

ORIGINAL ARTICLE

Size Matters: Cigarette Size and Quitting Behaviour Among Male Smokers in An Urban Slum of West Bengal

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ABSTRACT

Introduction: Tobacco kills half of its users and globally every year around 8 million deaths are attributable to tobacco use. All forms of tobacco are harmful and there is no safe level of exposure to tobacco but cigarette smoking is the most common and notorious since it kills not only its users but also the innocent passive bystanders. **Objectives:** The study was conducted to determine the prevalence of cigarette use, minimum length of cigarette (nicotine portion) to quench the craving, level of nicotine dependence along with their stage of change (in behaviour to quit tobacco use) and also to find out its determinants among males above 15 years residing in the urban field practicing area of a Public Health Institute. **Materials and methods:** A community based observational, cross-sectional study was conducted in a slum of West Bengal. Data was collected as per a pre-designed and pre-tested schedule adapted from GATS India Questionnaire. Males above 15 years of age residing in the study area were interviewed during house-to-house visit. **Results:** A total of 352 study participants were interviewed. 38.4% of study participants consumes cigarettes on a regular basis. Study participants with a positive family history of tobacco use are 2.1 times (95% CI: 1.3, 3.4) more probable to use cigarettes. Half of the population are in stage of precontemplation and 43.7% of them are having high level of nicotine dependency. 66.7% of them do not need to consume the full length of a cigarette to quench their craving. Those with younger age of initiation (OR 5.35 95%CI:2.5,11.2) and consume full length of cigarette (OR 2.72, 95% CI: 1.3,5.7) are having more probability of high nicotine dependency than their counterparts. Odds of willingness to quit is significantly more among those who don't require full length of a cigarette even when adjusted with various covariates found significant in univariate regression. **Conclusion:** Length of the cigarettes (nicotine portion) may be reduced to at least half the size of present standard length to not only decrease the nicotine dependence but also to encourage quitting behaviour among the users.

KEYWORDS

Tobacco; Cigarette; Size Of Cigarette; Cessations; Smoking; Nicotine Dependence

INTRODUCTION

Tobacco is a “social evil” that accounts for 8million deaths per year globally (1). In India tobacco consumption leads to 13.5 lakh deaths, 1.5 lakh cancers, 4.2 million cardiac disease and 3.7 million pulmonary disease every year. (2) All forms of tobacco are harmful and there is no safe level of exposure to tobacco but cigarette smoking being the most common and notorious, kills not only its users but also the innocent passive bystanders. Once an individual gets addicted, then he smokes a cigarette out of craving for the nicotine which is different for different people according to their stage of nicotine dependency (Very Low to very high). The more he consumes a cigarette the more doses of nicotine is consumed, the more dependent he becomes on it and negatively affects his health. It has been estimated that reducing the levels of nicotine could possible save 8.5 million lives in next 80 years (3,4) and thus by reducing the length or the diameter of a cigarette (nicotine portion) we would reduce the total amount of nicotine consumed by a smoker.

The study was conducted with the aims and objectives:d

- To assess the level of nicotine dependence among smokers
- To determine the minimum size of cigarette a smoker needs to quench his craving.
- To find out the determinants of willingness to quit tobacco consumption.

MATERIAL & METHODS

Study Setting & Design: A cross sectional survey was conducted in a slum of West Bengal in the urban field practice area of a public health institute in Kolkata.

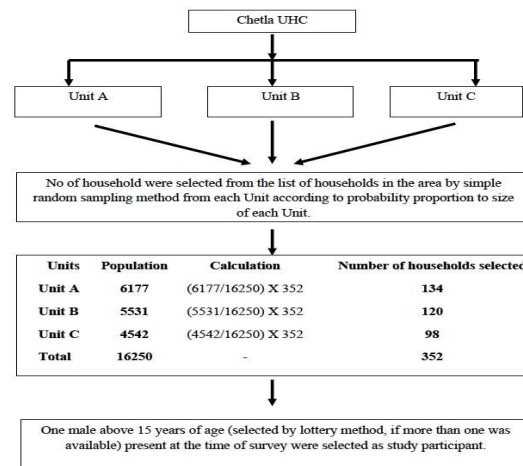
Study Population: Males aged more than 15 years residing in the study area who gave consent for the study.

Inclusion & Exclusion Criteria: Individual males aged 15 years and more & who gave consent were included in the study.

