

SOCIO-ECONOMIC INEQUALITY IN THE PREVALENCE OF SMOKELESS-TOBACCO CONSUMPTION AMONG THE MALES OF BIHAR: EVIDENCES FROM NFHS-4

Jyoti Das¹, Mukesh Kumar², K C Das³, Adarsh Tripathi⁴,

¹Master of Arts in Population Studies, International Institute for Population Sciences, Mumbai

²M.Phil. Research Scholar, International Institute for Population Sciences, Mumbai

³Professor, International Institute for Population Sciences, Mumbai

⁴Guest Faculty, MSc. Bio-statistics, University of Lucknow

Abstract—Tobacco kills more than 1 million people each year in India which is the 9.5% of all causes of death according to the data released by GYTS in 2018. Tobacco consumption includes both smoked and smokeless. smokeless tobacco, which is the most dominant form of tobacco consumption in India, has been inadequately addressed in Indian studies. This study tries to explore the pattern of smokeless-tobacco consumption with the help of socio-economic background of smokeless tobacco users such as how much they are educated, in strata of the wealth quantile they fall in, in what occupation they are involved, etc. This study is based on secondary data provided by the National Family Health Survey-4, Ministry of Health and Family welfare, India. The study shows that the prevalence of smokeless tobacco consumption among men is higher than smoked tobacco consumption. While studying the pattern of smokeless tobacco consumption in Bihar, it is found that men involved in agricultural occupation have the highest prevalence of smokeless tobacco consumption, therefore, it is obvious that the prevalence is higher in rural areas than urban areas. Out of 2774 male smokeless-tobacco consumers in Bihar, highest proportion is found in Patna district whereas least is in Sheohar. Policy makers should consider socio-economic patterning of smokeless-tobacco use when designing, implementing and evaluating tobacco control interventions in different states of India.

Index Terms— Smokeless-tobacco consumption, males, Bihar, National Family Health Survey-4.

I. INTRODUCTION

Tobacco kills more than 1 million people each year in India which is the 9.5% of all causes of death according to the data released by GYTS in 2018. Tobacco consumption can be defined as the consumption of the products prepared from the cured leaves of the tobacco plant having active ingredient nicotine. Tobacco consumption includes both smoked (e.g. cigarette, bidis, cigars, cheroots, rolled cigarettes, tobacco rolled in maize leaf and newspaper, hukkah, pipes, chillum) and smokeless (e.g. betel quid with tobacco, khaini, tobacco lime mixture, gutka, oral tobacco, pan masala, snuff). According to GATS-2 (2016-17), tobacco consumption among adults is 28.6% from which male consumers are 42.4% and

female consumers are 14.2%. Smokeless-tobacco users are 21.4% (199.4 million) which is much higher than tobacco smokers 10.7% whereas 29.6% of all men use smokeless tobacco.

Tobacco is an integral part of the culture of various socio-economic groups in eastern and northern parts of India and is frequently offered to guests at family and social gatherings. State-level variations in tobacco use also reflect variations in the implementation of tobacco control strategies, such as increases in taxation and the creation of smoke-free workplaces, and the relative success of promotional activities by the tobacco industry. Less is known about the impact of these drivers on the socio-economic patterns of tobacco use in Indian states.

Previous studies have shown marked variations in relationship between socio-economic variables and consumption of tobacco in India. However, it is not clear whether the associations identified at national-level studies are consistently present at state level. Previous studies have provided little information on the type and volume of tobacco consumed in India, they have been unable to adequately guide the development and evaluation of tobacco control initiatives and programmes. However, smokeless tobacco, which is the most dominant form of tobacco consumption in India, has been inadequately addressed in Indian studies.

Considering Bihar which is one of the backward states in India, the prevalence of smokeless-tobacco consumption is 23.5% which is higher than the national consumption (21.4%), while the prevalence of smoking-tobacco is 5.1% which is much less than the national average (10.7%). The proportion of male smokeless-tobacco users is 41.9%. According to NFHS4, half of men, but only 3 percent of women, age 15-49 use some form of tobacco. Men are much more likely to use khaini (37%), smoke cigarettes (15%), use gutkha or paan masala with tobacco (11%), and chew paan with tobacco (11%) than to use other types of tobacco. From the total sample size of men in Bihar 18.85% use smoke tobacco while 47.24% men

uses smokeless tobacco. Khaini is the most used smokeless tobacco product among men.

In this study we have tried to highlight the use of smokeless tobacco among the males of Bihar. This study also tells about the socio-economic background of smokeless tobacco users such as how much they are educated, in strata of the wealth quantile they fall in, in what occupation they are involved, etc. This study is based on secondary data provided by the National Family Health Survey-4, Ministry of Health and Family welfare, India which is more of a qualitative data, therefore the study focuses more on the qualitative aspects such as proportion of people involved in the consumption of smokeless tobacco.

