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## PUBLIC HEALTH RESEARCH

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### Improving Physician Referral for Tobacco Cessation Clients of Tobacco Cessation Clinic in South India

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#### ABSTRACT

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<b>Accepted</b>	1 September 2012
<b>Introduction</b>	The major burden of tobacco related diseases is borne by developing countries. Tobacco cessation is an important step in preventing mortality and morbidity due to tobacco related diseases. The objective of the study was to assess the profile of tobacco users utilizing the services of the district anti tobacco cell in Bangalore.
<b>Methods</b>	A cross sectional study was carried out in 2009. Total of 122 persons above 18 years old, current tobacco users and who were motivated to quit were interviewed by a trained medical social worker. Information about the socio-demographic profile of the clients, details of tobacco use and nicotine dependence levels using Fagerstrom score was collected. SPSS 16.0 software was used for data analysis. The results have been presented using descriptive statistics and ANOVA tests.
<b>Results</b>	The study population was comprised of exclusively males. The mean age was 34.9 years. Seventy four percent (73.8%) were smokers while 26% were users of smokeless tobacco products. Fagerstrom scores showed that majority of tobacco users (54% of smokers and 63% of smokeless tobacco users) had moderate to high nicotine dependence. Most of the clients were self-referred. The average pack years of tobacco use and the mean Fagerstrom score were higher in the physician referred group indicating that physicians have access to tobacco users who could benefit the most from tobacco cessation efforts.
<b>Conclusions</b>	Clients attending tobacco cessation clinics tend to have moderate to high tobacco dependence. Health care providers need to put in more efforts to refer tobacco users to tobacco cessation services. Improved physician awareness could help in stepping up tobacco cessation efforts.
<b>Keywords</b>	Tobacco cessation - Smokeless - Smoking - Nicotine dependence

### INTRODUCTION

Tobacco is the leading cause of preventable deaths and one of the biggest threats to public health globally. The major burden of tobacco related health problems are faced by low and middle-income countries.<sup>1</sup> India with a population of over 1 billion is one of the fastest growing markets for the tobacco industry. More than one-third (35%) of adults in India use tobacco in some or the other form.<sup>2</sup> In terms of sheer numbers, this translates to 275 million. The Global adult tobacco survey conducted in 2009-10 reports that the prevalence of overall tobacco use among males in India is 48 percent and that among females is 20 percent. Among them 21 percent adults use only smokeless tobacco, 9 percent only smoke and 5 percent smoke as well as use smokeless tobacco. In India, smokeless tobacco is used in numerous forms. Khaini or tobacco-lime mixture (12%) is the most commonly used smokeless tobacco product, followed by gutkha, a mixture of tobacco, lime and areca nut (8%), betel quid with tobacco (6%) and applying tobacco as dentifrice (5%). Among smoke tobacco products, bidi, a hand-rolled tobacco-filled leaf (9%) is used most commonly followed by the cigarette (6%) and the hookah (1%).

The WHO Framework convention on tobacco control (FCTC) was developed in response to the global tobacco epidemic and it entered into force in 2005. India is also one of the signatories of the FCTC. Even though it has been adopted by more than 170 countries, the implementation still lags behind. The WHO reports that less than 10% of the world population is covered by any one of the major measures proposed in the framework.<sup>3</sup>

The WHO estimates that 70% of deaths due to tobacco use will occur in developing countries.<sup>4</sup> Thus tobacco cessation is an important step in reducing the tobacco related mortality and morbidity, especially in developing countries.<sup>5</sup> Quitting tobacco at any age offers health benefits, both immediate as well as in the long run.<sup>6</sup> The MPOWER package was proposed by the WHO in 2008 under which 'offering help to quit' is one of the core strategies.<sup>7</sup> Studies conducted in India have shown very low rates of quitting tobacco, at around 10% and lower.<sup>8,9</sup>

The GATS survey shows that, in India though nearly two in five smokers (38%) and users of smokeless tobacco (35%) made an attempt to quit tobacco use, counseling was used by less than 10% of those who attempted quitting.<sup>2</sup> India launched the National Tobacco Control Program in 2007-08 to combat the tobacco epidemic. Under this initiative tobacco control cells were set up at state and district levels. The main function of the district anti-tobacco cells were enforcing existing anti-tobacco laws and rules and promoting tobacco cessation activities in schools and communities.