Sample Size Calculation: In a study conducted by WHO and MOHFW(5), INDIA it was found that prevalence of Cigarette users among males aged above 15 years in West Bengal was 19.6% (p_1). Considering this prevalence, α

error 5%, the minimum sample size becomes 352 (after considering design effect of 1.5)

Sampling: The urban field practice area of the institute is divided into 3 units for effective administration. From each of these 3 units, households were selected by simple random sampling method according to probability proportion to the size of each unit. One Male above 15 years of age (selected by lottery method if more than one was available) present at the time of survey were selected as study participant.



Study tools: A pre-designed pre-tested schedule adapted from GATS(5) (Global Adult Tobacco Survey) India Questionnaire was used for data collection. Questions were asked about their current cigarette use status, type of use, age at initiation, monthly expenditure on tobacco, minimum length of cigarette required to satisfy their craving. Nicotine dependency was assessed according to FTND questionnaire.(6)

Ethical Issues & Informed Consent: Ethical clearance was obtained from the Institutional Ethics Committee. A written consent in local language was taken from the study participants.

RESULTS

Data collected from 352 study participants was entered in MS Excel 2013 and analysis was done in SPSS 20. Data of 352 males above 15 years of age residing in the study area revealed (Table 1) that the majority of the study

population was in the age group of 15-34 years of age (55.7%) with the mean (SD) age being 35.6 (14.8). 72.7% of them belonged to Hindu community while 76.4% belonged to General caste. 57.1% were living in a joint family and 61.9% were unmarried. Majority of them (69.6%) were having middle level or below level of education and belonged to lower socio economic status.

Table 1 shows the association of cigarette use with family history of tobacco use and it was found that the odds of consuming cigarette is more among those with a positive family history of tobacco use. Most (75.6%) of the study participants were used to smoking less than 20 cigarettes per day and the mean expenditure on cigarette per month was approximately 850 INR (457.5-1312.5) (Table 2).

Table 1: Association of cigarette use with family history of tobacco use. (n=352)

Family history of tobacco use	Cigarette User		Total No. (%)	Odds ratio (95% CI)
	Non-user No. (%)	User No. (%)		
Absent	83 (38.2)	31 (23.0)	114 (32.4)	Ref.
Present	134 (61.8)	104 (77.0)	238 (67.6)	2.1* (1.3, 3.4)
Total	217 (61.6)	135 (38.4)	352 (100.0)	

* Significant at the level of 95%

Figure 1 shows the frequency distribution of the study participants according to their present stage of change. Majority of them were in the stage of precontemplation and when asked about the minimum length of a standard size cigarette that quenches their craving/urge for tobacco, majority (66.7%) said

that they need less than the full length of the cigarette to satisfy their craving of tobacco (Figure 2) and 43.7% of them were having high to very high level of nicotine dependency as per Fagerstrom test for Nicotine Dependence (Figure 3).

Figure 1 Distribution of Cigarette users as per their stage of change (n=135)

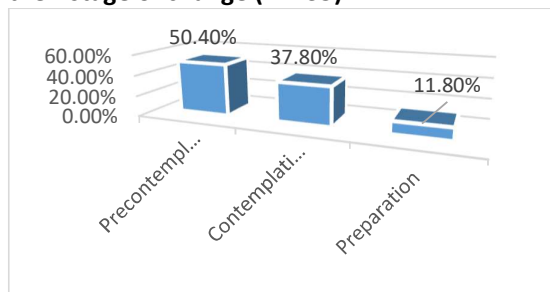


Figure 2 Distribution of participants as per desired minimum cigarette size (length)

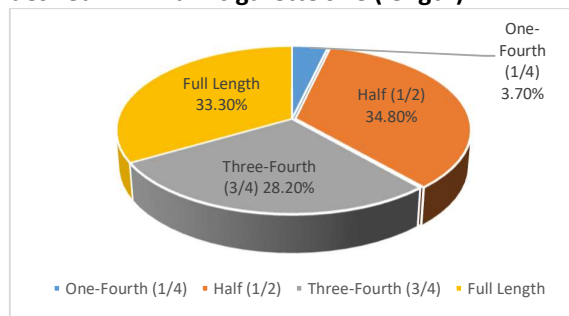


Figure 3 Distribution of Cigarette users as per their level of Nicotine dependency (FTND Score)