II. OBJECTIVES

1. To observe the pattern of smokeless tobacco consumption among the males in Bihar with help of socio-economic background characteristics.
2. To see the prevalence of smokeless tobacco consumption among males in various districts of Bihar.

III. DATA

Data from male file of National Family Health Survey-4 has been used. NFHS provides various information at individual level of both male and female which includes social, economic, religious, health indicators, etc. For this study we require tobacco consumption data of the men of Bihar which is available in male file of NFHS-4. The National Family Health Survey (NFHS) is a large-scale, multi-round survey conducted in a representative sample of households throughout India. NFHS has had two specific goals: a) to provide essential data on health and family welfare needed by the Ministry of Health

and Family Welfare and other agencies for policy and programme purposes, and b) to provide information on important emerging health and family welfare issues.

IV. METHOD

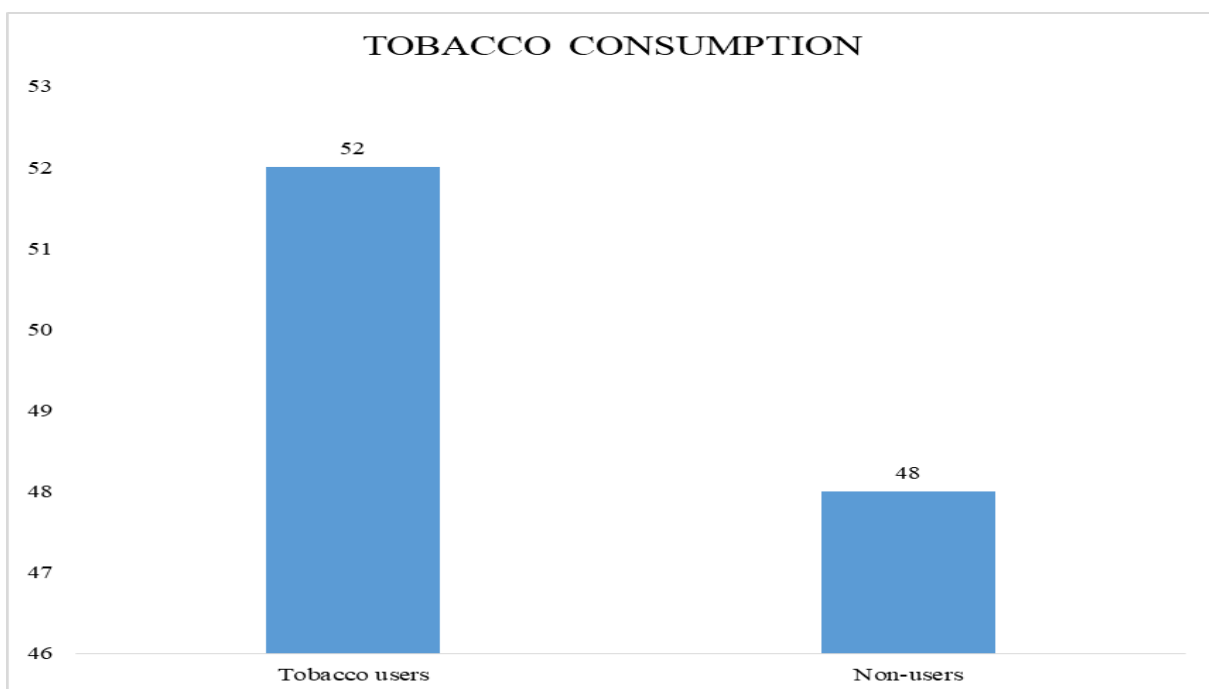
Bivariate and multivariate analysis has been carried out to see the smokeless tobacco consumption among males 15-54 age group with help of various independent variables. The prevalence of smokeless tobacco consumption has been seen with respect to following independent variables (i) place of residence (ii) five-year age group (iii) education level (iv) wealth quantile (v) type of occupation (vi) across districts.

V. RESULT

This paper focuses on the consumption of smokeless tobacco among males of Bihar as the males are more prone to consume smokeless tobacco. Socio-economic variables such as place of residence, education, wealth index, occupation have been considered to see the prevalence of smokeless tobacco. The results of the analysis show that

- (i) Consumption is highest among the age group 35-39.
- (ii) Among men, the proportion of smokeless-tobacco users is higher in rural areas (84%) than in urban areas (16%).
- (iii) It is found that men having secondary level of education have higher smokeless tobacco consumption than others.
- (iv) Considering standard of living the poor men are consuming more smokeless tobacco than middle and rich.
- (v) Among 38 districts of Bihar, Patna leads in the proportion of men using smokeless tobacco.
- (vi) Considering occupation prevalence of smokeless-tobacco consumption is highest among the men involved in agriculture.

