort of nicotine product. The Chi-square test and a two tailed test was used to test the significant difference in level of nicotine dependency. Our study found that Exact percentage and number medical and dental students were dependent on some form of nicotine.***

1. Introduction

Among the developing countries, India as a nation is undergoing many changes from economical to cultural, with many flaws in its policies related to nicotine products that are smoked and smokeless forms. Presently, worldwide the one and only major cause of death (put up statistics in terms of number/ percentage by any health agency/ author reference) among youth are tobacco related deaths to which they are exposed at a very early ages of 15 years or below (1), because of not so stringent laws in India and Asian countries which give the youth an easy accessibility to these products in various smoke and smokeless forms. The prevalence of substance abuse varies throughout the country, ranging from lowest of 13.9% in Punjab to the highest of 49.4% in Mizoram and it should be noted that these patterns are notorious for their ability to change over time. (2,3) Although studies done on physicians and medical interns report a prevalence of substance abuse ranging from 32.5% to as high as 81.2% in North India (5). Though the awareness about the possible outcomes of such habits among the medical and dental undergraduate students is more, yet the prevalence of such habits has been found to be high among the undergraduate students of the medical and dental fields. Very few studies have been undertaken to study this epidemic among the future healthcare professionals in Eastern part of India and hence the present study was conducted to assess the rate of nicotine dependence among the future healthcare professionals of Bihar & Jharkhand, the two strategic states of Eastern India.

The study objective was to assess the dependency on nicotine and pattern and the willingness to quit the habit among medical and dental students of Bihar & Jharkhand states of India.

2. Methodology

The data for the study was collected over a period of 2 months (February to March 2018). Nicotine dependency was calculated using the Fragerstorm's Test for Nicotine dependence (FTND) for smoking, Fragerstorm's test for Nicotine Dependency smokeless form (FTND-ST) and a pre tested performa was used to collect to data for students using both the forms i.e Smoked and smokeless forms of nicotine with other information like the demographic details.. The FTND questionnaire is a pre-validated and pre-tested tool to study the nicotine dependency. The questionnaire also collected information on nicotine habits, patterns and students willingness to quit the habit.This questionnaire was distributed among the under graduate students of two prominent Medical and Dental Institutes in each of Bihar and Jharkhand states. The informed consent was taken from the all the participating students before their participation in the study. An ethical clearance was obtained from all the respective health institutes. Data was tabulated and subsequently analyzed using SPSS Version 17.

3. Result

The present study evaluates the prevalence of nicotine dependency among future Medical and Dental professionals of Bihar and Jharkhand states of India. A total 2000, including1000 Medical students and 1000 Dental students consented and took part in the study(fig 1). The results were assessed on three aspects.

1) Students who are dependent on smoked form of nicotine
2) Students who are dependent on non- smoked form of nicotine
3) Students dependent on both smoked and smokeless forms of nicotine

Students Dependent on Smoked form of Nicotine

Among 1000 Medical undergraduates 425 were dependent on smoked form of nicotine, while among 1000 Dental undergraduates it was 450. Thus the prevalence of smoked form of nicotine in medical undergraduates was 42.5% and in dental undergraduates was 45.0%. The overall dependency of both medical and dental undergraduates was 43.8% (Table 1). It is also observed that the Dental undergraduates were more dependent on smoked form of nicotine as compared to the medical counterparts. Chi-square test showed significantly (23.87) higher frequency of smoking in places where it is forbidden (8.5%) (52.9% vs 44.4%). Most of the undergraduate students who smoke less than 10 cigarettes a day were found to be in medical (47.1%) and dental (54%). Among the group who smoked in the range of in 11-20 cigarettes a day in medical was (24.2%) and in dental (22.4%). In the range of 21-30 cigarettes/day the medical (22.4%) undergraduates was higher as compared to dental undergraduates (11.8%), but in the range of more than 31 cigarettes/day the dental undergraduates (11.8%) was higher as compared to medical undergraduates (6.4%). The result of the students who smoke when they are sick most the day revealed medical undergraduates (62.8%) as compared to dental undergraduates (53.1%) was higher in medical undergraduates. In contrast it was observed that the dental undergraduates (65.6%) smoked more frequently in morning as compared to medical undergraduates(56%).