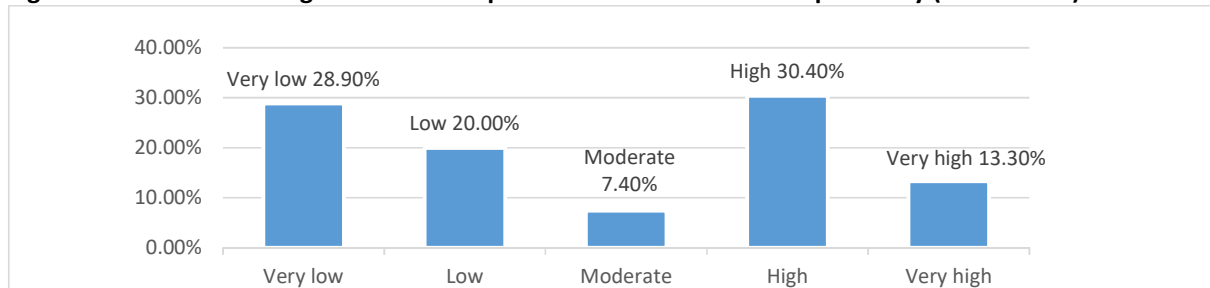


Table 2 reveals that those who require full length of a standard size of a cigarette to quench their craving are having statistically significant odds of 2.72 times (95% CI- 1.3,5.68) and those who started consuming cigarette at

an age less than 15 years were more probable (OR 5.81 95% CI- 2.75,12.34) to have chances of higher nicotine dependency than their counterparts respectively.

Table 2 Association of Cigarette length (minimum desired) and age of initiation of cigarette use with nicotine dependency. (n=135)

Variables	Nicotine Dependency		Total No. (%)	Odds ratio (95% CI)
	FTND score ≤ 5 No. (%)	FTND score ≥ 5 No. (%)		
Cigarette Length (minimum desired)				
Less than Full	58 (64.4)	32 (35.6)	90 (66.7)	Ref
Full	18 (40.0)	27 (60.0)	45 (33.3)	2.72 * (1.30, 5.68)
Age of initiation of cigarette smoking				
≤ 14 yrs.	18 (32.1)	38(67.9)	56(41.5)	5.81* (2.75,12.34)
≥ 15 yrs.	58 (73.4)	21 (26.6)	79 (58.5)	Ref

Table 3 Univariate logistic regression showing Association of Willingness to quit tobacco use among cigarette users with its various covariates (n=135).

Covariates	Current users		Total	Odds ratio (95%CI)
	Not willing to quit (pre-contemplation) No. (%)	Willing to quit (contemplation / preparation) No. (%)		
Age (median)				
≤ 39 yrs.	54 (61.4)	34 (38.6)	88 (65.2)	Ref.
> 39 yrs.	14 (29.8)	33 (70.2)	47 (34.8)	3.74* (1.75,7.99)
Caste				
General	60 (52.6)	54 (47.4)	114 (84.4)	Ref.
Others	8 (38.1)	13 (61.9)	21 (15.6)	1.90 (0.91,3.97)
Religion				
Hindu	51 (55.4)	41 (44.6)	92 (68.1)	Ref.
Others	17 (39.5)	26 (60.5)	43 (31.9)	1.90 (0.91,3.97)
Education				
Below secondary	46 (51.7)	43 (48.3)	89 (65.9)	Ref.
Secondary & above	22 (47.8)	24 (52.2)	46 (34.1)	1.17 (0.57,2.38)
Occupation				
Non-earning	11 (57.9)	8 (42.1)	19 (14.1)	Ref.
Earning	57 (49.1)	59 (50.9)	116 (85.9)	1.42 (0.53, 3.79)
Marital Status				
Unmarried	35 (70.0)	15 (30.0)	50 (100.0)	Ref.
Married	33 (38.8)	52 (61.2)	85 (100.0)	3.68 * (1.74,7.75)
Family Type				
Nuclear	28 (49.1)	29 (50.9)	57 (42.2)	Ref.
Joint	40 (51.3)	38 (48.7)	78 (57.8)	0.92 (0.463,1.82)
Socio-economic status (modified BG Prasad scale 2014)				
Up to Class II	22 (39.3)	34 (60.7)	56 (41.5)	2.15 * (1.07,4.33)
Class III, IV and V	46 (58.2)	33 (41.8)	79 (58.5)	Ref.
Age of initiation of cigarette use				
≤ 14 yrs.	34 (60.7)	22 (39.3)	56 (41.5)	Ref
≥ 15 yrs.	34 (43.0)	45 (57.0)	79 (58.5)	2.04 (1.02,4.11)
Cigarette Length				
Less than Full	30 (33.3)	60 (66.7)	90 (66.7)	10.87* (4.33,27.03)
Full	38 (84.4)	7 (15.6)	45 (33.3)	Ref.
Nicotine dependence				
FTND score < 5	31 (40.8)	45 (59.2)	76 (56.3)	2.44 * (1.21,4.91)
FTND score ≥ 5	37 (62.7)	22 (37.3)	59 (43.7)	Ref