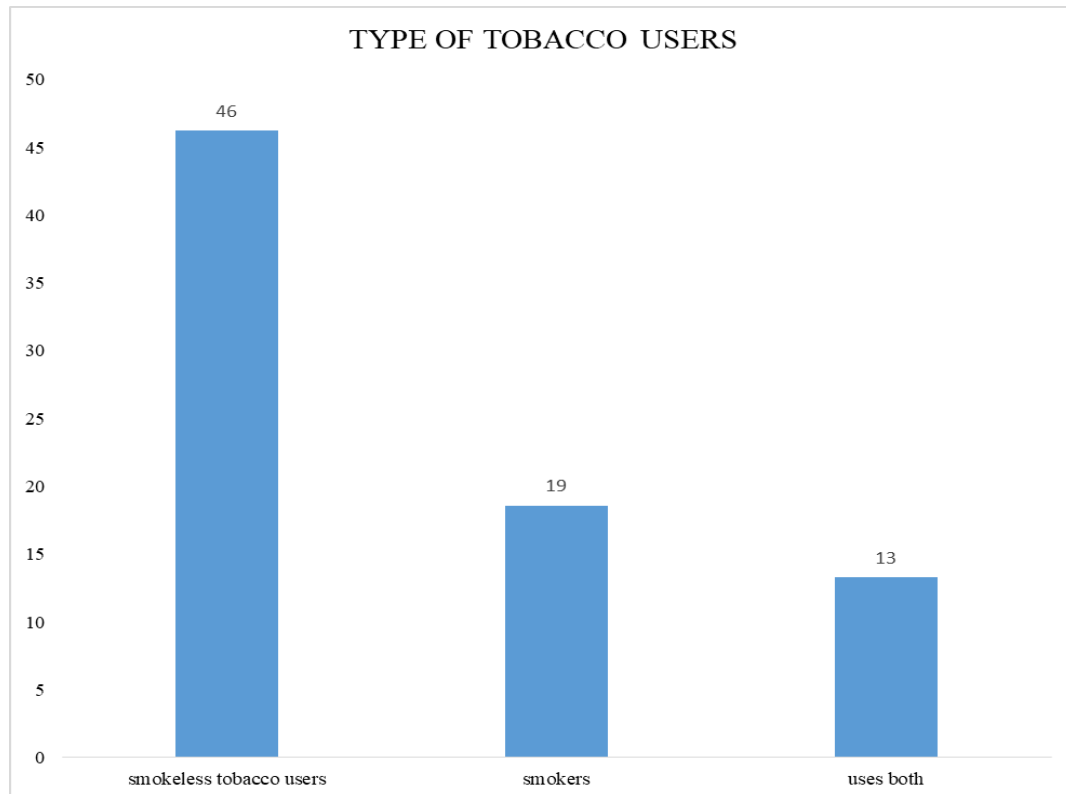
Graph 1. Tobacco consumption among males of Bihar (NFHS-4)



Graph 1 shows the proportion of males of Bihar consuming tobacco in any form (either smoked or smokeless). Out of total sample of 5872 men, around 52% are tobacco users whereas around 48% of men do not use any kind of tobacco product.

The proportion of tobacco users in the population is higher than that of the proportion of tobacco non-users of the total sample size.

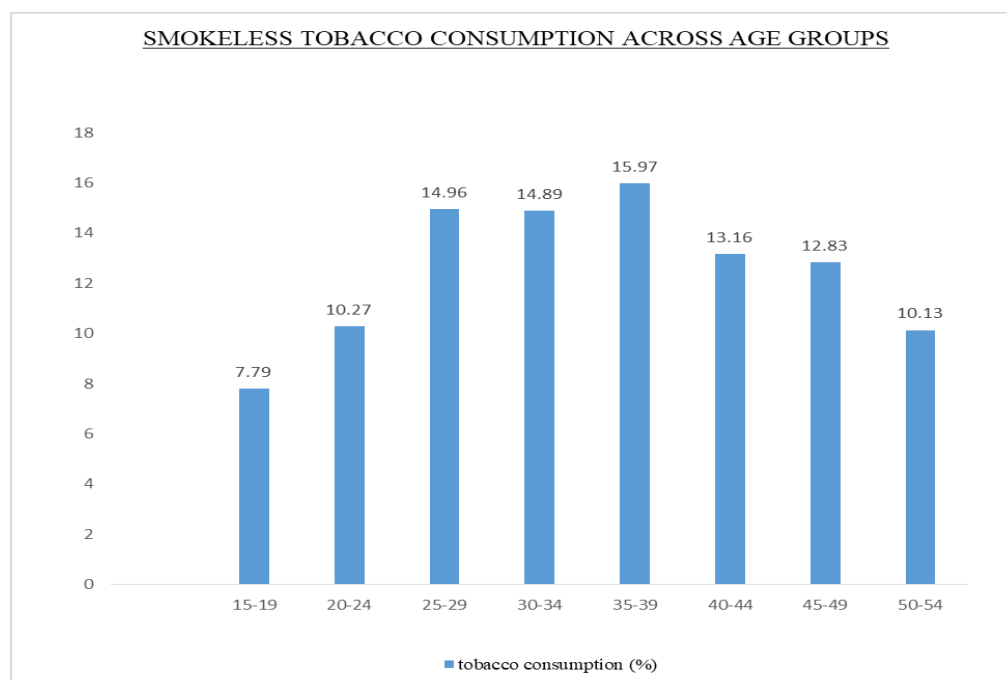
Graph 2. Type of tobacco users among males of Bihar (NFHS-4)



