

## Prevalence and determinants of smoking status among the general peoples of different ages in Medinipur Municipality area, Paschim Medinipur district, West Bengal, India

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### Abstract

In 2015, over 1.1 billion people smoked tobacco and the number of men smoking tobacco in rose to 108 million, an increase of 36%, between 1998 and 2015. However, smoking among the people is still more common in high-income than in low and middle-income countries. Still now there is no such data base are developed regarding smoking in Midnapur town. So the main objective of the present study was to examine the prevalence and determinants of smoking data base among the general peoples of Medinipur Municipality area, Paschim Medinipur District, West Bengal, India. This cross-sectional study was conducted for 3 months in 22 wards of Medinipur Municipality, Paschim Medinipur district, West Bengal, India. Total 1173 subjects out of 2178 (both male and female) from municipality area were selected randomly and data was collected by questionnaire plus direct interview method. Sample analysis was conducted (through percentage calculation and two tail Chi-square test) and evaluates the determinants smoking status. So from this survey it was concluded that tobacco use through smoking was a major public health problem in this Midnapure Municipality area as like other small towns. This study also provides a valuable insight into the tobacco use pattern of the people of Medinipur Municipality and its determinants. A larger study longitudinal in nature needs to be done to get the risk factors. Data provided by this study could be used for surveillance, developing evidence-informed multi-sectorial policy, strategies and interventions.

**Keywords:** Tobacco user (Current and former), Bidis Smoking, Cigarette Smoking, Medinipur Municipality, West Bengal, India

### 1. Introduction

Tobacco smoking is among the largest preventable causes of premature deaths globally (Jha and Peto, 2014). In 2010, an estimated 120 million Indian adults smoked, making India second only to China in number of smokers (Shafey et al.,

2009; GATS, The Global Adult Tobacco Survey, 2010). Historically, most of the smoked tobacco in India has been in the form of bidis, small locally made cigarettes with tobacco wrapped inside a Tendu leaf. In 2010, smoking caused about 1 million deaths or 10% of all deaths in

India, with about 70% of these deaths occurring at the ages of 30–69 years (Jha et al., 2008; Gajalakshmi et al., 2003). The patterns of use of bidis or manufactured cigarettes vary across different regions and socioeconomic levels (Rani et al., 2003; Subramanian et al., 2004). A recent report revealed by the WB Government on the current trends of public health, 62.4% of NCD deaths were caused by heart diseases and strokes due to tobacco practice. The habit of smoking is a major cause of physiological and psychological health problems which can also affect on public health, education and society (Bhowmick et al., 2013; Das et al., 2012). GATS report (2009-10) in India showed that nearly one-quarter (21%) of adults use smokeless tobacco exclusively, whereas only 9% of adults use smoked tobacco exclusively. A study carried out by the Department of Community Medicine of Medinipur Medical College in Paschim Medinipur found out that in 70.12% of the population who were in the age group of 18-45 years, smoking was the main form of addiction (Biswas and Sarkar, 2010). Though many studies have been carried out in our country on prevalence of tobacco use and its different correlates, but very few of them, particularly in rural areas where the problem is highest. West Bengal is known for high prevalence of smoking among males. But there is no such informational data or statistics are present about the smoking with different aspect for Medinipur town. So that the present study was conducted to evaluate the prevalence of smoking pattern and its different correlates among persons aged 15 or more years, in the Midnapure Municipality area of Paschim Midnapur district, West Bengal, covering all the constitutive wards (22) of municipality by validated and reliable tested questionnaire methods with this special aims: To identify the socio-demographic and socio-

economic profile of the study subjects and to study the prevalence of smoking pattern and its different determinants along with tobacco dependence among common peoples (both male and female).

## **2. Methodology**

### **2.1. Selection of site**

Collection of sample from the study area designed (Study Area: 22 wards of Medinipur town, West Bengal, India) and randomly selection of sample among general Population. This cross-sectional study period was 3 months during February 2016 to April 2016. The Latitude of Medinipur town is 22.424°N and the Longitude of Medinipur town is 87.319°E. Total population (2011 census) is 1, 69, and 127 (Male 84,977, Female 84,287). Literacy rate 88.99%. (<http://www.wikipedia.org>)

### **2.2. Collection of Data**

#### **2.2.1. Questionnaire method**

The survey instrument used was adapted from a validated and reliable tested questionnaire. This study was distributed at variety of sites of Medinipur town in West Bengal, India including all the 22 wards among the general population. This method is applied to assess the prevalence of addiction to smoking. The questionnaire contains following topics: Practice of smoking, Types of addiction, Frequency of addiction, and causes for starting smoking.

