Original Research Article

Cross sectional study to assess prevalence of smoking and nicotine dependence among under graduate medical students of Index group of college Indore.

Rashmi Bhujade[1*], G.D.Bhide[2],(Col)V.K.Arora[3],Aarti Sahasrabuddhe[4],Dilesh Yuvraj Bagul[5]

[1]Associate Professor Zydus Medical College and Hospital, Dahod, Gujrat, India.

[2]Associate Professor, Index Medical College, Hospital &Research Center, Indore, India

[3]Professor & head. Index Medical College, Hospital &Research Center, Indore, India

[4]Professor, Index Medical College, Hospital &Research Center, Indore, India

[5]Statistician cum tutor, Index Medical College, Hospital &Research Center, Indore, India

Received: 03-01-2021 / Revised: 13-02-2021 / Accepted: 28-02-2021

Abstract

Background: Tobacco use became an epidemic now. Nicotine in tobacco is responsible for addiction. Tobacco use is a major risk factor for many diseases. Cigarette is most common form of tobacco use .To reverse this epidemic we should know magnitude & extent of problem. **Methodology:**Cross sectional study was conducted in a teaching hospital on medical students to know prevalence of smoking & among smokers nicotine dependence.**Results**:smoking prevalence was 24%,more common in males. Maximum participants had low to moderate nicotine dependency .Nicotine dependence was found to be significantly associated with sex, age of starting smoking, duration of smoking and awareness regarding health effects of smoking.**Conclusion**:Prevalence of smoking among medical students was pronounced & nicotine dependency was also noteworthy. Genned up successor doctors should be exempted from dependency first. Interventions to prevent commencing of smoking for non smokers& promotion smoking cessation and harm reduction for smokers, should be planned.

Keywords: Smoking prevalence, Nicotine dependency, Medical students.

Introduction

Tobacco dependence reflects its highly addictive nature. Dependence is a maladaptive pattern of substance use characterized by tolerance development, withdrawal symptoms on discontinuation, compulsive use in spite of adverse consequences. Addictive component of tobacco is nicotine[1-4]. Nicotine triggers release of dopamine that gives a pleasant feeling & leads to urge to continue use. Commonest method of using tobacco is cigarette[5].Cigarette is, well engineered nicotine delivery device. A cigarette contains about, 10 mg nicotine [6,7]. A smoker will absorb around 0.5 to 3 mg of nicotine[8,9]. Smoking have been associated with over 40 diseases[10]. Study assessed prevalence of smoking in Medicos & nicotine dependency among smokers.

Methodology

After taking ethical approval from the institutional ethical committee of Index Medical College, Hospital & research center, the study was conducted in a teaching hospital. Cross sectional study design was found most suitable to achieve stated objectives. All the students who had given written informed consent were included in the study & who cannot be contacted was excluded from study. If any student was absent on the day of data collection, was approached 3 times for study, but even after 3 visits students who were not found, were excluded from study. All undergraduate students who had fulfilled inclusion& exclusion criteria were considered as study participants. Data was collected with the help of semi structured proforma. Self administered method was used for fulfilling the proforma which was anonymous to avoid the face to face interview bias because student may hesitant to disclose their smoking habit. But it was ensured that participants answered all questionnaire items. Proforma contained 3 sections. First section comprised of socio-demographic profile of participants, in 2nd section smoking habit related relevant questions were there & 3rd section had Fagerstrom test for assessing the nicotine dependency. To assess nicotine dependency & heaviness of smoking (HSI), Fagerstrom test for nicotine dependence (FTND) [11]was used. FTND is a standard instrument for assessing the intensity of physical addiction to Nicotine. It contained 6 items that evaluate quantity of cigarette consumption, compulsion of use & dependence. For yes /no type item 0 to 1 score was assigned & for multiple –choice item, 0 to 3 score were assigned. Scores of all (6) the items were summed up to yield total scores that ranged from 0-10.Higher the total score more will be the physical nicotine dependency. Scores of 1-2, 3-4, 5-7 &>8 considered as low, low to moderate, moderate & high dependency on nicotine. While score of 0 considered as no dependency. So nicotine dependency was calculated by total score (Sum of scores of all items) while Heaviness of Smoking index (HSI) is calculated by using same response scale sum of item1& 4. Scores <2, 2-4 &>4 considered as low, moderate & high HSI respectively.