The district anti-tobacco cell of Bangalore district in Karnataka was established in Bangalore medical college and research institute. This cell, functional since 2008, has been involved in providing various tobacco cessation services since its inception. This study was conducted with the objective of describing the profile of clients who attended the anti-tobacco cell for tobacco cessation services.

### METHODS

The district anti-tobacco cell in Bangalore was established in October 2008 under the National Tobacco Control Program of the Government of India. The cell has been functioning in the outpatient department of Victoria hospital, a teaching hospital attached to Bangalore medical college and research institute. As a part of its activities, the anti tobacco cell also offers counseling services for tobacco users. This service is offered by a trained medical social worker on all working days without charging any fee. This cross sectional study was carried out to collect baseline information about clients attending the anti tobacco cell over a one year period from January 2009 to December 2009. The inclusion criteria were: (i) age 18 years and above (ii) current tobacco user and (iii) motivated to quit.

Informed consent was taken from the clients who attended the clinic and agreed to participate in the study. Clients were first evaluated by the counselor and the status of current tobacco usage was ascertained. Motivation to quit tobacco use was assessed by the answer to the question: 'How important is for you to quit smoking?' on a scale of 1-10 (1 denoting least important and 10 denoting most important). Those who scored the question more than 5 were considered as motivated. Clients who satisfied the inclusion criteria were further interviewed by the counselor using a pre-tested, validated and structured questionnaire which was developed by the faculty of the district Anti-tobacco cell, Bangalore. The Cronbach's alpha value for the questionnaire was 0.94. The following variables were studied: age, sex, educational status, occupation, marital status, details of the tobacco usage like type of tobacco product used, age at initiation of tobacco use, average number of smoke/smokeless tobacco products used per day, number of years of regular use and expenses per month on tobacco in Indian rupees. The tobacco use was quantified as 'pack years' for both smoke and smokeless tobacco products.

Fagerström scale was used for assessing the degree of nicotine dependence in smokers. The score is interpreted as follows: 0-2 Very low dependence; 3-4 Low dependence; 5- Medium dependence; 6-7 High dependence; 8-10 Very high dependence.<sup>10</sup> For smokeless tobacco users the

Fagerström Test for Nicotine Dependence-Smokeless Tobacco (FTND-ST) was used.<sup>11</sup> An identical scoring system was used for this scale too. All the clients included in the study were counseled regarding the benefits of quitting tobacco use, the various strategies involved in quitting and sustaining motivational levels. After counseling the patients were further referred to the Department of Psychiatry of Victoria hospital where they were assessed again and pharmacological therapy offered wherever necessary.

Statistical analysis was done using SPSS 16. Percentages, means and standard deviations are used in expressing the results. Analysis of variance (ANOVA) has been used to test the difference

between mean pack years of tobacco use and Fagerstrom test for nicotine dependence among the different referral groups. P values less than 0.05 were considered significant.

**RESULTS**

A total of 375 people attended the tobacco cessation clinic during the year 2009. Out of them 122, who satisfied the inclusion criteria were included in the study. All the clients were males. The mean age of the clients was 34.9 ± 10.8 years and majority of them (86.9%) were in the 18- 45 years age group. (Table 1)

**Table 1** Distribution of study population according to socio-demographic characteristics

<b>Characteristic</b>	<b>Frequency N= 122</b>	<b>Percent Total = 100%</b>
<b>Age distribution (in years)</b>		
18-30	50	41.0
31-45	56	45.9
46- 60	12	9.8
>60	4	3.3
<b>Education</b>		
Illiterate	10	8.2
Primary or middle school	22	18.1
High school or higher	90	73.7
<b>Occupation</b>		
Skilled worker	26	21.3
Semi skilled worker	60	49.1
Unskilled worker	22	18.0
Unemployed	6	4.9
Students	8	6.6
<b>Marital status</b>		
Currently married	74	60.7
Unmarried/divorce/separated	48	39.3

A large majority of them (91.8%) were literate with 73.7% of them having education of high school level or higher. Majority of the clients were married (60.7%). While most of the clients

were self referred (60.7%), less than one-third of them (27.8%) were referred by their doctors. (Table no.2)

**Table 2** Distribution of study population based on the source of referral

<b>Referred by</b>	<b>Frequency</b>	<b>Percent</b>
Self	74	60.7
Medico social worker	14	11.5
Consulting doctor	34	27.8
Total	122	100.0

Table 3 shows that smokers comprised 73.8% were smoke and 26.2% were users of

smokeless tobacco products. Mean age at initiation of smoke tobacco product users was 17.8 years and

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18.5 years for smokeless tobacco product users. The most commonly used form of smoke tobacco product was bidis (37.7%). Cigarette smokers were comparatively fewer with only 28.9%. Gutkha, a tobacco-lime-areca nut mixture, was the most commonly used form of smokeless tobacco product (59.37%). The average number of bidis / cigarettes

smoke tobacco product used per day was 12 while an average of 5 packets of smokeless tobacco products were used per day. The average expense on tobacco products was found to be Rupees 467 per person per month.