Univariate regression in Table 3 showed that age, marital status, socio-economic status, age

of initiation of cigarette use, minimum length of cigarette required to quench craving and

nicotine dependency were having statistically significant association with willingness to quit cigarette among the users. Multivariate logistic regression as in Table 4 showed that Odds of willingness to quit is significantly more among

those who don't require full length of a cigarette even when adjusted with various covariates found significant in univariate regression.

Table 4: Multivariate logistic regression showing the association of willingness to quit tobacco use among current tobacco users with various covariates found significant in univariate analysis in a stepwise approach (n = 135)

Variables		Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)	Model 4 OR (95% CI)
Current Age (median)	≤ 39 yrs.	Ref	Ref	Ref	Ref
	> 39 yrs.	2.49 (1.07,5.85)	2.31 (0.86,6.22)	2.24 (0.82,6.01)	2.19 (0.79,5.97)
Marital Status	Unmarried	Ref	Ref	Ref	Ref
	Married	2.43 (1.06,5.59)	3.63 (1.38,9.50)	3.86 (1.45,10.31)	4.04 (1.49,10.93)
Socio-economic status	Up to Class II	2.05 (0.98,4.32)	1.75 (0.73,4.19)	1.84 (0.77,4.44)	1.73 (0.71,4.20)
	Class III, IV and V	Ref	Ref	Ref	Ref
Minimum Cigarette length	Less than Full		13.19 (4.8, 36.28)	11.90 (4.25,33.32)	11.58 (4.06,33.01)
	Full length		Ref	Ref	Ref
Age of initiation of cigarette use	≤ 14 yrs.			Ref	Ref
	≥ 15 yrs.			1.57 (0.63, 3.39)	1.20 (0.44,3.25)
Nicotine dependence	FTND score < 5				1.96 (0.76,5.03)
	FTND score ≥ 5				Ref
Nagelkerke's R Square		0.191	0.438	0.445	0.457

DISCUSSION

An observational cross-sectional study was conducted to determine the prevalence of cigarette use, the minimum length of a cigarette to quench the craving and thus prevent further increase in nicotine dependency, level of nicotine dependence along with their stage of change and also to find out its determinants among males above 15 years in a slum of West Bengal.

In our study we found that the prevalence of cigarette use was 38.4% among males above 15 years of age and those with positive family history of tobacco use are more probable to consume cigarette than those without any positive family history which shows that there is considerable effect of parents and relatives in influencing cigarette use among the other members of the family as they don't find it to be a taboo anymore. Age of initiation of cigarette use was quite earlier in the study population. It was probably because of the earlier exposure of the children to the tobacco use and its marketing in the urban area. Moreover, stress and less conservative culture in urban societies might be responsible for early initiation of tobacco. Mean age at

initiation was 15 years which increased the odds of higher nicotine dependency and less probability to quit cigarette use than those who started consuming cigarette at a later age. But it needs to be emphasized that just because everyone/ many people are practicing some behaviour, that doesn't justify doing/ repeating the same mistakes (or harmful behaviours) and for this the children needs to be targeted at schools to inculcate healthy behaviour so that they refrain themselves from blindly following the footsteps of their peers and family members.

50.4% of the smokers (Figure 1) were in the stage of precontemplation and 37.8% in stage of contemplation while the rest were in stage of preparation signifying that the majority of the individuals don't at all consider to quit smoking which implies that either they are ignorant of its harmful effects or shows there couldn't care less attitude towards their health.

