

**“PREVALENCE OF TOBACCO CONSUMPTION
AMONG RURAL WOMEN IN THE
REPRODUCTIVE AGE GROUP” – A
COMMUNITY BASED
CROSS SECTIONAL STUDY**

REG. NO. BD 0110002

Dissertation

**Submitted to the
KLE University, Belgaum, Karnataka**

**In Partial Fulfillment
of the requirements for the degree of**

**M. D.
In
COMMUNITY MEDICINE**

**DEPARTMENT OF COMMUNITY MEDICINE,
JAWAHARLAL NEHRU MEDICAL COLLEGE,
BELGAUM, KARNATAKA**

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ENDORSEMENT

This is to certify that the dissertation entitled
**“PREVALENCE OF TOBACCO CONSUMPTION
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AGE GROUP – A COMMUNITY BASED CROSS
SECTIONAL STUDY”** is a bona fide research work done
by **CANDIDATE REG. NO. BD0110002**

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LIST OF ABBREVIATIONS USED

BC	–	Before Christ
Ca (OH) ₂	–	Calcium Hydroxide
CI	–	Class Interval
ETS	–	Environmental Tobacco Smoke
FCTC	–	Framework Convention on Tobacco control
GATS	–	Global Adult Tobacco Survey
Gms	–	Grams
ICMR	–	Indian Council of Medical Research
IUGR	–	Intra Uterine Growth Retardation
Kgs	–	Kilograms
KLE	–	Karnataka Lingayat Education Society
Kms	–	Kilometers
LBW	–	Low Birth Weight
ml	–	Milliliters
NFHS	–	National Family Health Survey
NSSO	–	National Sample Survey Organization
OR	–	Odds Ratio
PHC	–	Primary Health Centre
SD	–	Standard Deviation
SES	–	Socio Economic Status
SHS	–	Second Hand Smoke
SPSS	–	Statistical
WHO	–	World Health Organization
χ^2	–	Chi Square Test

ABSTRACT

Background and objectives

Tobacco is packed with harmful and addictive substances. Scientific evidence has shown conclusively that all forms of tobacco cause health problems throughout life, frequently resulting in death or disability. The epidemic of tobacco-related diseases has expanded from developed to developing countries and tobacco use is increasingly becoming a major health issue for women as well as men. Hence the present study was done to know the prevalence, patterns of tobacco consumption and socio-demographic and behavioral determinants associated with tobacco consumption among the rural women in the reproductive age group.

Materials and Methods

A community based cross sectional study, conducted from January 2011 to December 2011 among 1200 rural women aged between 15 years to 49 years residing in PHC Vantmuri area, Belgaum.

After taking written informed consent, data regarding socio demographic variables and details regarding tobacco consumption was collected. Statistical analysis was done using chi square test.

Results

Tobacco consumption was seen in 9.7% of the study participants with more than 80% of them using dentrifice form of tobacco. Majority (60%) of women initiated tobacco use before the age of 18 years and were consuming it for more than 10 years duration. 4.3% was the overall quitting rate observed. A high prevalence of tobacco use was observed in elderly age groups, among illiterates, women working in the fields/ farms with $p < 0.05$ for all. A significant association of tobacco consumption with irregularity of menstrual cycles and dysmenorrhoea is noted in this study. An association was found between tobacco consumption and abnormal outcomes of pregnancies like spontaneous abortions, preterm deliveries and still births of 2nd, 3rd and 4th pregnancies and low birth weight.

Conclusion

Prevalence of tobacco consumption was 9.7%. Significant association was found between tobacco consumption and the irregularity of menstrual cycles and dysmenorrhoea. This study suggests that there is a need for appropriate intervention to create awareness among the women about the hazards of tobacco use and to stop tobacco consumption.

