

# Tobacco Abuse: Prevalence, Patterns and Awareness among Rural Adults - A Population Based Study

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## Abstract

Using a multistage random sampling technique, two villages were selected from rural area of Jammu and all the people aged 15 years and above were interviewed using semi-structured and pretested questionnaire. Majority of respondents were males (91%) and Hindus (76.5%) with 39% aged  $\geq 56$  years. 64.8% were literate. The overall prevalence of tobacco consumption was 19.7% with 32.5% among males and 3.9% in females. Tobacco consumption in the form of cigarette smoking was predominant (49%) followed by beedi (33.1). 52% initiated smoking by 16-25 years of age. 78.6% smoked for pleasure. Muslim respondents were overwhelmingly using smokeless tobacco as compared to Hindu respondents ( $p < 0.001$ ). Level of literacy was found to be significantly associated with tobacco use ( $p < 0.001$ ). Hazards of smoking was known to 84.1% while mere 11.7% knows that they could get rid of this habit. Tobacco consumption in any form is quite prevalent in the current study area. Despite mass media availability, the awareness regarding specific tobacco control measures is below expectation. Tobacco control programs need to develop strategies to address different subgroups among the users. There is dire need for smoking cessation counseling services across the length and breadth of country.

## Key Words

Tobacco, Abuse, Epidemiology, Prevalance

## Introduction

Tobacco use in any form is widely prevalent all over the globe including India. During the last century, irrefutable evidence has been generated regarding harmful effect of tobacco use on the health of human beings both in terms of morbidity and mortality.

Among the preventable causes of death, tobacco use still remains a major challenge for public health planners. (1) WHO estimates predict that by 2020 deaths due to tobacco usage could touch 8.4 million worldwide on a yearly basis (2) and the corresponding figure for India could be 1.5 million. (3)

Morbidities caused by tobacco consumption include lung cancer, bladder carcinoma, carcinomas of the oral cavity, Chronic Obstructive Pulmonary Disease, stroke, coronary heart disease etc. In India out of all cancers occurring in humans, tobacco is responsible for half of them in men and a quarter in women. (4) Regarding contribution to years of life lost, tobacco use is currently ranked fourth in the world.

In India, both the smoking and non-smoking forms of tobacco are used. According to GATS (Global Adult Tobacco Survey) India, 35% of adults in India use tobacco in some form or the other. (5) More than 80% of world's smokers live in low and middle income countries while the trends in developed nations are showing a decline in tobacco smoking. (6)

Estimates show that around 1/6th (16.6%) of all the smokers live in India (7) and smoking is primarily through cigarettes, beedis, hokkah and chillum while smokeless tobacco is consumed as pan, gutkha, zarda, khaini etc. which are all laced with tobacco.

Although there is enough evidence about the ill effects of tobacco use, but there is not much published literature about the extent of the problem and factors influencing its use in rural areas of Jammu. Also the socio-demographic predictors of tobacco use are not understood extensively due to diversity in culture and geography in our country. Considering this it was felt pertinent to generate quality data on prevalence and factors leading to tobacco use. This would be of exceptional help in curtailing the use of tobacco and can systematically guide us in conducting the BCC (Behavior Change communication) activities specific to the identified underlying factors. Thus, the study was done to estimate the prevalence of various forms of tobacco use and to study the factors influencing the use of tobacco in a rural population aged 15 years and above.

## Material and Methods

After taking approval from Institutional Ethical Committee, all the Primary Health Centers (PHC) falling within Ranbir Singh Pura Block were listed. Then using a multi-stage random sampling, PHC Miran Sahib was

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selected. In the next step, Langotian sub-health centre was chosen out of all the sub-health centers under this PHC. Langotian sub-health centre caters to five villages and has a total population of 5346. In the final step of sampling, two villages out of five were selected for the conduct of the study. The selected villages had a total population of 1470. House to house visit was conducted and all the individuals aged 15 years and above in these two villages consuming tobacco in any form comprised the study population. During household visit each of the eligible individual was asked about tobacco consumption status and only those who were using tobacco in any form were interviewed. During the interview, privacy was sufficiently maintained so as to ensure unbiased responses.