**Table 3** Tobacco usage characteristics of study population

Characteristic	Smoking tobacco		Smokeless tobacco	
<b>Type of tobacco product used</b>	Bidi	-34 (37.77%)	Gutkha	-19 (59.37%)
	Bidi and Cigarette	-31 (34.44%)	Khaini	-11 (34.37%)
	Cigarette	-25 (27.77%)	Betel quid with tobacco	-2 (6.25%)
	Total	90 (100%)	Total	32 (100%)
<b>Age at initiation of tobacco use</b> (Mean± standard deviation)	17.78 ± 6.10 years		18.50 ± 5.79 years	
<b>Average number of products used per day</b>	12 (cigarettes or bidis)		5 packets	
<b>Average expense per month per capita</b> (in Indian Rupees)	375		133	
<b>Average pack years of tobacco use</b>	211.64		77.4	

In Table 4, the Fagerström score for tobacco smokers shows that majority of the persons had moderate to high nicotine dependence with scores of 5 and 6-7 (31.1 % and 26.7% respectively). The Fagerström score for smokeless tobacco users showed that more than one-third

persons had a score of 5 (37.5%) followed by the score of 6-7 (25.0%) suggesting moderate to high nicotine dependence levels in majority of the study sample.

**Table 4** Fagerström score for smoking and smokeless tobacco users

Nicotine dependence - Score	Smokers Frequency (Percent)	Smokeless tobacco users Frequency (Percent)
Very low 2	11 (24.4)	4 (12.5)
Low 3-4	14 (15.6)	7 (21.9)
Medium 5	28 (31.1)	12 (37.5)
High 6-7	24 (26.7)	8 (25.0)
Very high 8-10	2 (2.2)	1 (3.1)
Total	90 (100.0)	32 (100.0)

On comparing the tobacco usage characteristics across different referral groups, (table 5) it was found that the average pack years of tobacco use and the mean Fagerstrom score were

higher in the physician referred group; for both smoke and smokeless forms of tobacco.

**Table 5** Association between source of referral of clients and tobacco use (using ANOVA)

Characteristic	Mean ( ± Standard deviation)			Significance value
	Self referred	Medical social worker referred	Physician referred	
<b>Fagerström score for smoking tobacco</b>	8.00 ± 2.99	2.00 ± 0.00	9.33 ± 4.92	0.03*
<b>Fagerström score for</b>	4.08 ± 2.35	3.00 ± 2.41	4.77 ± 1.75	0.07

<b>smokeless tobacco</b>				
<b>Average pack years of use for smoking tobacco</b>	191.08 ± 84.092	123.00 ± 71.41	293.69 ± 83.469	0.04*
<b>Average pack years of use for smokeless tobacco</b>	50.07 ± 35.66	2.00 ± 0.00	230.33 ± 106.611	0.00*

\*denotes significant value

## DISCUSSION

The study provides constructive baseline data about the profile of patients attending the anti tobacco cell. The major finding in our study is that physician referred clients were found to have a higher average of tobacco use compared to self-referred and social worker referred use. This finding could have significant implications for tobacco control strategies in health care settings. The results suggests that those individuals who present themselves to health care facilities with different morbidities are likely to be more nicotine dependent and are likely to have higher tobacco usage. Hence targeting these individuals could provide a window of opportunity vis-à-vis tobacco cessation efforts. Treating physicians could be motivated to follow the 5 'A's of tobacco cessation, namely, (1) Asking every patient about tobacco use, (2) Advising all smokers to quit, (3) Assessing smokers' willingness to make a quit-attempt, (4) Assisting smokers with treatment and referrals, and (5) Arranging follow-up contacts. This could help in improving the effectiveness and reach of tobacco control programs. If implemented right from the primary care facilities, this could even match effective community based cessation efforts.

