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RESEARCH ARTICLE

A COMPARATIVE STUDY OF TOBACCO CONSUMPTION, ITS DEPENDENCY & EFFECTS ON BLOOD PRESSURE AMONG TRIBAL AND NON TRIBAL ADULTS OF A RURAL BLOCK IN A TRIBAL DISTRICT OF CENTRAL INDIA

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ABSTRACT

Tobacco Consumption is widely prevalent habit among Tribals & Non Tribals. Awareness about its hazardous effects is important to reduce the number of tobacco users and its dependency in them. Objectives are To find out the Magnitude of Tobacco Consumption among Tribal & Non Tribal, Its dependency status & Effects on Blood Pressure. A cross sectional study using Multi stage Random Sampling Method with house to house visits. Sample size came out 300 each from the Tribal &Non Tribal adults. Study was conducted in Narayanganj block of Mandla District. Tobacco consumption among Tribal 182 (60.7%) &Non Tribal 141 (47%) the difference was found to be Significant *{χ2 = 11.27; p < 0.001}*. Tobacco smoking in any form among tribals was 19 subjects (6.3 %) and among non tribals 32 subjects (10.3%). It was not found to be significant {χ2 = 3.62, p= 0.057}. The trend of Karl Fagersrom Score was shifted more towards tribals *{χ^2_{trend} = 31.47, P < 0.001}*. The association of hypertension and tobacco consumption was strong. Our study shows that the habit of Tobacco Consumption, its dependency & its association with Hypertension was more among Tribals.

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INTRODUCTION

Tobacco Consumption in any form is widely prevalent &socially accepted behavior in society. India being the second largest consumer and the third largest producer of tobacco products in the world (Jayakrishnan *et al*., 2012). Tobacco use is the leading cause of preventable deaths and one of the biggest threats to public health globally. The major burden of tobacco related health problems are faced by low and middle income countries. The Global adult tobacco survey conducted in 2009-10 published by WHO reveals that the prevalence of overall tobacco use among males in India is 48 percent and that among females is 20 percent. (WHO 2011) According to WHO, 90% of smokeless tobacco users live in South-East Asia. (http://www.searo.who.int/mediacentre/releases/2013/pr1563/en) NFHS-3 conducted in the years 2005-2006 puts the prevalence rate of current tobacco use at 57% and 10.8% among males and females aged 15-49 years. (International Institute for Population Sciences. National Family Health Survey (NFHS-3) 2007) Tobacco chewers had a significantly higher values of systolic blood pressure (BP), diastolic BP, resting heart rate. (Gupta and Kaushik, 2015) Long use of Tobacco makes the individual dependent on it. Tobacco/ nicotine dependence has been included in standardized psychiatric diagnostic criteria such as ICD-10 (International Classification of Diseases 10th revision, 1992) &DSM-III-R (DSM-IV, American Psychiatric Association, 1994) According to American Psychiatric Association 1994, Tobacco/nicotine dependence is defined as a cluster of cognitive, behavioral, and physiological symptoms for which the individual attributes use of tobacco despite significant tobacco-related problems. The Fagerstrom Test for Nicotine Dependence (FTND), a 6 item questionnaire, was introduced and has gained wide popularity since 1991. The FTND is considered as easy to obtain self-reporting tool that conceptualize dependence through physiological and behavioral symptoms. (Perez-Rios *et al*., 2009) Studies conducted in different contexts had shown high test, reliability and consistency for the FTND scale. (Weinberger *et al*., 2007) Tobacco Consumption in any form is Increasing in rural as well as in tribal pockets of the country, also the lack of awareness about the hazardous effects of its consumption makes the situation grim & alarming therefore we

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opted for this study to explore the magnitude of the problem not only in rural non tribal but also in tribal people of this backward tribal district of Madhya Pradesh – Mandla.

MATERIALS AND METHODS

Ethical Consideration

This study plan has got Ethical clearance from the Institutional Ethical Committee of NSCB Medical College Jabalpur & Informed Written Consent was taken from each participating subjects and in case of any illiterate subjects this consent was read out to him/her.

