The relation between price and daily consumption of cigarettes and bidis: Findings from TCP India wave 1 survey

Pratibha S. Pawar, MPH[1], **Mangesh S. Pednekar, PhD**[1], **Prakash C. Gupta, PhD**[1], **C. Shang, PhD**[2], **Anne CK. Quah, PhD**[3], and **Geoffrey T. Fong, PhD.**[3,4]

[1] Healis - Sekhsaria Institute For Public Health, 501, Technocity, Plot X-4/5A, M.I.D.C., Mahape, Navi Mumbai, 400701, India.

[2] Health Policy Center, Institute for Health Research and Policy, University of Illinois at Chicago, Chicago, Illinois, USA

[3] Department of Psychology, University of Waterloo, Waterloo, Ontario, Canada

[4] Ontario Institute for Cancer Research, Toronto, Ontario, Canada

Abstract

Context—In India, 14% of the population use smoked tobacco products. Increasing prices of these products is one of the measures to curb their consumption.

Aims—This study analyzes 'unit price' and 'daily consumption' of cigarettes and bidis and investigates their relation with each other.

Settings and Design—A cross sectional survey was conducted in four states of India (Bihar, West Bengal, Madhya Pradesh and Maharashtra) as a part of the International Tobacco Control Policy Evaluation Project (the TCP India Project) during 2010-11.

Methods—Information was collected from adult (aged ≥ 15) daily exclusive smokers of cigarette /bidi regarding a) last purchase (purchase in pack/loose, brand and price) and b) daily consumption. Average unit price and daily consumption was calculated for different brands and states. Regression model was used to assess the impact of price on daily consumption.

Results—Bidis were much less expensive (Rs. 0.39) than cigarettes (Rs. 3.1). The daily consumption was higher (14) among bidi smokers than cigarette smokers (8). The prices and daily consumption of bidis (Rs. 0.33 to 0.43; 12 to 15) and cigarettes (Rs. 2.9 to 3.6; 5 to 9) varied across the four states. The unit prices of bidis and cigarettes did not influence their daily

Corresponding Author: Name: Dr. Pratibha S. Pawar, Address: Healis - Sekhsaria Institute For Public Health, 501, Technocity, Plot X-4/5A, M.I.D.C., Mahape, Navi Mumbai, 400701, India. Telephone: +91- 22 40025146. Facsimile: +91- 22 27780923, kumbharp@healis.org.
1. Pawar Pratibha S: (kumbharp@healis.org)
2. Pednekar Mangesh S: (pednekarm@healis.org)
3. Gupta Prakash C: (guptapc@healis.org)
4. Shang C: (cshang@uic.edu)
5. Quah Anne CK: (ackquah@uwaterloo.ca)
6. Fong Geoffrey T: (geoffrey.fong@uwaterloo.ca)

Conflicting Interest (If present, give more details): Nil

consumption. Smokers purchasing bidis in packs paid substantially less per unit and purchase of bidis and cigarettes in packs influenced their consumption positively.

Conclusions—Cigarettes although more expensive than bidis, seem very cheap if compared internationally. Hence, prices of both cigarettes and bidis do not influence their consumption.

Keywords

Cigarette; Bidi; Price; Daily consumption; Purchase-behaviours

Introduction

Tobacco consumption is associated with the price of tobacco products.[1] Studying the extent of their association is important in order to guide fiscal policies of the country. Evidence suggests that, increasing price of tobacco products would lead to reduction in consumption and the reduction could be higher in low- and middle-income countries (LMICs).[2] India is one of the LMICs with over a third of its population using tobacco.[1] Moreover, tobacco is consumed in the smoking as well as smokeless forms. Majority of the smoking tobacco is consumed in the form of bidis and cigarettes in which, unit of consumption is clearly defined as one bidi/cigarette. Smokeless tobacco however, can be consumed in loose or packs, varying in quantities starting from couple of grams to several hundred grams.