The sample in this study comprised of only males, majority was married, with good educational status and majority was employed. Though tobacco use is prevalent among females also, there are several reasons for women usually do not seek help for tobacco cessation. The National Family Health Survey 2005-06 (NFHS -3) reported that only 0.1 % of women in Karnataka smoke any form of tobacco.<sup>12</sup> Even though chewing of tobacco is more common at (4%), the social and cultural acceptance of this practice as well as low awareness of health risks associated with chewing tobacco might have resulted in the non-participation of women in tobacco cessation activities. Other studies from India by S.K. Jindal et al, Anoop MP et al also substantiate this scenario.<sup>13</sup> To augment the active participation of women in anti-tobacco activities additional targeted information campaigns and gender specific interventions are essential.

In this study majority of the clients were self referred. Only 27.8% were referred by their consulting doctor. Tobacco cessation is a relatively new area in tobacco control in India and not many doctors in India are aware of the existence of such facilities or the necessity to refer patients to such centers.<sup>14</sup> Similar findings have been reported by

Franke DL from USA and Ceraso M, McElroy JA, Kuang X, et al.<sup>15,16</sup> Health care personnel have a unique chance in the hospital set up to motivate the patient for quitting tobacco use. This window of opportunity should not be wasted and if garnered effectively can yield immense results as patients are more motivated to quit and more receptive to cessation advice when in a health care setting.<sup>17</sup> Thus this is another aspect in tobacco control activities where inputs to health care providers can have a remarkable impact on tobacco cessation.

Bidi was the most common smoke tobacco product used in this study population. This is consistent with other studies from India.<sup>9</sup> Bidi, often called as the 'poor man's cigarette' is the cheapest and popular form of smoke tobacco product consumed in India, especially in the rural areas. Even though typically smaller and thinner than the average cigarette, bidi delivers higher levels of nicotine and do not provide any harm reduction when compared to conventional cigarettes.<sup>18,19,20</sup> This is therefore an important message to be included in information and education campaigns in India. The mean age of initiation of smoke tobacco product use was 17.8 years and 18.5 years for use of smokeless tobacco products. This corresponds to the GATS survey in India which reports an identical figure. Available literature has documented a downward shift in the age at initiation of tobacco use in India.<sup>21</sup>

In this study the Fagerström test for nicotine dependence in tobacco smokers shows that majority of the clients had moderate to high dependence (score of 5 and 6). It is known that those who seek help to stop smoking are more likely to have higher nicotine dependence than others.<sup>22</sup> This is a pointer that purely institution based tobacco cessation efforts are unlikely to be successful as it misses the large number of low dependence tobacco users in the community. Thus community participation and community based interventions are required alongside clinic based approaches.

The average smoke tobacco product user spends around Indian Rupees 375 (US\$ 8.3) a month on tobacco. For the smokeless tobacco product user, the average monthly expenditure comes to Rupees 133(US\$ 3). This high spending on tobacco products in India is of concern as previous research has shown that tobacco use and related health expenditure can result in impoverishment.<sup>23</sup> Spending on tobacco products affects investment in health and education,

financial security in a family and also impairs productivity.<sup>24</sup> Expenditure on tobacco use has also been held responsible in reduced household nutritional intake.<sup>25</sup>

The strength of this study is that this bridges a gap in the existing literature in India regarding institution based services for tobacco cessation. One of the limitations of this study is that we do not have data from all the clients who attended the clinic. It would have helped us to get a better picture. Also only a limited number of variables were included in the study.

### CONCLUSIONS

The results of this study has helped us in identifying low physician referral of tobacco users as one of the thrust areas where we can concentrate our efforts to enhance tobacco cessation efforts, especially in a health care setting. The results also suggest that tobacco users with higher nicotine dependence tend to seek help more. Hence concentrated efforts have to be made to reach the large volume of people in the community with low dependence levels and motivate them to quit tobacco use.