Most importantly, of the total 425 nicotine dependent medical students 65.2% wanted to quit the habit, whereas 68.2% dental undergraduates wanted to quit the habit. It was observed that the willingness to quit the habit of smoking was 3.0% higher in dental undergraduates. Moreover, the frequency of first cigarette in a day was almost 67.1% in medical and 66.7% in dental students.

Students Dependent on Non Smoked form of Nicotine

Among 1000 medical undergraduates only 95 (9.5%) had habit of chewing tobacco, where as in 1000 dental undergraduates it was only 22(2.2%)(fig-2). Thus, the overall prevalence of non smoked form of nicotine among medical and dental students was at 5.9%. Chi-square test showed the significantly different and higher (7.3%) dependency on non smoked form of nicotine in medical undergraduates than dental undergraduates (9.5% vs 2.2%) (table 2). In both medical and dental undergraduates none intentionally swallowed the tobacco only 66.3% medical undergraduates accepted of swallowing the tobacco sometimes and only 33.7% admitted of never swallowing the tobacco juice. When it was compared to dental undergraduates 50% admitted of swallowing it sometimes and remaining 50% admitted of never swallowing the tobacco juice. Many of the participants accepted of taking their 1st packet of tobacco in the first 31-60 min slot was in medical undergraduates(66.3%) and dental undergraduates (68.2%). The rate of taking the 1st pouch within the first five minutes of waking reveled dental undergraduates (22.7%) which was higher when compared to medical undergraduates (10.5%). Chi-square test revealed higher percentage (48.1%) of medical undergraduates(52.6%) hate to give up their 1st packet of tobacco of the morning when compared to dental undergraduates which was 4.5%. In contrast the percentage of dental undergraduates was higher who chew more frequently in the morning (45.5%) and tobacco chewing when sick most of the day (54.5%)as compared to the medical undergraduates.

An extra question was added to the questionnaire about the willingness to quit the habit which revealed that all of the dental undergraduates (100%) who wanted to quit the habit of smokeless form of nicotine as compared to medical undergraduates which was only 87.4% .

Student Dependent on Both Smoked and Smokeless form of Nicotine

A fresh questionnaire was devised by combining the questionnaire of smoked (FTND) and smokeless form of nicotine (FTND-ST) for the participants who were having both the forms of nicotine to know the prevalence of which abuse was higher whether the smoked form or the non smoked form.

Among the 1000 medical undergraduates only 50 participants accepted of consuming both the forms of nicotine, whereas only 52 among 1000 dental undergraduates accepted of consuming both the forms(fig-3). When the participants were asked what they prefer the most between smoking and tobacco chewing most of the participants preferred smoking in both medical undergraduates (76%) and dental undergraduates (84.6%), only 24% medical undergraduates preferred smokeless form which was higher than dental undergraduates (15.4%). Almost 98% medical undergraduates accepted of taking nicotine in any form within the first five minutes of waking up which was higher when compared to dental undergraduates (80.8%). on difficulty in refraining them at places where it is forbidden the percentage of dental undergraduates was 75% as compared to medical undergraduates which was 70%. When asked whether the participants consume nicotine in any form in such places 46% medical undergraduates accepted, whereas 54% refused the percentage was higher than dental undergraduates which was only 23.1% who accepted and 76.9% refused. In both the groups higher percentage of participants hate to give up the first shot of nicotine in the morning after waking up which was at 98% for medical undergraduates and 86.5% for the dental undergraduates. In both the groups the consumption of smoked form of nicotine was less than 10 (100% vs 100%). Even the consumption of non smoked form of nicotine also less than 10 for 80% of medical undergraduates and 75% dental undergraduates. All of the participants preferred smoking more frequently in the morning than the non-smoked form of nicotine. All 100% participants in both the groups said no for chewing frequently in the morning. About 98% medical undergraduates refused of taking any form of nicotine when they are sick most of the day which was more as compared to dental undergraduates (86.5%). (Table-3)

Most importantly of the total 50 (5%) medical undergraduates and 52 (5.2%) dental undergraduates wanted to quit both of these habits altogether. The participants showed more dependency and preferred the smoked form than the non smoked form.