There is limited information available in India on association between prices and consumption of tobacco products. There are few reports on the price elasticity of tobacco products which showed that the price-increase would lead to reduction in consumption.[3-7] However, evidence from other countries suggests that the impact of increased prices can be attenuated if the tobacco users engage into price reducing purchase-behaviors (such as buying products in bulk or obtaining them from cheaper sources).[8] Hence, it is important to account for these compensatory behaviors of tobacco users in order to fully reveal the relationship between prices and consumption. To the best of authors' knowledge, there are no recent studies in India that assess the relationship between prices and consumption of tobacco products at individual level while accounting for the compensatory behaviors of tobacco users.

In this paper, we used the data from the International Tobacco Control (ITC) Policy Evaluation Project in India (the TCP India Project) to 1) analyze the unit prices and daily consumption of cigarettes and bidis and 2) investigate the relation between 'price' of cigarettes and bidis and their 'consumption' at the individual level. Since it was not possible to study these objectives among smokeless tobacco users, this paper focused on cigarette and bidi smokers only.

Methods

Study design and setting

The TCP India Survey is a part of multi-country survey. The first wave of the survey was completed during August 2010 to December 2011 with the specific objective of examining the perceptions and impact of tobacco control policies. Instruments developed in other ITC

surveys[9] were adapted for bidi and smokeless tobacco use. The study protocols and instruments were approved by the Institutional Review Boards in Canada and India.

The survey was conducted in 4 states: Bihar, West Bengal, Madhya Pradesh and Maharashtra using a multistage cluster sampling design.[9] The principal/capital city in each state (Patna in Bihar, Kolkata in West Bengal, Indore in Madhya Pradesh and Mumbai in Maharashtra) and its surrounding rural areas within a diameter of 50 kilometers were chosen for sampling.

In each state, a minimum total of 2,000 households (1500 urban+500 rural) were enumerated to recruit at least 2000 tobacco users and 600 non-users using a probability sampling procedure.[9] A total of 8,051 users and 2,534 non-users were surveyed from all four states.

Data collection and Measures

Face-to-face interviews were conducted in local languages (Bengali in West Bengal; Marathi in Maharashtra and Hindi in Bihar and Madhya Pradesh) after obtaining written informed consent. A token of appreciation was offered to the respondent. The survey included questions relating to existing tobacco policies; tobacco use and demographics. The survey instruments are available at http://www.itcproject.org/surveys.

Specific questions were asked regarding a) the brand of smoking product last purchased, if the brand choice was based on the price, whether it was their usual brand; b) the quantity purchased, loose or in a pack and c) the price paid in Rupees (Rs.). Based on the money spent and the quantity reported, the unit price was obtained and it was expressed in Rupees (Rs.). Additionally, respondents were asked to report the average number of times they smoked their respective product in a day. The 'frequency of smoking per day' in this paper is assumed to represents the number of sticks smoked per day and is hereafter referred as the 'daily consumption' (expressed in times/day). The price reducing purchase-behaviors considered for this paper were: 1) form of purchase ('purchase in pack/s' or 'purchase in loose') and 2) choice of brand based on its price (yes/no).

In total, there were 2,060 smokers among 8,051 tobacco users. We considered only exclusive cigarette (n=497) and exclusive bidi (n=436) smokers to avoid recall problems among users of multiple products. Almost all smokers were males (>99%) and daily smokers (93%) and hence, the analysis was restricted to male daily smokers. We included only those respondents who provided information for all of the three variables: price, brand, and frequency of consumption (how many excluded?). We dropped obvious outliers such as those who reported smoking 75 bidis a day (n=1); those who smoked >40 cigarettes a day (n=2) and those who reported unit price of cigarettes as Rs. 20 (n=1). Thus the analysis was restricted to 719 smokers (383 cigarette and 336 bidi smokers) (Table 1).