Graph 2 shows the proportion of males in Bihar using various type of tobacco which includes smokeless tobacco users, smokers, and the proportion who consumes both (smokeless-tobacco and smoked tobacco). Out of 3031 total male tobacco

consumers proportion using smokeless tobacco is 46% while the proportion of smokers is 19% and the proportion of male population involved in both kind of tobacco consumption is 13%.

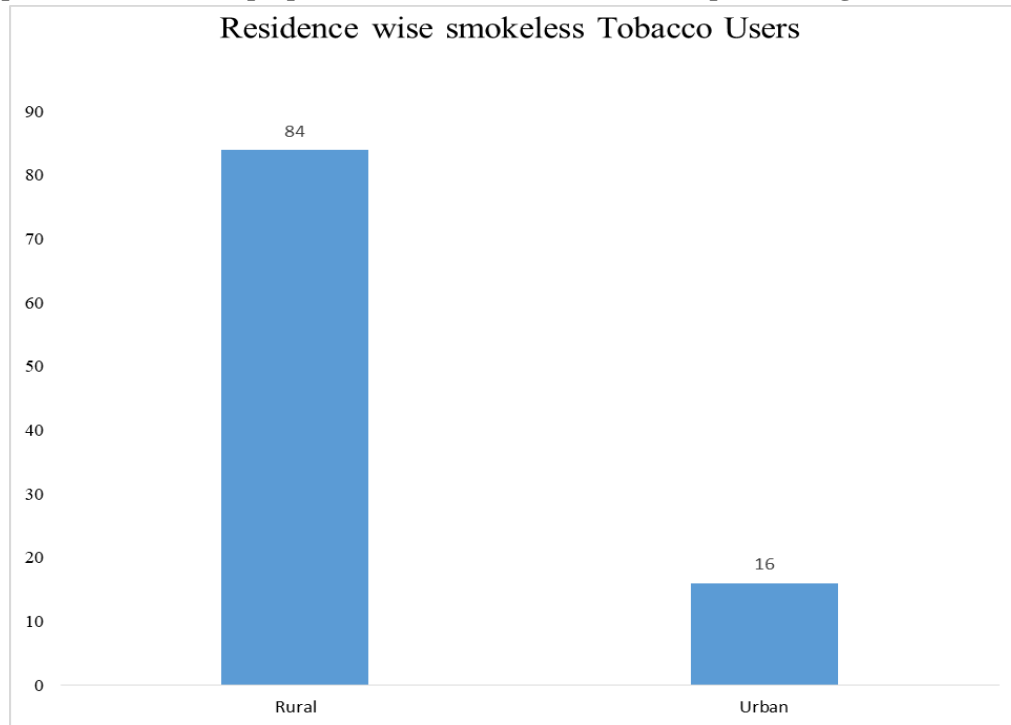
Graph 3. Smokeless-tobacco consumption in various age-groups of males in Bihar (NFHS-4)



Graph 3 shows the proportion of smokeless-tobacco consumers among various age groups of males in Bihar. The age group considered in NFHS-4 is 15 to 54 in five years age interval. The prevalence of smokeless-tobacco consumption is

maximum in the age group 35-39 (15.97%), followed by the age group 25-29 (14.96%), 30-34(14.89%). The consumption is least in the age group 15-19(7.79%). Consumption is highest among the males of 25 to 40 years of age.