Data analysis was done with the help of SPSS -20 and Microsoft excel.

Results &Observation

Table 1:Socio-demographic profile of study participants

Variables		Frequency (percentage)
Age	≥25 years	120(13.3%)
	<25 years	780(86.7%)
Total		900

**Correspondence*

Dr.Rashmi Bhujade

Associate Professor, Zydus Medical College and hospital, Dahod Gujrat,India

E-mail: drbhujaderashmi@gmail.com

Sex	Male	484(53.8%)
	Female	416(46.2%)
Total		**900**
Current Residence	Hostler	683(75.8%)
	Day scholar	217(24.1%)
Total		**900**
Permanent address	Metro city	177(19.6%)
	One tier city	492(54.6%)
	Two tier city	231(25.6%)
Total		**900**
Type of family	Joint	303(33.6%)
	Nuclear	597(66.3%)
Total		**900**
History of tobacco use in family	No	615(68.3%)
	Yes	285(31.7%)
Total		**900**
Current tobacco user	**No**	683(75.9%)
	Yes	217(24.1%)
Total		**900**
Socio-economic status	Upper	126(14%)
	Upper middle	301(33.4%)
	Lower middle	183(20.3%)
	Upper lower	223(24.7%)
	Lower	67(7.4%)
Total		**900**

Table 1 shows most (87%) participants were from below 25 years of age group while 13% participants were from above 25 year age group, 54% participants were male. Almost 76% participants were hostler. Around 55% were permanent resident of one tier city, 20 % participants were from metro cities and rest was from 2 tier city. Maximum 66% participants were from nuclear family. Thirty two percent (32%) had family history of tobacco use & 24% were current smokers. Around 57% participants were from middle class of socio economic status.

Table 2:Smoking related behavior of study participants

Variables		**Frequency (percentages)**
Age of starting smoking	<10 years of age	16(7.4)
	Between 10-20 years of age	103(47.5)
	Between 20-30 years of age	97(44.7)
	>30 years of age	1(0.5)
Total		217
Duration of smoking	≤ 1 year	65(30)
	2-4 years	111(51.2)
	5-10 years	35(16.1)
	>10 years	6(2.8)
Total		217
Type of tobacco used	Smoked form	217
	Smokeless	5
	Both	27
Total		222
Aware regarding adverse effect of tobacco use	No	16(7.4%)
	Yes	201(92.6)
Total		217
Quitting attempt	No	79(36.4)
	Yes	138(63.6)
Total		217
Reason to start smoking	Recreational purpose	63
	Peer pressure	34
	Sadness /anxiety /	74
	Status symbol/show off /fashion	44
	Experimentation	81
	Love failure	41
	Loneliness	18
	Exam failure	15
	Others	13
Total		
Time of Maximum urge of smoking	Just after getting up	50(23%)

	Before defecation	42(19%)
	After meal	74(34%)
	Before /after class	23(10.5%)
	Before sleep	28(12.9%)
Total		217
Nicotine dependency	No	23(10.6)
	Low	63(29)
	Low –moderate	61(28.1)
	Moderate	66(30.4)
	High	4(1.8)
Total		217
Heaviness of smoking index	Low	94(43.3)
	Moderate	115(53)
	High	8(3.7)
Total		217

Table 2 shows maximum (47.5%) participants had started smoking between 10-20 years of age .Maximum 81.2% participants were smoking since < 5years, 92% participants were aware about the health effect of smoking. Approximately 64% participants tried to quit smoking.Maximum (37%) smokers started smoking for experimentation followed by anxiety/depression,recreational purpose & as status symbol. More (34%) participants feel maximum urge of smoking just after meal, around 58% participants belongs to low to moderate nicotine dependence group followed by 29 % belonged to low nicotine dependency ,10 % smokers had no dependency & very few (1.8%) had high dependency.Maximum 53% smokers belonged to moderate HSI group, followed by 43% low HIS group, few 3.7% belonged to high HSI group