#### **2.2.2. Sample size**

In the study area the total no. of collected sample is 1173 out of 2178.

#### **2.2.3. Inclusion criteria for sampling**

People who are willing to participate in this study.

#### **2.2.4. Exclusion criteria for sampling**

People who are not co-operative.

**2.3. Statistical analysis**

Descriptive analysis and percentage calculation was conducted to evaluate frequencies of the independent variables with smoking status. Two tail Chi-square test is conducted to assess the presence and strength of an association between the independent variables and smoking status. The statistical analysis was done to find out if there any significant difference between smokers and non smokers (male and female) and also including long term and current smoker.

**3. Results**

**3.1. Distribution (%) of subject based on Sex**

In the study area of 22 wards, total 2178 persons distributed out of which 1173 persons are included in the analysis with a response rate 53.8%. The sample distribution based on sex tabulated bellow. From the above results (Fig. 1) it was shows that out of the 1173 population the male percentage (59%) in the Medinipur municipality town is higher than the female percentage (41%).

**3.2. Distribution (%) of subject based on literacy level**

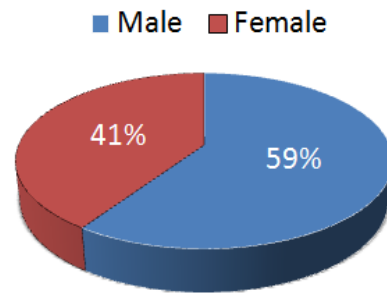
Out of total 1173 sample try to find out the literacy situation in this population. From the above results out of 697 male, illiterate 65(9%), primary 74(10%), M.P 171(25%), H.S 176(26%), Graduate 192(27%) and Post graduate 19(3%). In case of female out of 476 illiterate 58(12%), primary 62(13%), M.P 159(33%), H.S 132(28%), Graduate 60(13%) and post graduate 5(1%). In case of male graduate and in case of female Madhyamik passed are in higher in percentage (Fig. 2).

**3.3. Distribution (%) of subject by employment status**

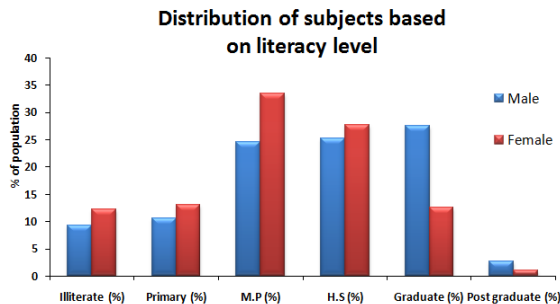
Depend on employment status the male and female samples are distributed to

several groups and these are explain by Table-1.

**Distribution of subjects based on sex**



**Figure 1: Pie diagram show the subject distribution on the basis of sex.**



**Figure 2: Histogram showing subjects distribution on the basis of literacy level.**

From above result table out of a total 697 male, unemployed 91(13%), unskilled 64(9%), Pvt. Employed 185(27%), Govt. Employed 285(41%), Self employed 48(7%) and House worker 22(3%). From above result table out of a total 697 male, unemployed 91(13%), unskilled 64(9%), Pvt. Employed 185(27%), Govt. Employed 285(41%), Self employed 48(7%) and House worker 22(3%).Whereas out of 476 female unemployed 134(28%), unskilled 10(2%), Pvt. Employed 32(7%), Govt. Employed 36(8%), Self employed 3(1%) and house worker 258(54%). In case of male govt. Employed percentage is higher (41%) but greater than females are of Medinipur town are house worker (54%).

**3.4. Distribution (%) based on monthly income status**

Based on monthly income status the total number of sample can also be distributed and this is tabulated in Table-2. Above results shows that most of the male 306(44%) earned 15001-25000 and other earned 45(6%) below 5000, (5001-8000) 77(11%), (8001-15000) 140(20%), (25001-40000) 111(16%) and above 40000 earned only 20 male (3%). In case of female no one earned above 40000, most of them 176(37%) earned lower than 5000. 147(31%) female earned 8000-15000 per month, 67(14%) and 52(11%) no of female earned 5001-8000 and 15001-25000 respectively, 34 female (7%) earned 25001-40000 per month.