The study was carried out in April-May 2014. Questionnaire containing questions regarding demography, details of smoking patterns like duration of usage, age of initiation, frequency of consumption, reasons for smoking etc was applied. This was followed by questions on awareness regarding various aspects of smoking. Questionnaire used was semi-structured and pilot tested beforehand and was modified to gather the requisite information. Informed verbal consent was obtained from all the study subjects before the administration of the questionnaire. Those who were not willing to give consent were excluded from the study. The data was scrutinized, edited and corrected for any missing information. Data analysis was done with SPSS version 18.0 and Chi-square test was used to look at the association between groups with p-value <0.05 considered as significant.

## Results

A total of 290 rural adults aged 15 years and above who were consuming tobacco in any form were interviewed during the course of survey. 264/290 (91.0%) of the respondents were males and more than two-third (76.5%) of them were Hindus while none of the Muslim female was found to consume tobacco in any form. Although there were some Sikh families in these villages, they were not included in the study for obvious reasons. Literacy wise 1/3rd of the respondents were illiterate and only 4% were matriculate and above. Among the employed respondents, some were working in night shifts and few had to travel a couple of hours to their work place. 96.5% were married and about half of them had a monthly income of 5000-10000. About 27% of the respondents were devoid of sanitary latrines at their home, *Table 1*. The overall prevalence of tobacco use in any form was 19.7% (290/1470). The prevalence among males and females being 32.5% (264/812) and 3.9% (26/658) respectively. Majority of the respondents were cigarette smokers (49%) followed by beedi smokers (33.1%). There was no cigarette smoking and smokeless tobacco

consuming female in the study population. The prevalence of smokeless tobacco consumption was 9.6% (28/290). The association between gender and type of tobacco consumption was found to be highly significant ( $p < 0.0001$ ). More than half of the respondents had initiated smoking by 16-25 years of age. Majority of the males (40.7%) consumed 11-15 cigarettes/beedis per day while females consumed no more than 10 beedis per day *Table 2*. Regarding first time smoking experience, 32.4% had it at a relative's place and 29.6% at friend's place. For 78.6% of the study participants most common reason for tobacco consumption was pleasure/enjoyment. Less than half (44.8%) of the respondents felt low and 38.6% (112/290) felt irritable if they did not consume tobacco. Only 48/290 (16.5%) had tried to quit smoking, of which 81.2% quit it for <6 months. 55.8% respondents had none of the diseases diagnosed on visit to doctor ( $p < 0.0001$ ). *Table 3*

Although the use of cigarettes and beedis was higher among the Hindu respondents, the use of smokeless tobacco and hookah use was strikingly high among the Muslim respondents. This association between tobacco consumption pattern and religion was statistically significant ( $p < 0.0001$ ). Also literacy wise distribution of respondents showed that the level of literacy is significantly associated ( $p < 0.0001$ ) with type of tobacco use. *Table 4*. Awareness regarding the deleterious effects of smoking was high (84.1%) among respondents and nearly half of them (41.3%) knew about the ill effects of second hand smoke. Mere 8.2% were aware of the presence of de-addiction centers, *Table 5*.

## Discussion

In the current cross-sectional study conducted in rural adults in Northern India, the overall prevalence of tobacco use in any form was 19.7%, similar to what has been observed in earlier studies in India. (8,9) Regarding tobacco consumption in the form of smoking, GATS India (2009-10) (5) and Jindal SK *et al* (10) reported a lower prevalence of 14% and 15.6% respectively. In contrast, a very high rate of 72.4% was reported by Aryal *et al* (11) in Kathmandu but the study was conducted among college students. With respect to gender, our findings show that tobacco usage was higher among males than females which is in sync with the observations made by other studies on tobacco use in the country. (12,13) Consistent with our results, GATS Uttarakhand (2009-10) (5) and NFHS-3 (2005-06) (14) reported lower prevalence of smoking in females at 3.9% and 1.8% respectively. However Narayan *et al* (15) found higher smoking prevalence of 45% and 7% in males and females respectively. Since this cross-sectional study doesn't show trends over time, but the observed increase in tobacco use with age can be probably explained due to age effect or simply due to under reporting by young people. In the current study, 49% of the