4. Discussion

The result of our study showed high prevalence rate of nicotine consumption in various forms in future medical (57%) and dental (52.4%) professionals. A similar study conducted among 400 male students of Patna Medical College revealed a smoking prevalence of 23%(6) Sinha et al in 2001. In many of the researches it has been observed that the Balkan countries have the highest rate of smoking exceeding more than 40%, while countries like Africa and the Middle East have the lowest percentage of smokers. Similar study conducted among the male medical students in South India showed the prevalence of current smoking to be 22.4%.(7) The highest reported prevalence to our knowledge was 56.9 % reported in 2008 by Khader and Alsadi in 2008.(8)

The mean age of the participants from both the medical and dental in the study was observed in the range of 17-20 years. Whereas many of the researches have presented us with the same range of data, where the students of these age groups sought out an easier ways to cope from the prevailing stress in their lives by depending on nicotine and the most common form is smoking and they also presented us the data on how peer pressure is a most important factor in shaping behaviors towards substance abuse (9). The study conducted by Shekhawat et al in 2015 revealed that the peer smoking seemed to be one of the important factors in influencing behavior among students (28.7%) (9,10,11)

Most of the studies pertaining to nicotine only considered smoking as the criteria of nicotine dependency. In India especially in north (UP and Bihar) and north eastern states of India the prevalence of smokeless form of nicotine is also observed. In a study conducted by Sinha DN et al in 2003 found that the overall rate of nicotine dependence among adults (>15 years) of Akhta village was found at 74% in males and 45% of females in various forms available (12) . In another study conducted by Singh A (2014) that Meghalaya had the highest prevalence of smoking, Bihar the highest prevalence of smokeless tobacco use, and Nagaland the highest prevalence of dual tobacco use(13). The study conducted in Lucknow which showed a total of 28.8% of male medical students showed dependency on nicotine's and its derivatives in which 87.5% were dependent on smoking and remaining 37.5% were dependent on other forms of nicotine like khaini, gutkha and gulmanjan. But none of the study emphasized on those students who were dependent on both(14). Thus this study was undertaken to differentiate the smokers with tobacco chewers and the people who consume both (smoke and smokeless forms) in the future medical and dental fraternity.

The present study revealed that almost 57.0% of future medical professionals were indulged in some form of nicotine dependency, whereas the future dental professionals were almost 51.2%. This might attribute the stress levels of medical students was more as compared to the dental students. These future professionals will serve as role models to the society where they would be required to counsel the patients against the dependency of nicotine. A study in 2016 by Ain et al conducted practicing dental professionals revealed that almost 79% of the dental professional respondents were themselves nicotine dependent.(4)

The prevalence was higher compared to the result of the study in this region which found the entire dependency to be at 23% at a government Medical Institute, Patna(6) the only limitation of this study was that it only considered smoking as a criteria for nicotine dependency.

The students in various groups of nicotine dependency as smokers, tobacco chewers, and the ones who consume both, showed that almost all of them wanted to quit the habits leaving a few. The participants of the study almost 60% were in the Moderate Group (5-7 Score), and the minimum were in the high dependency about 7% of the total sample combining the Medical and Dental students. The remaining were distributed in Low to Moderate (3-4 score) (20%) and Low dependence range (1-2 score) (13%). This picture points out that the major students were in moderate range where a regular counseling could help these students quit the habit at the earliest as most of them wanted to quit the habits (smoke and smokeless forms) in all the categories All the students were aware to ill-effects of the products on their health in future.