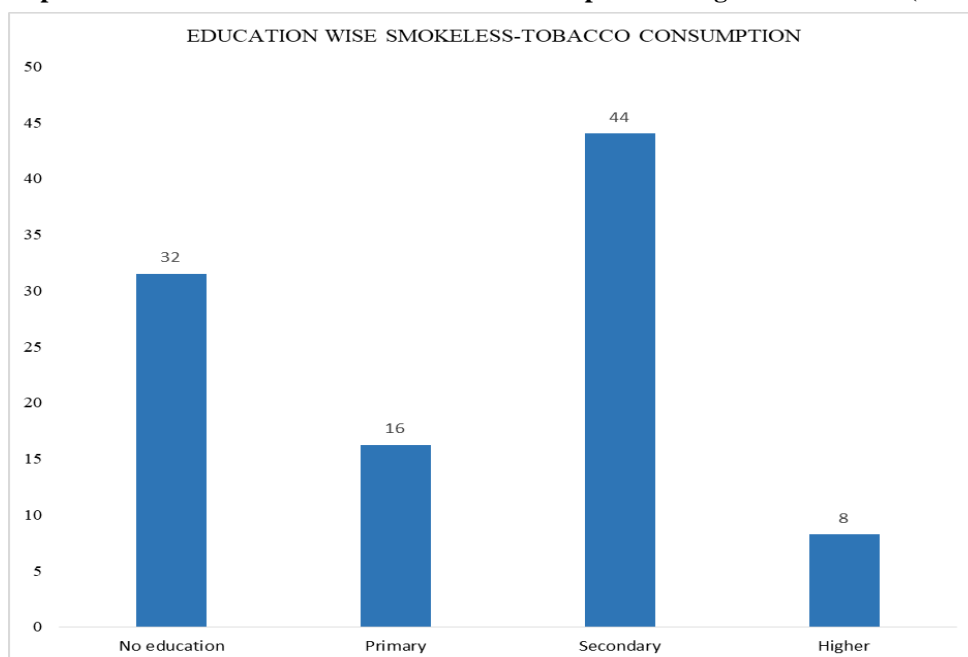
Graph 4. Residence wise proportion of smokeless-tobacco consumption among males of Bihar (NFHS-4)



Graph 4 shows smokeless-tobacco consumption according to the place of residence which is rural and urban. The prevalence is high among male living in rural areas (84%)

than the male living in urban areas(16%). The consumption in rural is around five times higher than that of urban areas.

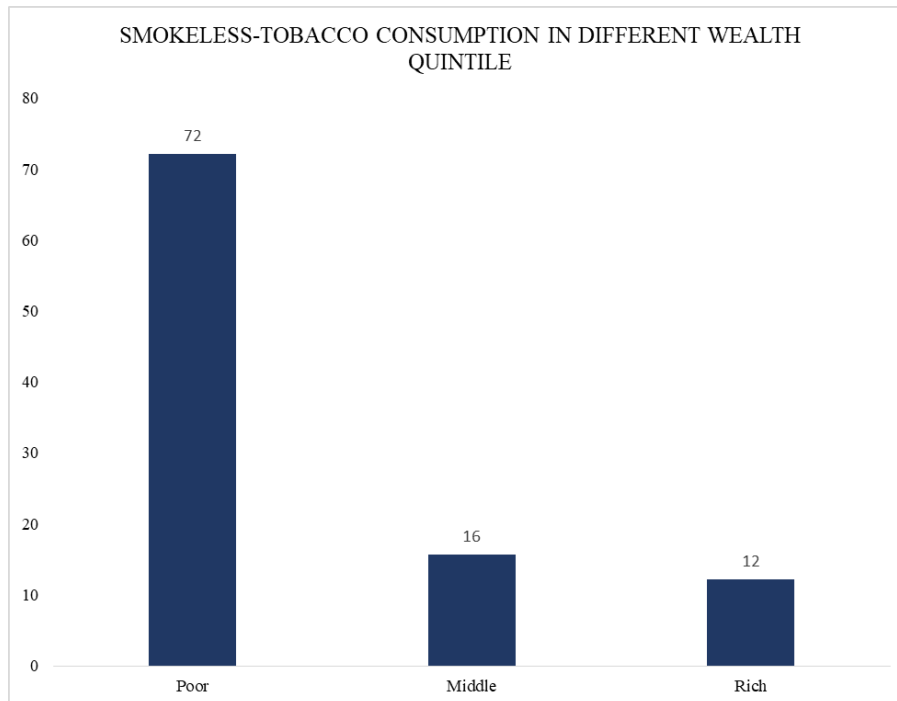
Graph 5. Education wise smokeless-tobacco consumption among males of Bihar (NFHS-4)



Graph5 shows variation in the consumption of smokeless tobacco consumption irrespective of level of education among the males of Bihar. The proportion of smokeless tobacco consumption is highest among the male having secondary

level of education (44%), followed by the uneducated males (32%). The prevalence is least among the males having higher level of education (8%).