**Table 1: Demographics of The Study Population**

|                         | Male (264)<br>N (%) | Female (26)<br>N (%) | Total (290)<br>N (%) |
|-------------------------|---------------------|----------------------|----------------------|
| <b>Age in years</b>     |                     |                      |                      |
| • 15-25                 | 12 (4.5)            | 0 (0)                | 12 (4.1)             |
| • 26-35                 | 30 (11.4)           | 0 (0)                | 30 (10.3)            |
| • 36-45                 | 54 (20.4)           | 0 (0)                | 54 (18.6)            |
| • 46-55                 | 72 (27.2)           | 10 (38.5)            | 82 (28)              |
| • 56 and more           | 96 (36.5)           | 16 (61.5)            | 112 (39)             |
| <b>Religion</b>         |                     |                      |                      |
| • Hindu                 | 202 (76.5)          | 26 (100)             | 228 (78.6)           |
| • Muslim                | 62 (23.5)           | 0 (0)                | 62 (21.4)            |
| <b>Literacy</b>         |                     |                      |                      |
| • Illiterate            | 84 (32)             | 18 (69.2)            | 102 (35.2)           |
| • Up to primary         | 36 (13.5)           | 08 (30.8)            | 44 (15.2)            |
| • Up to matric          | 132 (50)            | 0 (0)                | 132 (45.5)           |
| • Matric and above      | 12 (4.5)            | 0 (0)                | 12 (4.1)             |
| <b>Occupation</b>       |                     |                      |                      |
| • Employed              | 180 (68.1)          | 0 (0)                | 180 (62.0)           |
| • Unemployed            | 84 (31.9)           | 26 (100)             | 110 (38.0)           |
| <b>Marital status</b>   |                     |                      |                      |
| • Married               | 258 (97.7)          | 22 (84.6)            | 280 (96.5)           |
| • Unmarried             | 0 (0)               | 0 (0)                | 0 (0)                |
| • Widower               | 06 (2.3)            | 04 (15.4)            | 10 (3.5)             |
| <b>Family income</b>    |                     |                      |                      |
| • < 5000                | 12 (4.5)            | 04 (15.3)            | 16 (5.6)             |
| • 5000-10,000           | 117(44.3)           | 18 (69.2)            | 135 (46.6)           |
| • 10,000-20,000         | 63 (23.9)           | 04 (15.5)            | 67 (23.0)            |
| • >20,000               | 72 (27.3)           | 0 (0)                | 72 (24.8)            |
| <b>Sanitary latrine</b> |                     |                      |                      |
| • Present               | 192 (72.7)          | 20 (77)              | 212 (73.1)           |
| • Absent                | 72 (27.3)           | 06 (23)              | 78 (26.9)            |

**Table 2: Prevalence And Smoking Patterns Among Respondents**

|  | Male<br>N (%) | Female<br>N (%) | Total<br>N (%) | P value |
|--|---------------|-----------------|----------------|---------|
| <b>Types of smoking product</b>  |               |                 |                |         |
| • Cigarette  | 142 (53.8)    | 0 (0)           | 142 (49)       | <0.0001 |
| • Beedi  | 74 (28)       | 22 (84.6)       | 96 (33.1)      |         |
| • Smokeless tobacco  | 28 (10.6)     | 0 (0)           | 28 (9.6)       |         |
| • Hookah   | 20 (7.6)      | 04 (15.4)       | 24 (8.3)       |         |
| <b>Smokers by age of initiation</b>  |               |                 |                |         |
| • <15 years  | 82 (31)       | 0 (0)           | 82 (28.2)      | <0.0001 |
| • 16-25 years  | 140 (53)      | 10 (38.4)       | 150 (52.0)     |         |
| • 28-35 years  | 24 (9.1)      | 10 (38.4)       | 34 (11.7)      |         |
| • >35 years  | 18 (6.9)      | 6 (23.2)        | 24 (8.1)       |         |
| <b>Average cigarette/beedis smoked per day (n= 216 for males and n=22 for females)</b> |               |                 |                |         |
| • <5   | 26 (12)       | 06 (27.3)       | 32 (13.4)      | <0.0001 |
| • 5-10   | 62 (28.7)     | 16 (72.7)       | 78 (32.7)      |         |
| • 11-15  | 88 (40.7)     | 0 (0)           | 88 (37.0)      |         |
| • >15  | 40 (18.6)     | 0 (0)           | 40 (16.9)      |         |
| <b>Any other smoker in family</b>  |               |                 |                |         |
| • Parents  | 36 (13.6)     | 0 (0)           | 36 (12.4)      | 0.01    |
| • Siblings   | 32 (12.1)     | 0 (0)           | 32 (11.0)      |         |
| • None   | 196 (74.3)    | 26 (100)        | 222 (76.6)     |         |