The highlights of the study were that most of the students started smoking after entering into these professional courses, this suggests the need for an enhanced and effective tobacco cessation programs incorporated in the teaching schedule of students at the university to discourage smoking and raise awareness about adverse effects of nicotine in various forms.(9)

Further research is recommended to include larger section of health professionals and assess the reason for initiation of the tobacco habits and reason for the willingness to quit the habit. Also, there is an urgent need to implement tobacco cessation programs for health professionals and regular reinforcement is required for the students throughout their career to help them quit the habit. This will restore the credibility of the profession and in turn they will be more competent in instilling this behavior in the society at large.

5. Conclusion

The present study revealed that the future role models of the society are themselves addicted to some form of nicotine. These future professionals bear the responsibility of correcting the society and teaching them the ill effects of nicotine dependency. Thus, the study projects the need of tobacco cessation programs addressing our future medical and dental professionals as they themselves are addicted to nicotine, it is very unlikely that they will counsel or advise the patients about the harmful effect of nicotine.

6. Conflict of Interest- None

7. Funding- None

Data Availability Statement

The data is available on request from the corresponding author within 6 month of publication at sumit.singh.dr@gmail.com

References

[1] Prasad S, Handa S, Dhingra S, Choudhary P, Sirohi K, Khatkar A, Abuse, nicotine dependency & intentions I J Pre Clin Dent Res 2014;1(4):27-32 October-December.

[2] Narain R, Sardana S, Gupta S, Sehgal A. Age at initiation & prevalence of tobacco use among school children in Noida, India: A cross-sectional questionnaire based survey. Indian J Med Res. 2011;133(3):300-307.

[3] Rani M, Bonu S, Jha P, Nguyen SN, Jamjoum L. Tobacco use in India: prevalence and predictors of smoking and chewing in a national cross-sectional household survey. Tobacco Control. 2003;12:e4.

[4] Ain ST,Sultan S, Gowhar O, Ravishankar TL. Tobacco cessation counseling among dental professional-Willingness, Knowledge and perceived Barriers. Int Journal of Contemp Med Research 2016, 3(10),2990-2993

[5] Kumar P, Basu D. Substance abuse by medical students and doctors. Journal of the Indian Medical Association. 2000;98(8):447-52.

[6] Sinha DN, Gupta PC. Tobacco and areca nut use in male medical students of Patna. Nat Med J India 2001;14(3):176-8.

[7] Ganesh Kumar S, Subba SH, Unnikrishnan B, Jain A, Badiger S. Prevalence and Factors Associated with Current Smoking among Medical Students in Coastal South India. *Kathmandu Univ Med J* 2011; 9(36):233-237.

[8] Khader YS, Alsadi AA. Smoking habits among university students in Jordan: prevalence and associated factors. East Mediterr Health J 2008;14(4):897-904.

[9] *Urberg KA,Luo Q, Pilgrim C, Degirmencioglu SM. A Two Stage Model of Peer influence in Adolescent substance abuse : Individual and relationship specific difference in susceptibility to influence. Addoct. Behav 2003;28(7):1243-56.*

[10] Ghimre A, Sharma B, Niraula SR, Devkota S, Pradhan PM. Smoking habit among male medical and dental students of B.P Koirala Institute of Health Sciences, Nepal. Kathmandu Univ. Med J 2013;41(1):32-36

[11] *Shekhawat KS, Sam P, Senthil M* Prevalence of smoking among male dental and medical students of a deemed university in Pondicherry Annals of Dental Specialty Vol. 3; Issue 2. Apr – June 2015: 48-51

[12] *SN Dhirendra, CG Gupta, MS Pednekar. Tobacco use in a rural area of Bihar, India. Indian Journal of Community Medicine Vol XXVIII, N.4, Oct- Dec 2003.*