**3.5. Smoking status based on age group**

The smoking status of the total population is distributed in five age groups obtain in Table- 3. From the above results out of a total 697 male higher percentage (28%) of male belongs to 25-33yr age group and higher no. (151) of smoker of male are also belongs to that age group. In case of female there is no smoker in 15-24yrs age group. Most of the female belongs to age group 35-42yrs (24%). Higher no. (11) of smoker is present in the age group >51yrs out of a total 24 smoker.

**3.6. Smoking status based on duration of smoking**

Based on duration of smoking smokers are divided into two groups (Table-4) and the smokers are distributed to these two categories. From the above result it is shows that out of 444 male smoker in the age group 25-33yrs most number (132) of smoker are long term smoker and large number of current smoker [53(72%)] are belong to 15-24 age group. Out of only 24

smoker most of the long term smokers belongs to the >51yrs age group and 25-33yrs age group has most of the current smoker. There is no current smoker for age group 15-24yrs and >51yrs, rest age group has only 1 current smoker.

**3.7. Various forms of tobacco consumed by different age categories**

Here we work on three kinds of tobacco products (cigarette, bidis and cigar) are smoked by the population. The population distributed on the basis of tobacco consumed in pre-determined age groups (Table-5). The graphical presentation shows that the lowest smoking tendency of bidis in the 15 -24 yrs (21.6%, male only) and highest in the 43-51yrs ( 67.12%), > 51 yrs (63.63%) age groups for male and female respectively. On the other hand it was observed that lowest practice of cigarette smoking was greater than 51 yrs age groups (30.9%, male and 36.37%, female) and highest in the 15 – 24 yrs of male groups (78.4%) and 25 – 42 yrs of female groups (100%). So we observed that cigarette smoking tendency highly found in 15-42 yrs male &female age groups and bidis smoking tendency highly found in 43 to >51yrs yrs male &female age groups. From the statistical point of view it was shows that the two tail critical chi-square value is lower than the computed chi-square value at the level of P=0.001 in case of both male and female.

**3.8. Distribution of tobacco used by the employment categories**

The samples are distributed to different employment categories and they consumed various typed of tobacco (cigarette, bidis and cigar). The result is tabulated by Table-6.

**Table 1: % Distribution of sample based on employment status (N=1173).**

Categories	Unemployed		Unskilled		Private employment		Govt. employment		Self employment		House worker	
	Sample No.	Percentage (%)	Sample No.	Percentage (%)	Sample No.	Percentage (%)	Sample No.	Percentage (%)	Sample No.	Percentage (%)	Sample No.	Percentage (%)
<b>Male (n=697)</b>	91	13	64	9	185	27	285	41	48	7	22	3
<b>Female (n=476)</b>	134	28	10	2	32	7	36	8	3	1	258	54

**Table 2: % Distribution of sample based on monthly income (Rs.) status (N=1173).**

Categories	<5000		5001-8000		8001-15000		15001-25000		25001-40000		>40000	
	Sample No.	Percentage (%)	Sample No.	Percentage (%)	Sample No.	Percentage (%)	Sample No.	Percentage (%)	Sample No.	Percentage (%)	Sample No.	Percentage (%)
<b>Male (n=697)</b>	45	6	77	11	140	20	306	44	111	16	20	3
<b>Female (n=476)</b>	176	37	67	14	147	31	52	11	34	7	0	0

**Table 3: % of Smoking status based on age group (N=1173).**

Categories		15-24yrs		25-33yrs		34-42yrs		43-51yrs		>51yrs	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
<b>Male (n=697)</b>	<b>Total</b>	112	16	194	28	114	16	142	20	135	20
	<b>Smoker</b>	74	66	151	78	62	55	73	51	84	62
	<b>Non smoker</b>	42	33	43	23	52	46	69	49	51	38
<b>Female (n=476)</b>	<b>Total</b>	98	21	87	18	112	24	95	20	84	18
	<b>Smoker</b>	0	0	4	5	3	3	6	6	11	13
	<b>Non Smoker</b>	98	100	83	95	109	97	89	94	73	87

**Table 4: % of Smoking Status Based on duration of smoking.**

Categories		15-24yrs		25-33yrs		34-42yrs		43-51yrs		>51yrs	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
<b>Male (n=444)</b>	<b>Long-term Smoker</b>	21	28	132	87	60	97	69	95	84	100
	<b>Current smoker</b>	53	72	19	13	2	3	4	5	0	0
<b>Female (n=24)</b>	<b>Long-term Smoker</b>	0	0	0	0	2	67	5	83	11	100
	<b>Current Smoker</b>	0	0	4	100	1	34	1	17	0	0