Table 3:Cross table between nicotine dependency & other variables

		Nicotine dependency					Total	df	Chi - square value	p-value
		No	**low**	**Low-moderate**	**Moderate**	**High**				
Sex	Female	13	20	6	5	2	46	4	35.4	0.000
	Male	10	43	55	61	2	171			
Total		23	63	61	66	4	217			
Age of starting smoking	<20years of age	6	29	35	46	3	119	4	6.34	0.003
	>20years of age	17	34	26	20	1	98			
Total		23	63	61	66	4	217			
Duration of smoking	<5 years	23	57	50	44	3	177	4	18.39	0.001
	>5 years	0	6	11	22	1	40			
Total		23	63	61	66	4	217			
Awareness regarding health effect	No	1	2	4	7	2	16	4	13.64	0.009
	Yes	22	61	57	59	2	201			
Total		23	63	61	66	4	217			

Table 3 shows statistically significant association was found between nicotine dependency & sex, age of starting of smoking, duration of smoking & awareness regarding health effect of smoking , as after application of chi square test p value found to be <0.05.

Table 4: Cross table between HSI & other variables

		Heaviness of smoking index				df	Chi square value	P value
		Low	**Moderate**	**High**	**Total**			
Age	>25 years	17	35	0	52	2	6.94	0.03
	<25 years	77	80	8	165			
Total		94	115	8	217			
Sex	Female	34	9	3	46	2	26.19	0.000
	Male	60	106	5	171			
Total		94	115	8	217			
Age of starting of smoking	<20 years	38	76	5	119	2	13.95	0.001
	>20 years	56	39	3	98			
Total		94	115	8	217			
Duration of smoking	<5 years	84	86	7	177	2	7.5	0.02
	>5 years	10	29	1	40			
Total		94	115	8	217			

Table 4 shows statistically significant association between HSI & sex, age of starting of smoking & duration of smoking, as after application of chi square test p value found to be <0.05.

Discussion

Objectives of current study were to find out the prevalence of smoking among under graduate medical students & nicotine dependency among smokers. The main results were prevalence of smoking among medical students was 24% of which approximately 79 % were male. Sex, age of starting of smoking, duration of smoking and awareness regarding health effects of smoking were found to be important determinant of Nicotine dependency while sex, age of starting of smoking & duration of smoking were important determinant of HSI.Studies[12,13] revealed less prevalence 10 % & 12% of smoking among medical student as compared to current

study prevalence (24%). The reason behind almost double prevalence of smoking may be the current study is recently done and the smoking trend is increasing with time.Almost similar results were observed in other study[14]. They found the prevalence of smoking 22.1% among women, 32.4% among men. Another study[15] used similar scale to measure nicotine dependency & found statistically significant association between nicotine dependency & residence, years of smoking, age at smoking initiation & smoking pack year's .Partial similar results also observed in current study, nicotine dependency was found to be associated with years of smoking & age at smoking initiation. Garg S et al[16]revealed by their research on youngsters that the prevalence of smoking was higher (41%) as compared to current study. The cause behind this may be in our study the participants were medical students. They had good (91%) knowledge regarding health effects of tobacco use that's why they were found to be less indulged in smoking habit. Evidence[17]of higher prevalence of smoking as compared to current study is also present. The probable cause behind this finding may be in mentioned study the study participants were men while in current study both sex were included as study participants. More participants (30%) had high nicotine dependence as compared to present study and the probable cause behind this may be more mean duration of smoking in mentioned study & sex of participants. High nicotine dependence was found to be significantly associated with years of smoking as similar to current study. A study[18] also concluded that higher nicotine dependence was found to be associated with duration of tobacco use as similar to present study.Concluded by Samatha SS[19] that most (66.15%) of the participants were of mild nicotine dependence. Investigators found nicotine dependence of 51% unlike present study they found association of nicotine dependency with existing smoking family members, starting of smoking in early age etc.

Conclusion

Current study inferred considerable high prevalence of smoking & nicotine dependency among under graduate medical students. Steeping prevalence of smoking & nicotine dependency in this proficient wing is awful. To ward off nicotine dependency we should impend the acquisition of smoking first, because once Nicotine dependence is established, it is difficult to revert. Interventions at different plans are needed like for existing smokers we should arrange/formulate measures to quit like pharmacotherapy, rehabilitation & in severely nicotine dependent in whom total abstinence is not possible we should suggest measures for harm reduction.In non users we should generate consciousness about dreaded squeal of smoking.