When asked about the minimum length of a standard size cigarette that quenches their craving/urge for tobacco, majority (66.7%) said that they need less than the full length of the cigarette to satisfy their craving of tobacco

(Figure 2) and 43.7% of the smokers were having high to very high level of nicotine dependency as per Fagerstrom test for Nicotine Dependence. Those who require full length of a standard size of a cigarette to quench their craving are having odds of 2.72 times (95% CI- 1.3,5.68) and those who started consuming cigarette at an age less than 15 years were more probable (OR 5.81 95% CI- 2.75,12.34) to have chances of higher nicotine dependency (Figure 3) than their counterparts respectively which substantiates our hypothesis that the longer the length (size) of a cigarette one smokes, the more he consumes tobacco (nicotine) and which increases his nicotine dependency to higher level. Further questioning revealed that although they don't require the full length of the cigarette still they consume it because of two main reasons, firstly they had "bought the cigarettes with a high price so they can't throw it without smoking it full length as it will feel like wasting money". and secondly the "strong taste" of the mini sized cigarette available in the market deter them from using the mini cigarettes. Notably mini size cigarettes are shorter because only the filter size is shortened but they deliver similar amounts of smoke as a regular size cigarette (7) whereas 1-2 mm reduction in the diameter i.e reduction in the volume of the cigarette reduces the amount of tobacco intake by 20- 40%.(8)

In a study done by R Jaykrishnan(9) et al. among smokers in a rural population in Kerala,India the average score (FTND) of the study participants was 5 i.e. moderate nicotine dependence while the study done in Burdwan district, West Bengal.(10) reported that 80.9% of smokers are highly dependent on nicotine. The findings of the present study shows that although nicotine dependency is more than in Kerala but much lesser than in the Burdwan district of West Bengal.

Univariate regression in Table 3 showed that age, marital status, socio-economic status, age of initiation of cigarette use, minimum length of cigarette required to quench craving and nicotine dependency were having statistically significant association with willingness to quit cigarette among the users. Younger age predict satisfactory practice i.e. not using

cigarette had been established in various other studies also viz. the studies done in Nepal by YB Kark et al.(11), in Gujrat by DV Bala et al. (12), in Rawalpindi by Ali Yawar Alam et al. (13), and in rural Sindh in Pakistan by Sajid Ali et al. (14) Younger age people are more addicted to tobacco has been reported by studies done in Karachi by Ali Khan Khuwaja et al. (15) and in rural Haryana by Rakesh Kumar et al. (16) although they are in agreement with the present study that, more the educational level, less is the consumption of tobacco.

Multivariate logistic regression as in (Table 4) showed that the odds of willingness to quit is significantly more among those who don't require full length of a cigarette even when adjusted with various covariates found significant in univariate regression which is consonance with the findings of the study by Benjamin J Apelberg et al (17) which also states that use of lower nicotine level cigarettes could result in higher rates of smoking cessation, intentions to quit and substantial health benefits than using high nicotine level cigarettes.

CONCLUSION

The present study revealed that cigarette use is much prevalent in the community and the majority of the users being in stage of precontemplation are also having moderate to very high level of nicotine dependency. Very few of them require the full length/size of a cigarette to quench their craving and it might be the most important determinant to not only reduce the burden of tobacco on an individual but also a significant factor which also would help them to quit. Reducing nicotine consumption in the long term and ability to quit smoking will provide enormous health benefits to the individual and also will protect their family members and society from financial and emotional hardships.

RECOMMENDATION

So from this study we recommend to reduce the size of a cigarette (nicotine portion) to at least half (if not 1/4th) of the present size as it will not only reduce the health hazards caused by long term use of tobacco but also will help the smokers (with lower nicotine dependency)

to quit smoking and gradually the size of the cigarette may be reduced to bare minimum (preferably zero) so as to realise the dream of a “tobacco free society”.

LIMITATION OF THE STUDY

This is a first type of study being done on the size of cigarette among its users. It was a cross-sectional study done in an urban slum hence further studies needs to be done for its generalizability in population.

RELEVANCE OF THE STUDY

As cigarette is an addiction good, the demand elasticity is steep. So entire banning of a tobacco product may be difficult. Hence either behavioural change or reducing the size to decrease the ill effects may be an alternate solution.

AUTHORS CONTRIBUTION

All authors have contributed equally

FINANCIAL SUPPORT AND SPONSORSHIP

Nil

CONFLICT OF INTEREST

There are no conflicts of interest.

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DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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