Statistical Analyses

We looked at the variation of average unit prices and average daily consumption across different sample characteristics (demographics and price reducing purchase-behaviors) and states. The monthly household income of a family was categorized as low' (< Rs. 5,000); moderate (Rs. 5,000-15,000), and high (> Rs. 15,000). The literacy level was categorized as

low (illiterate or educated only till middle school); moderate (up to 12 years of education), and high (graduates and above). Smokers reported buying 28 brands of cigarettes and 49 brands of bidis. We analyzed brands that were reported by >5% of the smokers (total five cigarette and three bidi brands). The determinants of 'unit prices' and 'daily consumption' were assessed independently using two regression models. Third regression model was used to assess the impact of 'unit prices' on 'daily consumption'. The regression coefficient was considered to be significant if the p value was   0.05. Analyses were performed using Statistical Package for Social Sciences (SPSS) version 13.

Results

Unit price and daily consumption

Sample characteristics—The mean unit price of cigarettes (Rs. 3.1) was much higher than that of bidis (Rs. 0.4) (Table 1). The mean daily consumption was higher among bidi smokers (14) as compared to cigarette smokers (8). About 60% of the cigarette smokers and over 70% of the bidi smokers were aged between 31 and 60 years. The prices paid per cigarette decreased with age and increased with education. The most of the bidi smokers (89%) purchased bidis in packs (containing ~20-25 sticks); whereas, just 36% of the cigarette smokers purchased cigarettes in packs (containing ~10 sticks). The prices paid were lower and daily consumption was higher among smokers who purchased cigarettes or bidis in packs instead of buying them in loose sticks.

State-specific brands of cigarettes and bidis—West Bengal had the highest number of cigarette smokers (49%) of the total as compared to other states (Maharashtra: 19%; Madhya Pradesh: 16%; Bihar: 16%) (Table 2). Eighty percent of the cigarette smokers used mainly five brands of cigarettes ['Brand A' (46%), 'Brand B' (14%), 'Brand C' (9%), 'Brand D' (6.2%), and 'Brand E' (5.7%)]. 'Brand A' was widely used across all four states. In West Bengal, the price of 'Brand A' was lower (Rs. 3.0) and its daily consumption was higher (9) than other states (price: Rs. 3.7-3.9; daily consumption: 4-7). 'Brand B' was mainly found in West Bengal where its price and daily consumption were similar to that of 'Brand A'. 'Brand C' was mainly reported by the smokers from Madhya Pradesh (5%) and Maharashtra (4%). Its price and daily consumption were higher in Madhya Pradesh than Maharashtra. 'Brand D' was exclusively reported by smokers from West Bengal and was the cheapest (Rs. 2.1) among all. 'Brand E' was found only in Maharashtra.

Madhya Pradesh had the highest number (53%) of bidi smokers of the total (West Bengal: 29%; Maharashtra: 18%) (Table 3). Bihar did not have daily exclusive bidi smokers. Fifty seven percent of the bidi smokers used mainly three brands of bidi ['Brand F' (43%), 'Brand G' (8%) and 'Brand H' (6%)]. 'Brand F' had highest (15) daily consumption and it was reported by the smokers exclusively from Madhya Pradesh. 'Brand G' was cheapest (Rs. 0.2) among all and it was reported by the smokers who were exclusively from West Bengal. 'Brand H' was mainly reported from Maharashtra and it had highest price (Rs. 0.5) and lowest daily consumption (12) among all.

Regressions

We found that the price paid per unit of cigarette significantly decreased with age (β= −0.42) and increased with education (β= 0.25) (Table 4). The price paid per bidi was lower if purchased in packs (β: −4.18) instead of loose. The daily consumption of cigarettes and bidis was higher (β: 5.30 and 7.72 respectively) among those who bought them in packs compared to their counterparts. The differences were observed in daily consumption of cigarettes and bidis across the states (β: 0.11 and 0.42 respectively). The daily consumption of cigarettes and bidis was found not to be influenced by their unit prices.