Key words

Tobacco; Reproductive age group; Prevalence; Rural women

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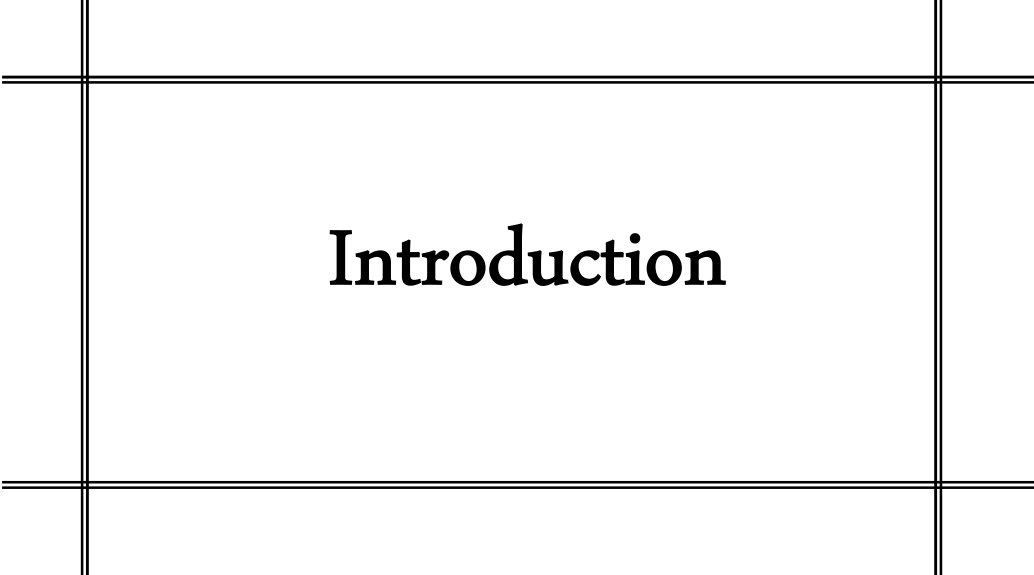
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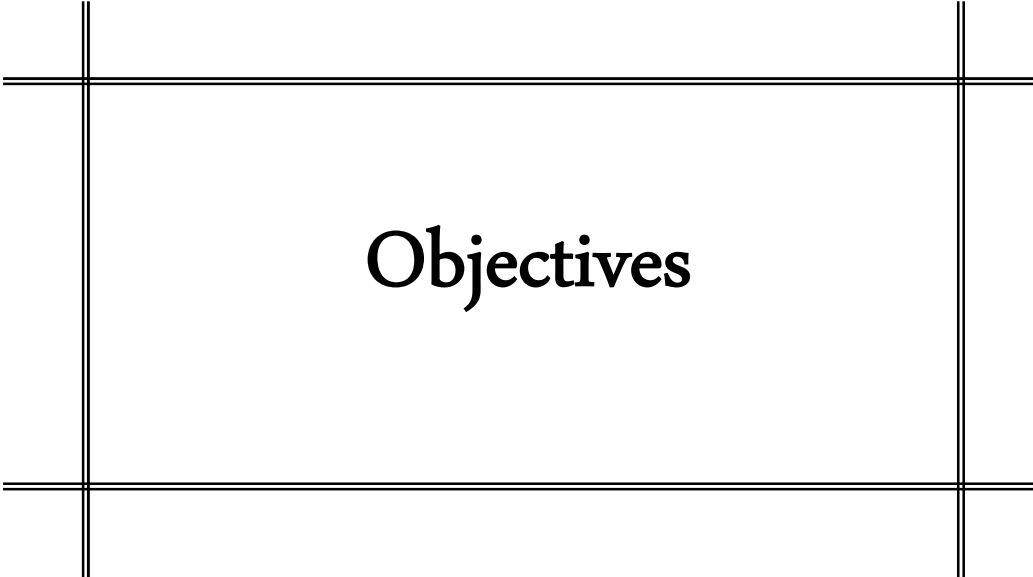