METHEDOLOGY

A cross sectional study was conducted in Narayanganj block of Mandla Tribal District of Madhya Pradesh during 01 October 2014 to 30th September 2015. Multistage simple random sampling method was used to select the study subjects. The sample size was drawn by applying calculation method for qualitative data with 25 % prevalence rate & with 5 as allowable error (20% of the prevalence). It was done separately for tribal & Non tribal subjects that came out to be 288 that was rounded to 300 each for respective group hence 600 total subjects. A pretested & pre- designed questionnaire was filled with house to house method. Having chosen the block on first stage, 20 villages were selected randomly and lastly from every village 15 tribal & 15 non tribal adults were chosen randomly by house to house visit method where a pre tested & pre designed questionnaire were filled. For Nicotine Dependency Study subjects was assessed by means of the six-item Fagerström Test for Nicotine Dependence (FTND) translated into Hindi language Dependency for nicotine was measured. Tobacco consumption and the Fagerstrom Nicotine Tolerance Questionnaire–This is a set of 6 questions having a maximum score of 10 which categorizes the consumers of tobacco into various grades of dependence (0-3 = Low; 4-6= Medium; 7-10= High). (Perez-Rios *et al*., 2009) Blood pressure of the study subjects was also recorded at the time of interview by using calibrated BP Measuring Instrument.

Inclusion Criteria

All the subjects above 18 years of age.

Exclusion Criteria

1. Terminally ill patient& Mentally Retarded Individuals who couldn't respond to the items in Questionnaire.
2. Pregnant Females, Lactating others, Post Partum Females (Up to 12 weeks).
3. Adults not willing to be the part of study/Those who denied.
4. Patients of Hypertension on Medication

Operational definition of hypertension

The operational definition of hypertension was taken from The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. (Chobanian *et al*., 2003)

Statistical analysis

Analysis was done using SPSS (Version 20, IBM, USA)

RESULTS

About the age wise distribution (Bar Diagram No. 1), The majority (31.6% & 25.3%) of the subjects in both the studied groups were found to be in the age group of 18-29 years respectively for Tribals and Non Tribals. least numbers of people were found in the age group of above 60 years in both Tribals (7.0%) & non Tribals (5.6%). Mean age were observed at 40.03(±4.02) years for Tribal subjects and 39.07(±4.25) years for Non Tribal subjects. Statistically there were no significant difference between the mean age of both the groups. {t= 1.84; p>0.05}. The gender distribution revealed (Bar Diagram No. 2) A total of 127 (42.3%) males & 173 (57.7%) females were found among Tribals population and among Non Tribal subjects males were 139 (46.3%) & females were 161 (53.7%). Statistically there was no significant difference in the proportion of Male and Female subjects in both studied groups. ($\chi 2$ = 0.972; p= 0.324). Regarding distribution of smokeless tobacco consumption in any form among study subjects (Table 1) Smokeless tobacco chewing in plain form or other forms such as Khaini or Gutkas whether daily or occasional was found to be more in the Tribal subjects (60.7%) than in Non tribal study subjects (47%) and this was significantly higher showing that the tribal population consumes more tobacco. (Chi Square=11.27; p < 0.001). About the Tobacco Smoking in both the studied groups and as observed Tobacco Smoking in any form such as Bidi, Cigarettes, Gudaku and Chilametc (Table No.2) were found to be more in Non tribal study group (10.7%) as compare to Tribals (6.3%). Chi square value was found to be 3.622 & the difference was not significant (p > 0.05).{$\chi 2$ Tribal Smoking V/s Non tribal Smoking = 3.62, p= 0.057; OR =0.57 (95%CI= 0.30 -1.06)} About the finding of the Karl Fagerstrom nicotine score (Table No. 3) in both the studied groups, In Tribal subjects 27.2% cases were found with 0-3 score, 55.9% with 4-6 score and 16.9% with 7-10 score category while in Non Tribal groups the score findings were 60.7% (0-3), 29.5% (4-6), 9.8% (7-10).Chi Square linear trend was used for this scale & a significant linear trend was observed which indicates that the tribal population found with higher KF scores than that of Non Tribals. *{χ^2_{trend} = 31.47, P < 0.001}* The association of hypertension and tobacco consumption (Table No. 4) was strong & among the tribal population 74.4% of the hypertensive subjects were tobacco chewers while among the non tribal this proportion was 57.4%, having a significant difference. (p<0.05). *{χ2 Tribal Vs Non Tribal = 4.026 , P = 0.04479; OR=2.141, 95% CI 1.0123- 4.531}*