respondents were cigarette smokers while 33.1% were beedi smokers. Our findings are in agreement with Narayan *et al* (15) who reported a higher proportion of cigarette users as compared to beedi

smokers. The female respondents were mainly using beedis (84.6%) and few (15.4%) of them using hookah. National figure as reported by GATS5 suggest that majority of people in India smoke beedis over

**Table 3: Responses To Queries Put Across To Respondents.**

|  | Male<br>N (%) | Female<br>N (%) | Total<br>N (%) | P value |
|--|---------------|-----------------|----------------|---------|
| <b>First time smoked at</b>  |               |                 |                |         |
| • Friends' place   | 86 (32.5)     | 0 (0)           | 86 (29.6)      | <0.0001 |
| • Relatives' place   | 68 (25.8)     | 26 (100)        | 94 (32.4)      |         |
| • Local shop   | 78 (29.6)     | 0 (0)           | 78 (27)        |         |
| • Picnic/ holiday  | 32 (12.1)     | 0 (0)           | 32 (11)        |         |
| <b>Primary reasons for smoking</b>   |               |                 |                |         |
| • Pleasure/ enjoyment  | 202 (76.6)    | 26 (100)        | 228 (78.6)     | 0.04    |
| • To alleviate stress  | 20 (7.6)      | 0 (0)           | 20 (6.9)       |         |
| • Peer pressure  | 38 (14.3)     | 0 (0)           | 38 (13.1)      |         |
| • Being an intellect   | 04 (1.5)      | 0 (0)           | 4 (1.4)        |         |
| <b>Feelings when you don't consume tobacco (&gt;1 response)</b>              |               |                 |                |         |
| • Irritability   | 92 (34.8)     | 20 (76.9)       | 112 (38.6)     | <0.0001 |
| • Aggression   | 106 (40.1)    | 0 (0)           | 106 (36.5)     |         |
| • Depression/ feeling low  | 112 (42.4)    | 18 (69.2)       | 130 (45)       |         |
| • Lack of concentration  | 76 (26.2)     | 22 (84.6)       | 98 (33.7)      |         |
| <b>Those who tried to stop smoking quit it for (Males n=40; Females n=8)</b> |               |                 |                |         |
| • < 6 months   | 31 (77.5)     | 08 (100)        | 39 (81.2)      | 0.33    |
| • 6 months- 1 year   | 07 (17.5)     | -               | 7 (14.6)       |         |
| • >1 year  | 02 (5)        | -               | 2 (4.2)        |         |
| <b>Disease diagnosed when you visited a doctor for some complaint</b>        |               |                 |                |         |
| • COPD/ Dyspnoea   | 23 (8.7)      | 18 (69.2)       | 41 (14.2)      | <0.0001 |
| • Gastric ulcer  | 37 (14)       | 04 (15.4)       | 41 (14.2)      |         |
| • Diabetes Mellitus  | 16 (6.1)      | 0 (0)           | 16 (5.5)       |         |
| • Hypertension   | 28 (10.6)     | 0 (0)           | 28 (9.6)       |         |
| • None   | 160 (60.6)    | 04 (15.4)       | 164 (56.5)     |         |