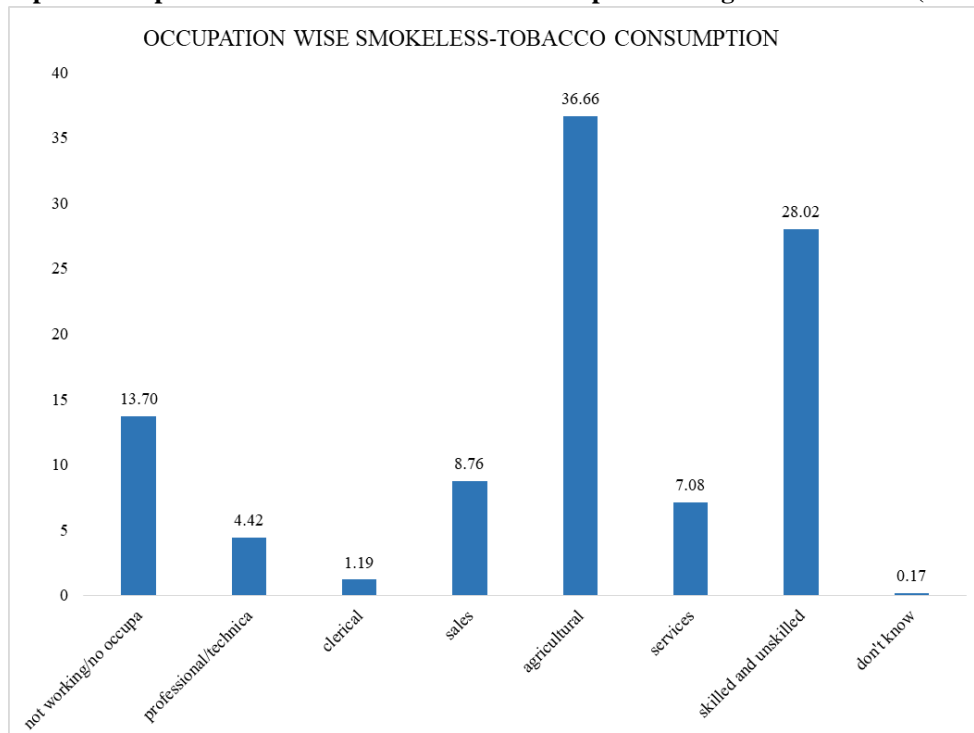
Graph 6. Smokeless-tobacco consumption in different wealth quantiles among males in Bihar (NFHS-4)



Graph 6 shows the proportion of smokeless tobacco consumers of different wealth quintile. Males of poor wealth quintile share the highest proportion in the consumption of smokeless tobacco consumption (72%) while the males of rich

wealth quintile share the least proportion(12%) . The consumption among poor males is around six times higher than the rich males.

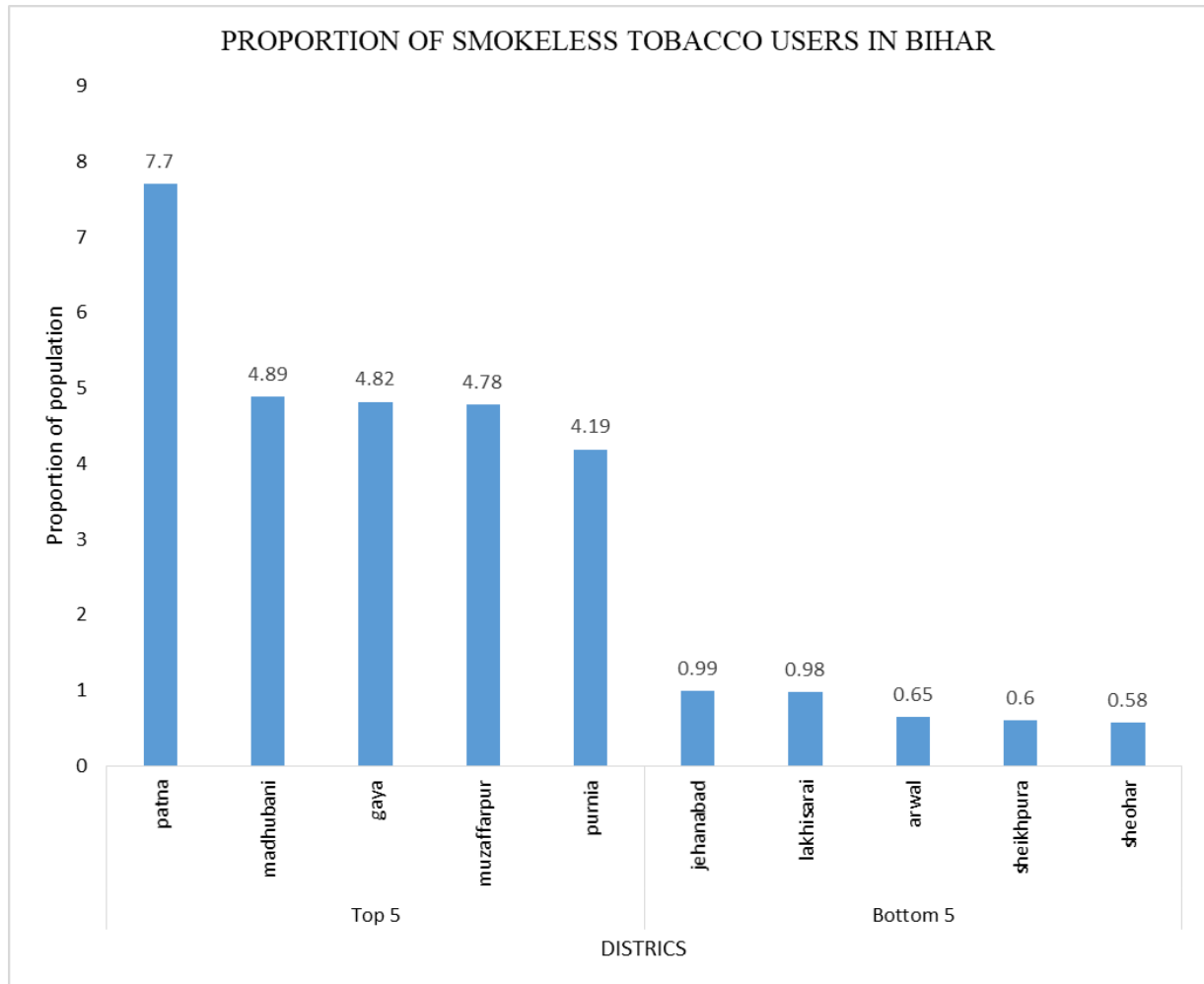
Graph 7. Occupation wise smokeless-tobacco consumption among males of Bihar (NFHS-4)