Table 1. Distribution of smokeless tobacco consumption in any form among study subjects

Tobacco Consumption	Tribals (N=300)	Non Tribals (N=300)	Total
Yes	182 (60.7%)	141 (47%)	323 (53.8%)
No	118 (39.3%)	159 (53%)	277 (46.2%)
TOTAL	300 (100%)	300 (100%)	600 (100%)

{χ2 Tribal Smokeless Tobacco Users Vs Non Tribal Smokeless tobacco users = 11.27, p <0.001; OR =1.74 (95%CI= 1.7 -2.4.)}

Table 2. Distribution of tobacco smoking in any form among the study subjects

Tobacco Smoking	Tribals (N=300)	Non Tribals (N=300)	Total
Yes	19 (6.3%)	32 (10.7%)	51 (8.5%)
No	281 (93.7%)	268 (89.3%)	549 (91.5%)
TOTAL	300 (100%)	300 (100%)	600 (100%)

{χ2 Tribal Smoking V/s Non tribal Smoking = 3.62, p= 0.057;OR =0.57 (95%CI= 0.30 -1.06)}

Table 3. Distribution of Karl fagerstrom nicotine score (KF score) among subjects who consumed tobacco in any form (smokeless & smoking)

KF Score	Tribals (N = 195)	Non Tribals (N = 173)	Total (N = 368)
Low (0-3)	53 (27.2%)	105 (60.7)	158 (42.9%)
Medium (4-6)	109 (55.9%)	51 (29.5%)	160 (43.5%)
High (7-10)	33 (16.9%)	17 (9.8%)	50 (13.6%)
TOTAL	195 (100%)	173 (100%)	368 (100%)

$\{\chi^2_{trend} = 31.47, df = 1, P < 0.001\}$

Table 4. Association of hypertension with consumption of tobacco (both smokeless & smoking) in any form in study subjects

Tobacco Consumption	Tribal Subjects with Hypertension (n=66)	Non Tribal Subjects with Hypertension (n=61)	Total Subjects with Hypertension (n=127)
Yes	49 (74.24%)	35 (57.4%)	84 (%)
No	17 (25.76%)	26 (42.6%)	43 (%)
TOTAL	66 (100%)	61 (100%)	127 (100%)

{χ2 Tribal Vs Non Tribal = 4.026, df =1, P = 0.04479; OR=2.141, 95% CI 1.0123- 4.531}