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### REFERENCES

1. WHO factsheet on Tobacco. N 339 May 2011 [cited 2011 Jun 24] Available from <http://www.who.int/mediacentre/factsheet/s/fs339/en/index.html>.
2. International institute for population sciences. Global adult tobacco survey GATS India 2009-10. New Delhi: Ministry of health and family welfare, Government of India.
3. WHO report on the global tobacco epidemic 2009. Geneva: World health organization; 2009.
4. World health organization. Trade, foreign policy, diplomacy and health. Tobacco World health organization. [cited 2011 Jun 24] Available from <http://www.who.int/trade/glossary/story089/en/index.html>.
5. Abdullah AS, Husten CG. Promotion of smoking cessation in developing countries: a framework for urgent public health interventions. *Thorax*. 2004 Jul; 59(7):623-30.
6. The health benefits of smoking cessation: a report of the Surgeon General. Rockville, MD: US Department of Health and Human Services, Centers for Disease Control, Office on Smoking and Health; 1990.
7. World Health Organization. The MPOWER Package. Geneva: WHO; 2008.
8. Report on tobacco cessation through community intervention in India (October 2002-December 2003). New Delhi: WHO SEARO; 2003.
9. Jindal SK, Aggarwal AN, Chaudhry K, Chhabra SK, D'Souza GA, Gupta D et al. Tobacco Smoking in India: Prevalence, Quit-rates and Respiratory Morbidity. *Indian J Chest Dis Allied Sci*. 2006; 48: 37-42.
10. Heatherton TF, Kozlowski LT, Frecker RC, Fagerström KO. The Fagerström Test for Nicotine Dependence: A revision of the Fagerström Tolerance Questionnaire. *British Journal of Addictions*. 1991; 86:1119-27.
11. Ebbert JO, Patten CA, Schroeder DR. The Fagerström Test for Nicotine Dependence-Smokeless Tobacco (FTND-ST). *Addict Behav*. 2006 September; 31(9): 1716–1721.
12. International Institute for Population Sciences (IIPS) and Macro International. 2007. National Family Health Survey (NFHS-3), 2005–06: India: Volume I. Mumbai: p 433.
13. Anoop MP, Abdul NT, Santosh Kumar PV, Ravindran C. Quit smoking – Expectations & Achievements: A prospective clinical study. *Journal of respiratory sciences*. [cited 2011 Jun 24] Available from [http://www.pulmononline.org/Quit\\_smoke.html](http://www.pulmononline.org/Quit_smoke.html).
14. World health organization country office for India. Tobacco cessation centers. [Internet] 2011 [updated 2010 Nov 25; cited 2011 Jun 24] Available from [http://www.whoindia.org/EN/Section20/Section25\\_952.htm](http://www.whoindia.org/EN/Section20/Section25_952.htm).
15. Franke DL, Leistikow BN, Offord KP, Schmidt L, Hurt RD. Physician referrals for smoking cessation: outcome in those who show and don't show. *Prev Med*. 1995 Mar; 24(2):194-200.
16. Ceraso M, McElroy JA, Kuang X, et al. Smoking, barriers to quitting, and smoking-related knowledge, attitudes, and patient practices among male physicians in China. *Prev Chronic Dis* 2009; 6(1):A06.
17. Rigotti NA, Arnsten JH, McKool KM, Wood-Reid KM, Pasternak RC, Singer DE. Efficacy of a smoking cessation program for hospital patients. *Arch Intern Med*. 1997 Dec 8-22; 157(22):2653-60.

18. Malson JL, Lee EM, Moolchan ET, Pickworth WB. Nicotine delivery from smoking bidis and an additive-free cigarette. *Nicotine Tob Res.* 2002 Nov; 4(4):485-90.
19. Watson CH, Polzin GM, Calafat AM, Ashley D L. Determination of tar, nicotine, and carbon monoxide yields in the smoke of bidi cigarettes. *Nicotine Tob Res.* 2003; 5(5): 747-753.
20. Malson JL, Sims K, Murty R, Pickworth WB. Comparison of the nicotine content of tobacco used in bidis and conventional cigarettes. *Tob Control* 2001;10:181-183.
21. Pradeepkumar AS, Mohan S, Gopalakrishnan P, Sarma PS, Thankappan KR, Nichter M. Tobacco use in Kerala: findings from three recent studies. *Natl Med J India* 2005 May-Jun; 18(3):148-53.
22. Fagerström KO, Kunze M, Schoberberger R, Breslau N, Hughes JR, Hurt RD, et al. Nicotine dependence versus smoking prevalence: comparisons among countries and categories of smokers. *Tob Control* 1996; 5:52-6.
23. RM John, HY Sung, W Max. Economic cost of tobacco use in India, 2004. *Tob Control* 2009 Apr; 18(2): 138–143.
24. Wang H, Sindelar JL, Busch SH. The impact of tobacco expenditure on household consumption patterns in rural China. *Social Science & Medicine* 2006 March; 62(6):1414-26.
25. John RM. Crowding-out effect of tobacco expenditure and its implications on intra-household resource allocation. Working Paper Series No. WP-2006-002 March, 2006.