Graph 7 shows the proportion of smokeless tobacco consumption among males of different occupation. Males involved in agricultural sector share the highest proportion in the consumption of smokeless tobacco consumption(36.66%),

followed by the males involved in males involved in skilled and unskilled sector(28.02%) and males who are unemployed(13.70%).

Graph 8. Top 5 and bottom 5 districts of Bihar in Smokeless tobacco consumption among males in Bihar (NFHS-4)



Graph 8 shows top 5 and bottom 5 districts of Bihar according to the proportion of smokeless tobacco consumption among males. The proportion is highest in Patna(7.7%) followed by Madhubani(4.89%), Gaya(4.82%),

Muzaffarpur(4.78%), Purnia(4.19%). While the proportion is least in Sheohar (0.58%) followed by Sheikhpura(0.6%), Arwal(0.65%), Lakhisarai(0.98%), Jehanabad(0.99%).

Table 1. Proportion of Smokeless Tobacco consumers across different districts of Bihar

DISTRICT	NO	YES
Patna	7.36	7.7
Madhubani	4.29	4.89
Gaya	3.58	4.82
Muzaffarpur	5.02	4.78
Purnia	2.52	4.19
Purba Champaran	3.56	4.1
Begusarai	3.56	3.91
Pashchim Champaran	5.23	3.69
Rohtas	3.06	3.58
Vaishali	2.25	3.57
Saran	3.69	3.47
Sitamarhi	3.97	3.3
Samastipur	3.66	3.18
Bhagalpur	3.73	3
Darbhanga	4.71	2.89
Araria	2.4	2.56
Bhojpur	2.67	2.55
Katihar	2.41	2.51
Banka	2.55	2.37
Nalanda	2.46	2.32
Siwan	3.64	2.2
Kishanganj	1.48	2.06
Nawada	1.47	1.91
Supaul	1.91	1.91
Saharsa	1.66	1.89
Khagaria	1.28	1.86
Madhepura	1.43	1.8
Aurangabad	1.56	1.8
Buxar	1.88	1.64
Kaimur (Bhabua)	1.5	1.54
Gopalganj	2.82	1.49
Jamui	2.06	1.42
Munger	1.44	1.3
Jehanabad	0.72	0.99
Lakhisarai	0.69	0.98
Arwal	0.59	0.65
Sheikhpura	0.53	0.6
Sheohar	0.65	0.58
Total	3,098	2,774

The table shows the proportion of smokeless-tobacco users(2774) and non-users(3098) across all the 38 districts of Bihar. From the total sample smokeless-tobacco consumers

highest proportion is found in Patna and the lowest found in Sheohar.

VI. CONCLUSION

The study shows that the prevalence of smokeless tobacco consumption among men is higher than smoked tobacco consumption. While studying the pattern of smokeless tobacco consumption in Bihar, it is found that men involved in agricultural occupation have the highest prevalence of smokeless tobacco consumption, therefore, it is obvious that the prevalence is higher in rural areas than urban areas. Broadly it can be observed that the consumption is highest among the males between 25 to 40 years of age. While considering education level the prevalence of smokeless tobacco consumption is surprisingly higher among men having 'secondary level' of education than men having 'no education', 'primary level', and 'higher level' of education. As tobacco is a cheap form of nicotine addiction, therefore its certainly higher among the poor men of Bihar than the rich-income and middle-income groups. Out of 2774 male smokeless-tobacco consumers in Bihar, highest proportion is found in Patna district where as least is in Sheohar. Policy makers should consider socio-economic patterning of smokeless-tobacco use when designing, implementing and evaluating tobacco control interventions in different states of India.