**Table 5: Types of tobacco consumed by different age categories.**

Categories		15-24yrs		25-33yrs		34-42yrs		43-51yrs		>51yrs		Chi-square test (P) two sided	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)		
Male	Beedi	16	21.6	55	36.42	33	53.2	49	67.12	56	66.66	Pearson (0.001)	
	Cigarette	58	78.4	96	63.58	29	46.8	24	32.8	26	30.9		
	Cigar	0	0	0	0	0	0	0	0	2	2.4		
Female	Beedi	0	0	0	0	0	0	1	16.6	7	63.63	Pearson (0.001)	
	Cigarette	0	0	4	100	3	100	5	83.4	4	36.37		
	Cigar	0	0	0	0	0	0	0	0	0	0		

**Table 6: Types of tobacco consumed by different employment status.**

Categories		Unemployed		Unskilled		Private employment		Govt. employment		Self-employment		House worker		Chi-square test (P) two sided	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)		
Male	Beedi	107	81.7	59	73.7	0	0	8	9.8	13	17.8	22	75.9	Pearson (0.001)	
	Cigarette	24	18.3	21	26.3	49	100	72	87.8	60	82.2	7	24.1		
	Cigar	0	0	0	0	0	0	2	2.4	0	0	0	0		
Female	Beedi	6	54.5	2	100	0	0	0	0	0	0	0	0	Pearson (0.001)	
	Cigarette	5	45.5	0	0	6	100	2	100	3	100	0	0		
	Cigar	0	0	0	0	0	0	0	0	0	0	0	0		

**Table 7: Distribution of different types of smoker based on monthly income (Rs) status.**

Categories		<5000		5001-8000		8001-15000		15001-25000		25001-40000		>40000		Chi-square test (P) two sided	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)		
Male	Beedi	96	97.8	74	85.1	37	48.7	2	2.3	0	0	0	0	Pearson (0.001)	
	Cigarette	2	2.2	13	14.9	39	51.3	84	97.7	53	100	42	95.5		
	Cigar	0	0	0	0	0	0	0	0	0	0	2	4.5		
Female	Beedi	7	100	1	20	0	0	0	0	0	0	0	0	Pearson (0.001)	
	Cigarette	0	0	4	80	9	100	1	100	1	100	0	0		
	Cigar	0	0	0	0	0	0	0	0	0	0	0	0		

**Table 8: Distribution of different types of smoker based on literacy level.**

Categories		Illiterate		Primary		M.P		H.S		Graduate		Post Graduate		Chi-square test (P) two sided	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)		
Male	Beedi	55	62.5	41	57.7	46	56.8	59	51.3	5	7.1	3	16.7	Pearson (0.001)	
	Cigarette	33	37.5	30	42.3	35	43.2	56	48.7	64	90.1	15	83.3		
	Cigar	0	0	0	0	0	0	0	0	2	2.8	0	0		
Female	Beedi	8	100	0	0	0	0	0	0	0	0	0	0	Pearson (0.001)	
	Cigarette	0	0	0	0	0	0	1	100	8	100	6	100		
	Cigar	0	0	0	0	0	0	0	0	0	0	0	0		

Here we found that cigarette intake percentage is low in unemployed persons (18.3%) and high in male private employers (100%) and female Govt. employment, private employment and self employment are also highly addicted to cigarette but cigarette intake tendency is low in case of unemployed female persons (45.5%) than other female. On the other hand we found that highly bidis addicted unemployed male are 81.7% and unskilled female persons are 100%. Unemployed female's bidis addicted percentage is low (54.5%). Which are statistically significant at the level of  $P=0.001$  in case of both male and female.

### 3.9. Distribution of forms of tobacco used on the basis of monthly income

Based on monthly income status the types of tobacco (cigarette, bidis and cigar) consumed by the populations are tabulated in Table-7. The graphical presentation shows that the intake tendency of cigarette is high in male (100%) who's monthly income 25,000 to 40,000 and female workers, monthly income above 8,001 to 40,000 their cigarette intake tendency is high (100%) but tendency of bidis intake is high in male (97.8%, 85.1% and 48.7%) workers who's monthly income above 5000 to 15000 respectively and all are statistically significant at the level of  $P=0.001$  in case of both male and female.