Key message

Burnout & dissatisfaction with work life balance in doctors leading to unhealthy lifestyle mainly addictions. Magnitude of tobacco use is worryingly high among imminent healers. Medical professionals are role models of health for society. They can make a difference by showing rather than saying/by practicing the healthy behavior, what they preach. Ironically the challenge is often reflecting this healthy behavior in their own life. Healthy physician can help people become healthier & motivate them for achieving their health goals.

References

1. Royal college of physicians of London.Nicotine addiction in Britain.London: Royal college of physicians,2000.
2. US department of health and human services.The health consequences of smoking: nicotine addiction.report of the surgeon. Rockville,MD:US Department of health and human services,Public health services,Center for disease control, Center for health promotion & education,office on smoking & health, 1998.
3. Food & drug administration.21 CFR part 801 et al Regulations restricting the sale and distribution of cigarette & smokeless tobacco to protect children & adolescent :final rule .federal register 1996; 61:44396-45318.
4. World health organization.Advancing knowledge on regulating tobacco products. Monograph.Geneva:World Health Organization, 2001.
5. Brandt AM. The cigarette century: the rise, fall, and the deadly persistence of the product that defined America. New York, NY, Basic Books, 2007.
6. Harm reduction in nicotine addiction: helping people who can't quit. A report by the Tobacco Advisory Group of the Royal College of Physicians. London, Royal College of Physicians, 2007.
7. Nicotine addiction. Bethesda, MD, National Institute on Drug Abuse, 2001, rev. 2006 (**Error! Hyperlink reference not valid.**obacco.pdf, accessed 15 February 2008).
8. Karan LD, Dani JA, Benowitz NL. The pharmacology of nicotine dependence. In: Principles of addiction medicine, 3rd ed. Washington, DC, American Society of Addiction Medicine, 2003, 225–248.
9. Lynch B, Bonnie RJ, eds. Growing up tobacco free: preventing nicotine addiction in children and youths. Institute of Medicine Committee on Preventing Nicotine Addiction on Children and Youths. Washington, DC, National Academy Press, 1994.
10. Doll R.Risk from tobacco and potentials for health gain. Int J Tuberc LungDis. 1990;3:90-99.
11. IARC. Handbook of cancer prevention, 413p.
12. Elamin OE O, Elamin SEO, Dafalla B AA,El-AminME, Elsiddig. Cigarette smoking among medical students in the National Ribatuniversity, Sudan. Sudan J Paediatr. 2013;13(2):45-51.
13. Abu-elenin MMM, Atalla AAEO, El-Salamy RM.Cigarette smoking among medical students and some associated risk factors.Tanta Med J. 2017;45:206-212.
14. Kusma B,Quarcoo D, Vitzthum K, Welte T, Mache S,Falcke AM et al. Berlin's medical students' smoking habits, knowledge about smoking and attitudes toward smoking cessation counseling. Journal of occupation medicine & toxicology 2010, 5(9):1
15. Aryal UR , Bhatta DN, Shrestha N, Gautam A.Assessment of nicotine dependence among smokers in Nepal: a community based cross-sectional study.Tobacco induced diseases, 2015, 13(26):9
16. Garg S, Garipelly R,Nagappa AK, Mateti UV.Evaluation of attitude, behavior, knowledge, and smoking rates among youngsters from Southern India: a survey-based study from Andhra Pradesh. Int J Stud Res. 2013;2(3):35-41.
17. Islam K, Datta AK, Seth S,Roy A, Das R.A study on prevalence and co rrelates of nicotine dependence among adolescents of Burdwan Town,West Bengal.Indian J psychiatry. 2019;61(1):89-93
18. Samatha SS, Byahatti SM,Ammanagi R, Tantradi P.Assessing the level of nicotine dependence in smokers visiting a dental college in belgaum city:A questionnaire study. Journal of education and ethics in Dentistry2015;5(1):25-29.
19. Khatatbeh MM, AlkhaldiS, Khader Y, Mommani W, Omari OA, Kheirallah K.Prevalence of nicotine dependence among university students in Jordan :a cross sectional study. Epidemiology Biostatistics and Public health 2019, 16(2):1

Conflict of Interest: Nil Source of support:Nil