Discussion

It has been consistently reported that the bidis are much less expensive than cigarettes in India. For example, in John's study (2004-05), the average unit price of bidis was Rs. 0.17 whereas that of cigarettes was Rs. 1.4.[4] The Global Adults Tobacco Survey, India (GATS, 2009-10) also showed similar results of average unit prices of bidis (Rs. 0.26) and cigarettes (Rs. 2.2).[1] Our study was conducted in 2010-11 and we found similar price-difference between bidis (Rs. 0.4) and cigarettes (Rs. 3.1). More recent estimates from a study from Rajasthan (2012) also re-confirmed the fact that bidis (Rs. 0.36) are much less expensive than cigarettes (Rs. 3.0), costing just one-eighth of the price of a cigarette.[10] These results show that the prices of bidis and cigarettes have increased gradually from 2004 to 2012 in India, whereas the price-difference between the two remained identical. The possible reason for such price difference could be the lower production cost of bidis as compared to cigarettes. In addition, there is difference in excise tax imposed on both the products where bidis are taxed lower than cigarettes.[4] Due to this; bidis are used as a popular form of smoking tobacco in India while outselling the cigarettes by a ratio of 8:1[11].

The price of cigarettes in India is much less as compared to that of other nations. In other developed nations, the average price per pack (containing 20 cigarettes) of the most popular brand in 2010, is given here- (Price per pack in USD- UK: 9.8; France: 7.3; USA: 5.7; South Africa: 3.0; Thailand: 1.8)[12] where, an increase in prices led to reduction in consumption[13-16]. In our study, the price per pack (of 20) of the most commonly used brand ('Brand A'), which had highest average unit price among all, was found to be ~1.3 USD i.e. Rs. 68. Hence, it is evident that although cigarettes are priced approximately eight times higher than bidis in India, they are still inexpensive if compared internationally.

In India, cigarettes and bidis are available in variety of brands. In the GATS, India, numerous brands were reported by the smokers (cigarettes: 350; bidis: >2000).[1] Similarly in our study, the smokers reported variety of brands (cigarette: 28; bidi: 49). To address the endogeneity bias while reporting prices, we averaged the unit prices over states and brands. We found that the prices of cigarettes (Rs. 2.1 to 3.4) and bidis (Rs. 0.2 to 0.5) varied greatly across brands. Moreover, even those within the same brand varied across states. For example, the unit price of 'Brand A' of cigarette was Rs. 3.0 in West Bengal whereas it was Rs. 3.9 in Bihar. This indicates that there is huge variety of cigarettes and bidis available in India and great variability in prices exists across different brands and states (possibly due to different taxes according to states and product characteristics). This may provide smokers with an opportunity to opt for cheaper choices/sources of cigarettes and bidis.

Various economic studies from India have shown that the price-increase of cigarettes and bidis would lead to decrease in tobacco consumption.[3-4,6] On the contrary, we found that the prices of both cigarettes as well as bidis didn't have any impact on their daily consumption. This contradictory finding in our study could be due to the fact that the form of purchase (pack or loose) and states in our study highly influenced the price and consumption. In our study, we found that the smokers who had higher daily consumption bought cigarettes or bidis in packs so that they could spend less per unit. The results are comparable with the ITC China survey, where smokers who smoked 11 to 19 cigarettes or 20 cigarettes daily were more likely to buy cigarettes in cartons (OR: 1.65 and 2.32 respectively) compared to those who smoked 10 cigarettes daily.[8] Similarly, in our study, the smokers who smoked 11 to 19 or 20 sticks of cigarette/bidi per day were more likely (OR- cigarette smokers: 3.5 and 9.46; bidi smokers: 4.29 and 24.1 respectively) to buy cigarettes/bidis in packs. Additionally, Chinese smokers were found to be engaged into price-reducing purchase behaviors such as purchase in cartons instead of packs and those who purchased cigarettes in cartons paid 10% less per pack.[8] We also found that the bidi smokers who purchased bidis in packs spent almost half the price than those who purchased in loose/singles. So, even if we double the existing price of a bidi pack, the consumption would at least reduce by four times among those who smoke 10 bidis daily; and by 25 times among those who smoke 20 bidis daily.