REFERENCES

- [1] Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2017 (GBD 2017) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2018.
- [2] International Institute for Population Sciences (IIPS) and MoHFW. National Family Health Survey -4. 2017. Available from: <http://rchiips.org/nfhs/pdf/NFHS4/India.pdf>. Accessed November 12, 2019
- [3] Sinha, D. N., Gupta, P. C., & Pednekar, M. S. (2003). Tobacco use in a rural area of Bihar, India. *Indian Journal of Community Medicine*, 28(4), 167-170.
- [4] Bhawna, G. (2013). Burden of smoked and smokeless tobacco consumption in India-results from the global adult tobacco survey India (GATS-India)-2009-2010. *Asian Pacific Journal of Cancer Prevention*, 14(5), 3323-3329.
- [5] Shimkhada, R., & Peabody, J. W. (2003). Tobacco control in India. *Bulletin of the World Health Organization*, 81, 48-52.
- [6] Sorensen, G., Gupta, P. C., & Pednekar, M. S. (2005). Social disparities in tobacco use in Mumbai, India: the roles of occupation, education, and gender. *American journal of public health*, 95(6), 1003-1008.
- [7] Murukutla, N., Turk, T., Prasad, C. V. S., Saradhi, R., Kaur, J., Gupta, S., ... & Wakefield, M. (2012). Results of a national mass media campaign in India to warn against the dangers of smokeless tobacco consumption. *Tobacco Control*, 21(1), 12-17.
- [8] Thakur, J. S., Prinja, S., Bhatnagar, N., Rana, S., Sinha, D. N., & Singh, P. K. (2013). Socioeconomic inequality in the prevalence of smoking and smokeless tobacco use in India. *Asian Pacific Journal of Cancer Prevention*, 14(11), 6965-6969.
- [9] Gupta, R. (2006). Smoking, educational status & health inequity in India. *Indian Journal of Medical Research*, 124(1), 15.
- [10] Gupta, I., & Sankar, D. (2003). Tobacco consumption in India: a new look using data from the National Sample Survey. *Journal of public health policy*, 24(3-4), 233-245.
- [11] Pandey, A., Patni, N., Sarangi, S., Singh, M., Sharma, K., Vellimana, A. K., & Patra, S. (2009). Association of exclusive smokeless tobacco consumption with hypertension in an adult male rural population of India. *Tobacco induced diseases*, 5(1), 15.
- [12] Singh, A., & Ladusingh, L. (2014). Prevalence and determinants of tobacco use in India: Evidence from recent global adult tobacco survey data. *PloS one*, 9(12), e114073.
- [13] Gupta, V., Yadav, K., & Anand, K. (2010). Patterns of tobacco use across rural, urban, and urban-slum populations in a north Indian community. *Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine*, 35(2), 245.
- [14] Sudarshan, R., & Mishra, N. (1999). Gender and tobacco consumption in India. *Asian Journal of Women's Studies*, 5(1), 84-114.
- [15] Chadda, R. K., & Sengupta, S. N. (2002). Tobacco use by Indian adolescents. *Tobacco induced diseases*, 1(2), 111.
- [16] Muttappallymalil, J., Sreedharan, J., & Divakaran, B. (2010). Smokeless tobacco consumption among school children. *Indian journal of cancer*, 47(5), 19.
- [17] Daniel, A. B., Nagaraj, K., & Kamath, R. (2008). Prevalence and determinants of tobacco use in a highly literate rural community in southern India. *Nat Med J India*, 21, 163-5.
- [18] Rao, V., & Chaturvedi, P. (2010). Tobacco and health in India. *Indian journal of cancer*, 47(5), 3.
- [19] Gupta, P. C., & Ray, C. S. (2003). Smokeless tobacco and health in India and South Asia. *Respirology*, 8(4), 419-431.
- [20] Agrawal, S., Karan, A., Selvaraj, S., Bhan, N., Subramanian, S. V., & Millett, C. (2013). Socio-economic patterning of tobacco use in Indian states. *The International Journal of Tuberculosis and Lung Disease*, 17(8), 1110-1117.
- [21] Vellappally, S., Jacob, V., Smejkalová, J., Shriharsha, P., Kumar, V., & Fiala, Z. (2008). Tobacco habits and oral health status in selected Indian population. *Central European journal of public health*, 16(2).
- [22] Reddy, K. S., Shah, B., Varghese, C., & Ramadoss, A. (2005). Responding to the threat of chronic diseases in India. *The Lancet*, 366(9498), 1744-1749.
- [23] Anand, P. S., Kamath, K. P., Shekar, B. R., & Anil, S. (2012). Relationship of smoking and smokeless tobacco use to tooth loss in a central Indian population. *Oral health & preventive dentistry*, 10(3).
- [24] Thakur, J. S., Prinja, S., Bhatnagar, N., Rana, S. K., Sinha, D. N., & Singh, P. K. (2015). Widespread inequalities in smoking & smokeless tobacco consumption across wealth quintiles in States of India: Need for targeted interventions. *The Indian journal of medical research*, 141(6), 789.