[13] Singh A, Ladusingh L (2014) Prevalence and Determinants of Tobacco Use in India: Evidence from Recent Global Adult Tobacco Survey Data. PLoS ONE 9(12): e114073. doi:10. 1371/journal.pone.0114073

[14] Kumari R, Nath B. Study on the use of tobacco among male medical students in Lucknow, India. Indian J Community Med 2008;33:100-3

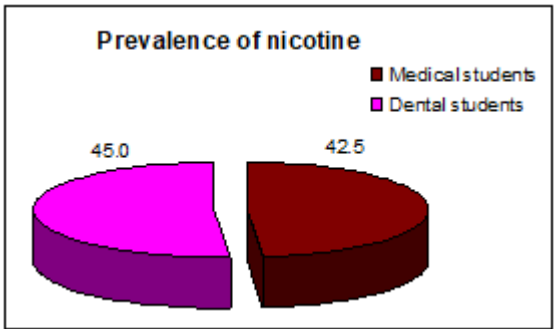

Figure 1: Prevalence of nicotine in medical and dental students

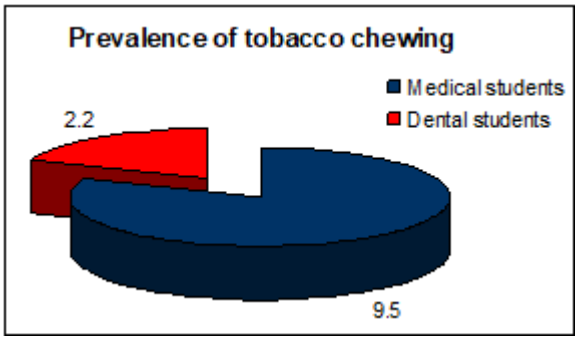

Figure 2: Prevalence of tobacco chewing in medical and dental students

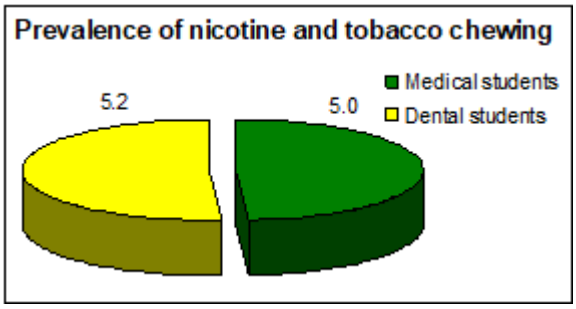

Figure 3: Prevalence of both nicotine and tobacco chewing in medical and dental students

Table 1: Comparison of nicotine dependency between medical and dental students

Fagerstrom's Test (Questions)	Medical students (n=425) (%)	Dental students (n=450) (%)	χ^2 value	p value
Q1. How soon after walking do you smoke your 1st cigarette?				
<5 min	285 (67.1)	300 (66.7)	5.91	0.052
5-30 min	100 (23.5)	125 (27.8)		
31-60 min	40 (9.4)	25 (5.6)		
Q2. Do you find it difficult to refrain from smoking in places where it is forbidden?				
Yes	225 (52.9)	200 (44.4)	6.32	0.012
No	200 (47.1)	250 (55.6)		
Q3. Which cigarette would you hate to give up?				
The first in morning	238 (56.0)	247 (54.9)	0.11	0.741

Any other	187 (44.0)	203 (45.1)		
Q4. How many cigarettes a day do you smoke?				
<10	200 (47.1)	243 (54.0)	23.87	<0.001
11-20	103 (24.2)	101 (22.4)		
21-30	95 (22.4)	53 (11.8)		
>31	27 (6.4)	53 (11.8)		
Q5. Do you smoke more frequently in the morning?				
Yes	238 (56.0)	295 (65.6)	8.38	0.004
No	187 (44.0)	155 (34.4)		
Q6. Do you smoke even if you are sick in bed most of the day?				
Yes	267 (62.8)	239 (53.1)	8.45	0.004
No	158 (37.2)	211 (46.9)		
Q7. Do you want to quit the habit of smoking?				
Yes	277 (65.2)	307 (68.2)	0.91	0.339
No	148 (34.8)	143 (31.8)		