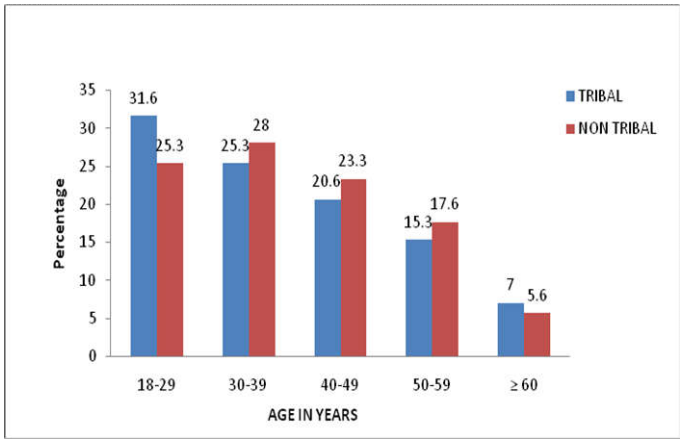

Figure 1. Age wise distribution of the study subjects

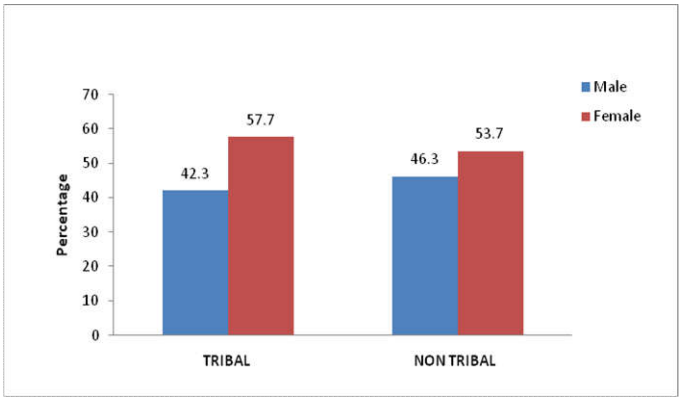

Figure 2. Gender wise distribution of the study subjects

DISCUSSION

Our study showed that majority of the subjects in both the studied groups were found to be in the age group of 18-29 years respectively for Tribals (31.6%) and Non Tribals (25.3%).least numbers of people were found in the age group of above 60 years in both Tribals (7.0%) & non Tribals (5.6%). Mean age were observed at 40.03(±4.02) years for Tribal subjects and 39.07(±4.25) years for Non Tribal subjects. The gender wise distribution of both Tribal and Non Tribal groups. A total of 127 (42.3%) males & 173 (57.7%) females were found among Tribals population and among Non Tribal subjects males were 139 (46.3%) & females were 161 (53.7%). Statistically there was no significant difference in the proportion of Male and Female subjects in both studied groups. [χ2 = 0.972; p= 0.324]. The higher proportion of female subjects in both study and control groups were only due to their availability at home at the time of interview/survey and most of the time males of these families have temporarily migrated for their wage earning. Prevalence of Smokeless tobacco use was overall 53.8 % (60.7 % among Tribals, 47 % among Non Tribals) Difference was significant {χ2 = 11.27 ; p < 0.001} (Table 1). NNMB survey report of 2011-12 found 51 % men & 17% women were consuming tobacco in any form[11] IDSP NCD Risk Factor survey found smokeless tobacco users in MP was 39% (Integrated Disease Surveillance Project, 2005-06) The National Household Survey of Drug and Alcohol Abuse in India (NHSDAA), conducted in 2002 among males, covered over 40,000 individuals aged 12.60 years in nearly 20,000 households in 25 states. The overall prevalence of current tobacco use from the NHSDAA was 55.8%. (NHSDAA Survey Report, 2002)

Manimunda *et al*. (2011) found that in both males & females Tribal about 88 % consumed tobacco in Car Nicobar Island. (Manimunda *et al.,* 2011) We found that among non tribals 10.7 % & among tribals 6.3% were tobacco smokers, (Table No. 2) but the difference was not significant. (Chi square = 3.62, p >0.05) In IDSP NCD risk factor Survey Report M.P, 2005-06 the prevalence of smoking tobacco among adults was 12 %.[12] S.K. Jindal *et al*. (2006) found about prevalence of smoking as 15%. (Jindal *et al*., 2006) Anshuman *et al*. found about 28 % smoking among a rural population of MP. (Anshuman Sharma *et al*., 2015) Our Study Shows the Dependency Status i.e KF Nicotine Score among tribals was

found to be more as compare to Non tribals. The Linear Chi Square trend was 31.47, p value < 0.001. Showing significant Tobacco / Nicotine Dependency among tribal population. (Table - 3) Mrudu Herbert *et al*. (2012) found in a study at Bangalore that 54 % smokers & 63 % smokeless tobacco users had moderate to high levels of Nicotine Dependency score. (Mrudu Herbert *et al*., 2012) Manimunda *et al*. (2011) used KF score in tribal population, Nicobarese tribe living in Car Nicobar Island, India. (Manimunda *et al.,* 2011) The association of hypertension and tobacco consumption (Table 4) was strong & among the tribal population 74.4% of the hypertensive subjects were tobacco Consumers (both smokeless & smoking) while among the non tribal this proportion was 57.4% and having a significant difference. NNMB in its Technical Report No: 24, NIN, Indian Council of Medical Research (ICMR), found that Tobacco Intake was significantly ($p<0.01$) associated with hypertension among tribal population in their study in nine states of India. (Meshram *et al*., 2005) Kokiwar Prashant *et al*. 2011 in his study, Prevalence of hypertension in a rural community of central India, found that tobacco use was significantly associated with hypertension in the study population. (Kokiwar Prashant *et al*., 2011)

Similar finding was reported by Malhotra *et al*. (1999)

Westman (1995) found the use of smokeless tobacco has been associated with an increase in blood pressure consequent to its effect on sympathetic system. Which directly correlates with the findings of our study.

Conclusion

Our study shows that Smokeless tobacco consumption was more in the tribal population. The Nicotine Dependency trend was shifted towards tribal Population. The Association of Hypertension with Tobacco Consumption was also more in Tribal Subjects.

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Declarations

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