### 3.10. Distribution of forms of tobacco used on the basis of literacy level

Table 10 showed the types of smoking habit amongst the male and female on the basis of literacy level. Types of smoking were divided into cigarette, bidis and cigar. Smoking tendency of cigarette in graduate male is high (90.1%) and bidis intake tendency is high in Illiterate male (62.5%) and female (100%) person (Table-8). From the statistical analysis it was shows that the two tail critical chi-square

value is lower than the computed chi-square value at level of  $P=0.001$  in case of both male and female.

## 4. Discussion

Smoking kills over one million people in India annually and is the fourth leading cause of non-communicable diseases (NCD) such as cancer and heart diseases, which account for 53 per cent of all deaths in India. There is still the issue of passive smoking. An estimated 10 per cent tobacco related deaths are caused due to passive smoking. The prevalence rate and determinants of tobacco use in the present study shows results similar as like of other studies, whereas in few cases, the prevalence rates are higher. In this study, males (59%) were more likely than females (41%) to use all types of tobacco products. The current and regular tobacco use (smoke) in any form among male (28%, 25-33yr age group) exceeded their female counterparts. Most of the female smokers belong to age group 35-42yrs (24%). For the female there is little number of smokers on the age group above 51 yrs. (Table-3). At the same time above 51yrs male and female age groups both are long term smoker (Table-4). Along with increasing age of female the consumption of bidis is increases (at a  $P=0.001$ ) while younger mainly male are consumed cigarette at a higher percentage which is same as reported by Bhasker et al (2015). The result of my study is as same as found in But according to GATS 2009-10 the percentage of current tobacco use in West Bengal among adults, males and females were 36.3%, 52.3% and 19.3 % respectively. So the prevalence of current tobacco user in this present study was found to be slightly different than the GATS 2009-10 figures. Current as well as regular use was found more among the rural people due to the socio-economic status. There is a statistically significant

variation in the form of smoking product used and the socioeconomic factor and also the literacy level. So in this study the samples are differentiated into six categories on the basis of different class of literacy level. In case of male the percentage is higher in the graduate (27%) category than the others (Fig. 2). Here we also observed that the illiteracy and primary level educated persons are highly addicted for lack of knowledge about smoking but we are surprised that the highly educated male persons are also addicted and cigarette intake tendency is high in educated females (Table-8). On the other hand smoking category depends on monthly income because above Rs.15, 000 to below 40,000 in both male and female cigarette intake tendency is high but below Rs. 15,000 bidis intake tendencies is high (Table- 2 & 7). So employment status mainly female govt. and self employers are high percentage of cigarette addiction. In case of male govt. employer are higher than other, normally they educated person but cigarette intake tendency is high in this sample group (Table- 1 & 6). Tobacco does not only have biological consequences but has immense societal, and economic impact in as much as worsening disease means worsening the productivity, economic loss both for individuals and the society and hence worsening poverty. It is now clearly recognized that much of tobacco-related morbidity and mortality affect the poor disproportionately more than it does the rich.

### 5. Limitations of the study

Throughout the study females member was one of the limitations of this study. However, it was unlikely that this had an influence on the results for women because data were weighted (standardized) for age and sex to national population. The over representation of females was not by

study design because at household level, eligible participants were randomly selected using the validated and reliable tested questionnaire method. The under representation of men in different age group was due to some being away from home at the time of the survey. It was not known if these groups had different survey characteristics. There were no differences in the refusal/non-availability between males and females and no replacements were made. About 53.8% of all the 2,178 participants were from Medinipur municipality areas. The prevalence and determinants despite the fact that it was a cross sectional study and with limited resources. A larger study longitudinal in nature needs to be done to get the risk factors for health status.

### 6. Conclusion

After studying 1173 subject in Medinipur municipality it was found that there is a higher smoker percentage of male than female. Most of the smoker consume low cost bidis, studying socioeconomic status it was established that product using pattern vary significantly category to category. It has also been showed that a higher % of people smoked during a long course of time. Tobacco use (smoking) and passive (secondhand) smoking was a major public health concern of Medinipur municipality areas. This population-based data on the high prevalence of current smokers based on duration, traditional forms of tobacco use, passive (secondhand) smoking by sex, age, literacy level, monthly income and municipality area demonstrated by this study therefore could be used to mobilize resources, develop and implement locally grounded multi-sectoral policy and anti-smoking lobby on the ban of tobacco advertising, promotion, sponsorship and smoking in public places and homes and community and primary health care based



interventions to screen tobacco users and provide advice and support for cessation.

### 7. Acknowledgement

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