Our work has certain limitations. First, the estimates of prices and daily consumption were self-reported which are subject to reporting bias. However, we used data collected from daily and exclusive users and averaged the prices over states and brands to mitigate this bias. Second, our study assumes that the frequencies of consumption of cigarettes and bidis represent quantities consumed per day of each type. While this might be close to accurate for bidis, there is a very slight possibility that a few cigarette smokers might be consuming one unit for more than one time.

Bidis are very inexpensive compared to cigarettes in India and hence, the prices of bidis do not influence their consumption. Cigarettes although more expensive than bidis, still seem very cheap if compared internationally and hence, the price of cigarettes do not influence their daily consumption. Therefore, the prices of bidis and cigarettes need to be increased substantially to reduce their consumption. After bifurcating the purchase behaviors into purchase in 'packs' versus 'loose/singles', it was found that among those who purchased bidis/cigarettes in loose, the consumption was lower and vice-versa was also true. This was perhaps due to the fact that the unit prices were lower if purchased in packs and higher if purchased in loose. Therefore, the compensatory behaviors such as 'purchase in bulk quantity' need to be taken into account while increasing the taxation to increase prices. There is a variation in prices of bidis and cigarettes across different states and different brands and this variation needs to be reduced. The price-changes are driven by changes in taxes and the taxing mechanism in India is very complex. For example, the excise tax for cigarettes is based on its length and for bidis it is based on whether is machine-made or hand-made.[17] Hence, the pricing and taxing structure in India should be made simpler to make it comparable across products and it should be adjusted for inflation on regular basis.

Acknowledgement

References

1. International Institute for Population Sciences. Global Adult Tobacco Survey (GATS) India 2009-2010. Ministry of Health and Family Welfare, Government of India; New Delhi, India: 2010.

2. Chaloupka FJ, Yurekli A, Fong GT. Tobacco taxes as a tobacco control strategy. Tob Control. 2012; 21:172–80. [PubMed: 22345242]

3. John, RM.; Rao, RK.; Rao, MG.; Moore, J.; Deshpande, RS.; Sengupta, J. The Economics of Tobacco and Tobacco Taxation in India. International Union Against Tuberculosis and Lung Disease; Paris: 2010.

4. John RM. Price Elasticity Estimates for Tobacco Products in India. Health Policy Plan. 2008; 23:200–9. [PubMed: 18424474]

5. Selvaraj, S.; Karan, AK.; Srivastava, S. [2014 Feb 20] Price Elasticity of Tobacco Products Among Quintile Groups in India, 2009-10.. Working Paper Series [Internet]. Jul. 2013 [about. 27 p.]. Available from: http://dx.doi.org/10.2139/ssrn.2289221

6. Joseph RA, Chaloupka FJ. The Influence of Prices on Youth Tobacco Use in India. Nicotine Tob Res. 2014; 16:24–9.

7. Guindon, GE.; Nandi, A.; Chaloupka, FJ.; Jha, P. [2014 Feb 26] Socioeconomic differences in the impact of smoking tobacco and alcohol prices on smoking in India.. National Bureau of Economic Research Working Paper Series [Internet]. Dec. 2011 [about. 36 p.]. Available from: http://www.nber.org/papers/w17580.pdf

8. Huang J, Zheng R, Chaloupka FJ, Fong GT, Li Q, Jiyang Y. Chinese smokers' cigarette purchase behaviours, cigarette prices and consumption: findings from the ITC China Survey. Tob Control. 2013; 23:67–72.