**Table 4: Relationship of Tobacco Consumption With Literacy Level**

| Literacy Level      | Cigarette<br>Smokers<br>N(%) | Beedi<br>Smokers<br>N(%) | Smokeless<br>Tobacco<br>Users<br>N(%) | Hookah Users<br>N(%) | Total<br>N(%) | P value |
|---------------------|------------------------------|--------------------------|---------------------------------------|----------------------|---------------|---------|
| <b>Illiterate</b>   | 60 (42.2)                    | 18 (18.7)                | 10 (35.7)                             | 14 (58.4)            | 102 (35.2)    | <0.0001 |
| <b>Primary</b>      | 30 (21.1)                    | 06 (6.3)                 | 08 (28.6)                             | 00 (00)              | 44 (15.2)     |         |
| <b>Upto matric</b>  | 45 (31.7)                    | 72 (75)                  | 10 (35.7)                             | 05 (20.8)            | 132 (45.5)    |         |
| <b>Above matric</b> | 07 (5)                       | 00 (00)                  | 00 (00)                               | 05 (20.8)            | 12 (4.1)      |         |
| <b>Total</b>        | 142 (100)                    | 96 (100)                 | 28 (100)                              | 24 (100)             | 290 (100)     |         |

**Table 5: Awareness Among Respondents About Tobacco Use**

| Questions  | YES<br>N (%) | No<br>N (%) |
|--|--------------|-------------|
| Do you think smoking can cause health hazards?                                 | 244 (84.1)   | 46 (15.8)   |
| Do you think smoke from other people's cigarette smoking is harmful to you?    | 120 (41.3)   | 170 (58.6)  |
| Have you heard of anti-tobacco messages through mass media?                    | 261 (90.0)   | 29 (10.0)   |
| Do you know that smoking is banned in public places?                           | 66 (22.7)    | 224 (77.2)  |
| Do you think you would be able to stop smoking if you want to?                 | 34 (11.7)    | 256 (88.2)  |
| Do you know about a de-addiction centre?                                       | 24 (8.2)     | 266 (91.7)  |
| Do you believe that smoking in the early morning helps in the bowel movements? | 202 (69.6)   | 88 (30.3)   |

cigarettes. The reason for this could be the cheaper cost of beedi, easy and widespread availability and that beedi and hookah usage is more ingrained in the rural culture of India. The most probable reason for more cigarette smokers in the present study was that current smokers were financially independent and belonged to better socioeconomic strata. Moreover the study area happens to be in close proximity to Jammu city and thus may not represent a typical rural area.

Pleasure/enjoyment was the main reason cited by respondents for smoking/tobacco use which clearly

reflects lack of entertainment in the rural areas. Only 16.5% of the respondents had tried to quit, though unsuccessfully; it clearly shows the addictive nature of tobacco use. Strikingly half (52%) of the respondents initiated tobacco use by 16-25 years of age which is considered as the habit forming age and it is more likely that they would continue to do so through out their life. These results concur with those reported by other authors.<sup>5,8</sup> Male sex, poverty and low levels of literacy have been incriminated as critical factors in determining the tobacco use among adults. Consistent

with earlier results, the current study found that level of education in a community has a significant association with the prevalence of tobacco consumption<sup>16</sup> with lower literacy levels leading to higher prevalence of tobacco use. Hence both formal and non-formal education remains the cornerstone in any tobacco control programme. Muslim respondents constituted only 23.5% of the participants and consumption of smokeless tobacco among them was found to be very high (38.7%) as compared to Hindu's (2.6%). These results are well supported by Ansari ZA *et al.*(17)

In the current study, 90% of the respondents had seen/heard of the anti-tobacco messages through electronic or print media which are in agreement with those reported by Chockalingam K *et al.* (9) More than 2/3rds of the study participants believed that early morning smoking helps in bowel movements. Low availability (27%) of sanitary latrines at home and hence open field defecation may have indirect association with smoking habit but this association needs to be explored further. Despite higher coverage and deep penetration of mass media into rural areas which has helped the health officials in putting the message across the public, the content of these messages is still not clear which is evidenced by the fact that only 22.7% knew that smoking is banned in public places and mere 8.2% being aware of de-addiction centers.

This population based cross-sectional study had small sample size and thus lacks generalizability. There may be underreporting of prevalence due to non disclosure about tobacco use by some of the persons in the study area.