Table 2: Comparison of smokeless dependency between medical and dental students

Fagerstrom's Test (Questions)	Medical students (n=95) (%)	Dental students (n=22) (%)	χ^2 value	p value
Q1. How soon after waking do you take your 1st packet of pan masala?				
<5 min	10 (10.5)	5 (22.7)	3.81	0.149
5-30 min	22 (23.2)	2 (9.1)		
31-60 min	63 (66.3)	15 (68.2)		
Q2. Do you find it difficult to refrain from eating pan masala in places where it is forbidden?				
Yes	63 (66.3)	11 (50.0)	2.05	0.153
No	32 (33.7)	11 (50.0)		
Q3. Which pan masala would you hate to give up?				
The first in morning	50 (52.6)	1 (4.5)	16.80	<0.001
Any other	45 (47.4)	21 (95.5)		
Q4. How many pan masala packets a day do you have?				
<10	50 (52.6)	12 (54.5)	7.22	0.065
11-20	5 (5.3)	3 (13.6)		
21-30	30 (31.6)	2 (9.1)		
>31	10 (10.5)	5 (22.7)		
Q5. Do you have pan masala more frequently in the morning?				
Yes	12 (12.6)	10 (45.5)	12.60	<0.001
No	83 (87.4)	12 (54.5)		
Q6. Do you have pan masala even if you are sick in bed most of the day?				
Yes	11 (11.6)	12 (54.5)	20.88	<0.001
No	84 (88.4)	10 (45.5)		
Q7. Do you want to quit the habit of chewing pan masala?				
Yes	83 (87.4)	22 (100.0)	3.10	0.079
No	12 (12.6)	0 (0.0)		

Table 3: Comparison of both nicotine and smokeless dependency between medical and dental students

Fagerstrom's Test (Questions)	Medical students (n=50) (%)	Dental students (n=52) (%)	χ^2 value	p value
Q1. What do you prefer immediately after waking up?				
Cigarette	38 (76.0)	44 (84.6)	1.20	0.273
Pan masala	12 (24.0)	8 (15.4)		
Q2. How soon after waking do you smoke your 1st cigarette/pan masala?				
<5 min	49 (98.0)	42 (80.8)	7.87	0.005
5-30 min	1 (2.0)	10 (19.2)		
Q3. Do you find it difficult to refrain from smoking/chewing tobacco in places where it is forbidden?	35 (70.0)	39 (75.0)	0.32	0.572
Yes	15 (30.0)	13 (25.0)		
No				
Q4. Do you consume nicotine in any forms in such places?				
Yes	23 (46.0)	12 (23.1)	5.94	0.015
No	27 (54.0)	40 (76.9)		
Q5. Which cigarette/tobacco chewing would you hate to give up?				
The first in morning	49 (98.0)	45 (86.5)	4.63	0.031
Any other	1 (2.0)	7 (13.5)		
Q6. How many cigarettes a day you smoke?				
<10	50 (100.0)	52 (100.0)	NA	-
Q7. How many pan masala packets a day do you consume?				
<10	40 (80.0)	39 (75.0)	8.53	0.014

11-20 21-30	5 (10.0) 5 (10.0)	13 (25.0) 0 (0.0)		
Q8. Do you smoke more frequently in the morning? Yes	50 (100.0)	52 (100.0)	NA	-
Q9. Do you chew tobacco more frequently in the morning? No	50 (100.0)	52 (100.0)	NA	-
Q10. Do you smoke and have tobacco even if you are sick in bed most of the day? Yes No	1 (2.0) 49 (98.0)	7 (13.5) 45 (86.5)	4.63	0.031
Q11. Do you want to quit both the habits together? Yes	50 (100.0)	52 (100.0)	NA	-

NA: not applicable