9. ITC Project. TCP India National Report. Findings from the Wave. 1 Survey (2010-2011). University of Waterloo; Healis-Sekhsaria Institute for Public Health; Waterloo, Ontario, Canada: Navi Mumbai, India: Sep. 2013 Available from: http://www.healis.org/SV/TCP%20IndiaNR-ENG-Sept25v-web.pdf [2014 Mar 8]

10. Singh V, Sharma BB, Saxena P, Meena H, Mangal DK. Price and consumption of tobacco. Lung India. 2012; 29:212–6. [PubMed: 22919157]

11. Gupta, PC.; Asma, S., editors. Bidi Smoking and Public Health. Ministry of Health and Family Welfare, Government of India; New Delhi, India: 2008.

12. WHO's certified [Internet]. Global Health Observatory Data Repository. WHO; 2013. Raise taxes on tobacco: Cigarette prices - most sold brand Data by country.. Available from: http://apps.who.int/gho/data/node.main.1300?lang=en [2014 Mar 28]

13. Chaloupka, FJ.; Warner, KE. [2014 Feb 9] The Economics of Smoking.. National Bureau of Economic Research Working Paper Series [Internet]. Mar. 1999 [about. 70 p.]. Available from: http://www.nber.org/papers/w7047.pdf

14. WHO Report on the Global Tobacco Epidemic, 2008: The MPOWER package. World Health Organization; Geneva: 2008.

15. Jha P, Peto R. Global Effects of Smoking, of Quitting, and of Taxing Tobacco. N Engl J Med. 2014; 370:60–8. [PubMed: 24382066]

16. World Health Organization [WHO][Internet]. [2014 Apr 18] Health and economic impact of tobacco taxation.. IARC Handbooks of Cancer Prevention. 20XX. [p.327-48]. Available from: http://www.iarc.fr/en/publications/pdfs-online/prev/handbook14/handbook14-9.pdf

17. WHO's certified [Internet]. WHO Technical Manual on Tobacco Tax Administration. World Health Organization; 2010. Available from: http://www.who.int/tobacco/publications/en_tfi_tob_tax_chapter2.pdf [2014 April 24]

Key Messages

The bidis and cigarettes seem very cheap in India; therefore, their prices do not influence their daily consumption. The prices of bidis and cigarettes need to be increased substantially across states and brands to make them more uniform; while accounting for compensatory behaviours like purchase in bulk, to reduce consumption.

Table 1

Sample Characteristics

N=719	Daily Exclusive Cigarette Smokers (53%)			Daily Exclusive *Bidi* Smokers (47%)		
	n	PPU[1] X^a (LB[b]-UB[c])	CPD[2] X^a (LB[b]-UB[c])	n	PPU[1] X^a (LB[b]-UB[c])	CPD[2] X^a (LB[b]-UB[c])
Daily users	383	3.1 (3.0-3.2)	8(7-8)	336	0.39 (0.36-0.43)	14 (13-15)
Demographics						
Age[3]						
18-30 years	117	3.6 (3.4-3.8)	7 (6-8)	34	0.40 (0.23-0.56)	13 (10-16)
31-60 years	226	2.9 (2.8-3.1)	8 (7-9)	245	0.39 (0.35-0.43)	15 (14-16)
61 and above	35	2.6 (2.3-2.9)	7 (5-8)	57	0.42 (0.33-0.51)	12 (10-14)
Income[4]						
Low	48	2.6 (2.3-3.0)	7 (5-8)	143	0.33 (0.29-0.38)	14 (13-16)
Moderate	217	3.1 (3.0-3.2)	7 (6-7)	157	0.44 (0.38-0.50)	14 (13-16)
High	109	3.4 (3.1-3.6)	10 (9-11)	26	0.45 (0.25-0.65)	14 (11-16)
Education[5]						
Low	124	2.8 (2.6-2.9)	8 (6-9)	261	0.39 (0.35-0.43)	15 (13-16)
Moderate	136	3.1 (2.9-3.3)	8 (7-9)	63	0.42 (0.33-0.51)	14 (12-15)
High	123	3.4 (3.2-3.6)	8 (7-9)	10	0.34 (0.26-0.43)	12 (8-16)
Locality						
Urban	342	3.2 (3.0-3.3)	8 (7-8)	154	0.41 (0.35-0.48)	14 (12-15
Rural	41	2.8 (2.5-3.1)	7 (4-9)	182	0.38 (0.34-0.42)	15 (13-16)
Price reducing purchase-behaviors						
Form of purchase						
Loose	247	3.2 (3.1-3.3)	6 (5-6)	34	0.80 (0.52-1.08)	8 (6-9)
Pack	136	2.9 (2.7-3.2)	11 (2-12)	302	0.35 (0.33-0.37)	15 (13-14)
Brand-choice based on price[6]						
Yes	129	3.1 (2.9-3.2)	7 (6-8)	63	0.45 (0.31-0.58)	16 (13-19)
No	253	3.2 (3.0-3.3)	8 (7-8)	272	0.38 (0.35-0.42)	14 (13-15)