### Conclusions

Prevalence of tobacco use was higher among the males with cigarette smoking being the main source of tobacco consumption. The female current smokers were primarily using beedi and Muslim respondents were mainly smokeless tobacco consumers. Efforts are needed to control tobacco use in every section of the society in India by increasing information, education and communication activities with clear and specific messages. Also there is a dire need for providing tobacco cessation programmes, counseling services and implementing prohibition of smoking in public places in letter and spirit.

### References

1. WHO: Young girls using tobacco almost as much as boys in many regions of the world. Available from: <http://www.who.int/mediacentre/news/releases/2003/pr64/en/>. [Accessed on 19 Aug 2015]
2. Global status report on non-communicable diseases 2010. Available from: [http://www.who.int/nmh/publications/ncd\\_report\\_full\\_en.pdf](http://www.who.int/nmh/publications/ncd_report_full_en.pdf). [Accessed on 19 Aug 2015]
3. Murray CJ, Lopez AD. The global burden of disease: A comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020. Harvard School of Public Health: Cambridge, Massachusetts; 1996.
4. World Cancer Report. Global cancer rates could increase by 50% to 15 million by 2020. Available from: <http://www.who.int/mediacentre/news/releases/2003/pr27/en/>. [Accessed on 19 Aug 2015]
5. Ministry of Health and Family Welfare, Government of India. Global Adult Tobacco Survey: India Report 2009-10. New Delhi, India, 2010. Available from: <http://mohfw.nic.in/WriTeReaDData/1892s/1455618937GATS%20India.pdf> [Accessed on 19 Aug 2015].
6. Jha P. Avoidable global cancer deaths and total deaths from smoking. *Nature Reviews: Cancer* 2009; (9):655-64.
7. Shimkhada R, Peabody JW. Tobacco control in India. *Bull World Health Organ* 2003;81:48-52.
8. Imtiaz D, Kandpal SD, Juyal R, Shrotriya VP, Singh AK. A Study on Prevalence and Pattern of Smoking Among Rural Population in Dehradun District of Uttarakhand. *Natl J Community Med* 2014; 5(4):440-3.
9. Chockalingam K, Vedhachalam C, Rangasamy S, Sekar G, Adinarayanan S, Swaminathan S *et al.* Prevalence of Tobacco Use in Urban, Semi Urban and Rural Areas in and around Chennai City, India. *PLoS ONE* 2013; 8(10): e76005.
10. Jindal S, Aggarwal A, Chaudhry K, Chhabra S, D Souza G, Gupta D *et al.* Tobacco smoking in India: prevalence, quit-rates and respiratory morbidity. *Indian J Chest Dis Allied Sci* 2006; 48 (1): 37.
11. Aryal U, Deuba K, Subedi A, Shrestha R, Bhatta L. Prevalence and Determinants of Cigarette Smoking among the College Students of Kathmandu Valley. *Asian J Med Sci* 2011; 1 (2): 53-58.
12. Giovino GA, Mirza SA, Samet JM, *et al.* Tobacco use in 3 billion individuals from 16 countries: an analysis of nationally representative cross-sectional household surveys. *Lancet* 2012; 380: 668-79.
13. 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. *Tob Control* 2003; 12:e4.
14. NFHS-3 (2007) National Family Health Survey (NFHS-3), 2005-06: India. International Institute for Population Sciences and Macro International Mumbai, India 1: 590.
15. Narayan KM, Chadha SL, Hanson RL, *et al.* Prevalence and patterns of smoking in Delhi: Cross sectional study. *BMJ* 1996; 312:1576-9.
16. Tobacco Free Initiative, World Health Organisation. Tobacco increases the poverty of individuals and families.. Available from: [http://www.who.int/tobacco/communications/events/wntd/2004/tobaccofacts\\_families/en/](http://www.who.int/tobacco/communications/events/wntd/2004/tobaccofacts_families/en/). [Accessed on 19 Aug 2015].
17. Ansari ZA, Bano S N, Zulkifli M. Prevalence of tobacco use among power loom workers - A cross-sectional study. *Indian J Community Med* 2010;35(1):34-9.