[1] **PPU**= Price Per Unit in Rs.

[2] **CPD**= Consumption Per Day in no. of sticks

[a] X^-= Mean

[b] **LB**= Lower Bound

[c] **UB**= Upper Bound

[3] Five cigarette smokers under age 18 are not included in table

[4] Nine cigarette smokers and 10 *bidi* smokers have not reported their income

[5] Two *bidi* smokers have not reported their education level

[6]One smoker of each product didn't report if his brand-choice was based on price.

Table 2

State-specific brands of cigarettes

	States									
	Overall		West Bengal		Maharashtra		Madhya Pradesh		Bihar	
Brands	PPU^1 $\bar{X}^a$ (LB^b-UB^c)	CPD^2 $\bar{X}^a$ (LB^b-UB^c)	PPU^1 $\bar{X}^a$ (LB^b-UB^c)	CPD^2 $\bar{X}^a$ (LB^b-UB^c)	PPU^1 $\bar{X}^a$ (LB^b-UB^c)	CPD^2 $\bar{X}^a$ (LB^b-UB^c)	PPU^1 $\bar{X}^a$ (LB^b-UB^c)	CPD^2 $\bar{X}^a$ (LB^b-UB^c)	PPU^1 $\bar{X}^a$ (LB^b-UB^c)	CPD^2 $\bar{X}^a$ (LB^b-UB^c)
Cigarette smokers (N=383)										
Overall	N=383		n=187		n=71		n=63		n=62	
	3.1 (3.0-3.2)	8 (7-8)	2.9 (2.7-3.0)	9 (8-10)	3.2 (3.0-3.4)	7 (5-8)	3.3 (3.0-3.6)	8 (6-9)	3.6 (3.4-3.9)	5 (4-6)
Brand- wise										
1. Brand A	N=175		n=86		n=25		n=26		n=38	
	3.4 (3.2-3.5)	7 (6-8)	3.0 (2.8-3.2)	9 (7-10)	3.7 (3.4-3.9)	4 (3-6)	3.7 (3.4-4.0)	7 (5-9)	3.9 (3.8-4.0)	5 (4-6)
2. Brand B	N=53		n=43		n=5		n=2		n=3	
	3.4 (3.1-3.7)	8 (6-9)	3.0 (2.8-3.2)	8 (6-10)	†	†	†	†	†	†
3. Brand C	N=34		n=0		n=14		n=20		n=0	
	2.9 (2.7-3.0)	8 (5-10)	-	-	2.7 (2.6-2.9)	6 (3-9)	3.0 (2.7-3.2)	9 (5-13)	-	-
4. Brand D	N=24		n=24		n=0		n=0		n=0	
	2.1 (1.8-2.3)	7 (6-9)	2.1 (1.8-2.3)	7 (6-9)	-	-	-	-	-	-
5. Brand E	N=22		n=0		n=21		n=1		n=0	
	2.9 (2.8-3.1)	8 (4-12)	-	-	3 (2.8-3.1)	8 (4-12)	†	†	-	-
6. Remaining Brands	N=75		n=34		n=6		n=14		n=21	
	2.8 (2.4-3.2)	9 (7-10)	2.8 (2.3-3.4)	11 (8-13)	†	†	2.8 (1.5-4.1)	7 (5-10)	2.7 (2.3-3.2)	5 (4-7)

^{1}PPU= Price Per Unit in Rs.

^{2}CPD= Consumption Per Day in no. of sticks

^{a}$\bar{X}$= Mean

^{b}**LB**= Lower Bound

^{c}**UB**= Upper Bound

†Results not reported as n<10.

Table 3

State-specific brands of *bidis*

Brands	Overall		Madhya Pradesh		West Bengal		Maharashtra	
	PPU[1] $\bar{X}^a$ (LB^b-UB^c)	CPD[2] $\bar{X}^a$ (LB^b-UB^c)	PPU[1] $\bar{X}^a$ (LB^b-UB^c)	CPD[2] $\bar{X}^a$ (LB^b-UB^c)	PPU[1] $\bar{X}^a$ (LB^b-UB^c)	CPD[2] $\bar{X}^a$ (LB^b-UB^c)	PPU[1] $\bar{X}^a$ (LB^b-UB^c)	CPD[2] $\bar{X}^a$ (LB^b-UB^c)
Bidi smokers (*N*=336)								
Overall	N=336		n=179		n=96		n=61	
	0.39 (0.36-0.43)	14 (13-15)	0.41 (0.39-0.44)	15 (14-17)	0.33 (0.24-0.43)	12 (11-14)	0.43 (0.31-0.55)	15 (12-18)
Brand-wise								
1. Brand F	N=145		n=144		n=0		n=1	
	0.42 (0.39-0.46)	15 (14-17)	0.42 (0.39-0.42)	15 (14-17)	-	-	†	†
2. Brand G	N=27		n=0		n=27		n=0	
	0.22 (0.21-0.23)	13 (10-17)	-	-	0.22 (0.21-0.23)	13 (10-17)	-	-
3. Brand H	N=21		n=0		n=0		n=21	
	0.48 (0.25-0.71)	12 (8-16)	-	-	-	-	0.48 (0.25-0.71)	12 (8-16)
4. Remaining Brands	N=143		n=35		n=69		n=39	
	0.38 (0.31-0.45)	14 (12-15)	0.44 (0.34-0.54)	15 (12-18)	0.38 (0.24-0.52)	12 (10-13)	0.34 (0.30-0.39)	17 (12-21)

[1]PPU= Price Per Unit in Rs.

[2]CPD= Consumption Per Day in no. of sticks

^{a}$\bar{X}$= Mean

^{b}**LB**= Lower Bound

^{c}**UB**= Upper Bound

†Results not reported as n<10.

Table 4

Determinants of 'paid unit price' and 'daily consumption' and impact on 'daily consumption' controlling for 'unit price'

Tobacco product	Sample characteristics	Determinants of 'unit price'	Determinants of 'daily consumption'	Impact on 'daily consumption' controlling for 'price'
		β	β	β
Cigarette[1]	Age	−0.42*	0.19	0.21
	Education	0.25*	−0.14	−0.15
	U/R	−0.25	−1.14	−1.13
	State	−0.01	0.11*	0.11*
	Form of Purchase	−0.09	5.30*	5.30*
Bidi[2]	U/R	0.16	0.30	0.28
	State	0.11	0.42*	0.41*
	Form of Purchase	−4.18*	7.72*	8.23*

β: Regression Coefficient (adjusted)

[1] Linear regressions adjusted for age, education, locality, state and form of purchase

[2] Linear regressions adjusted for locality, state and form of purchase (age and education were not included in the regression model for *bidis* as they were found not be associated with 'price' and 'consumption' at univariate level)

* $P<0.05$.