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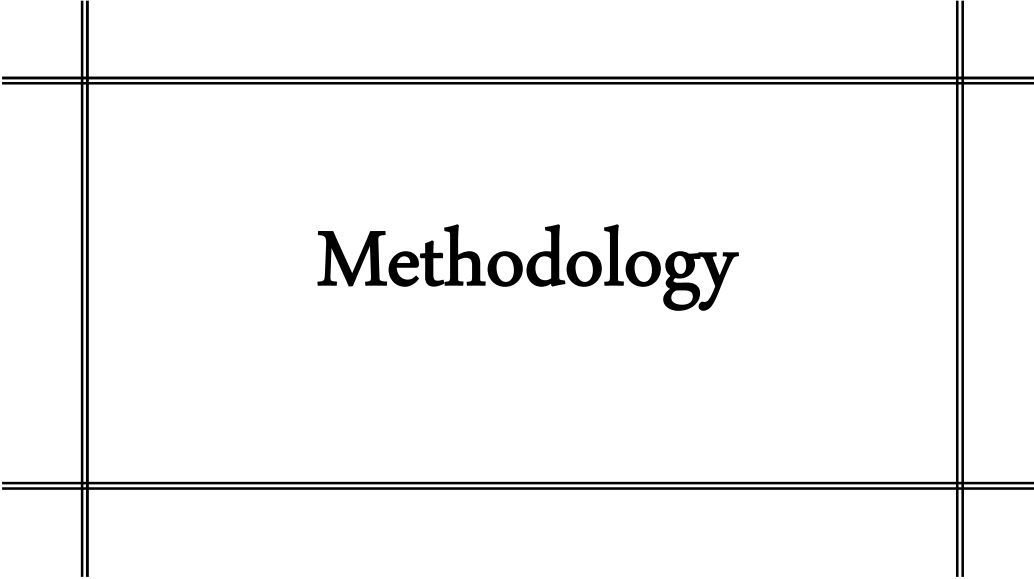
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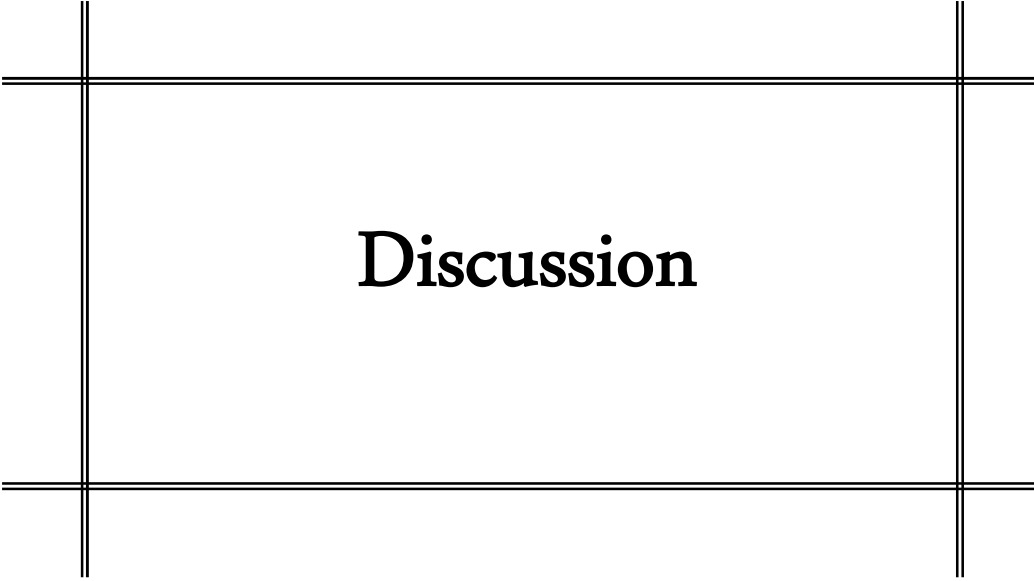


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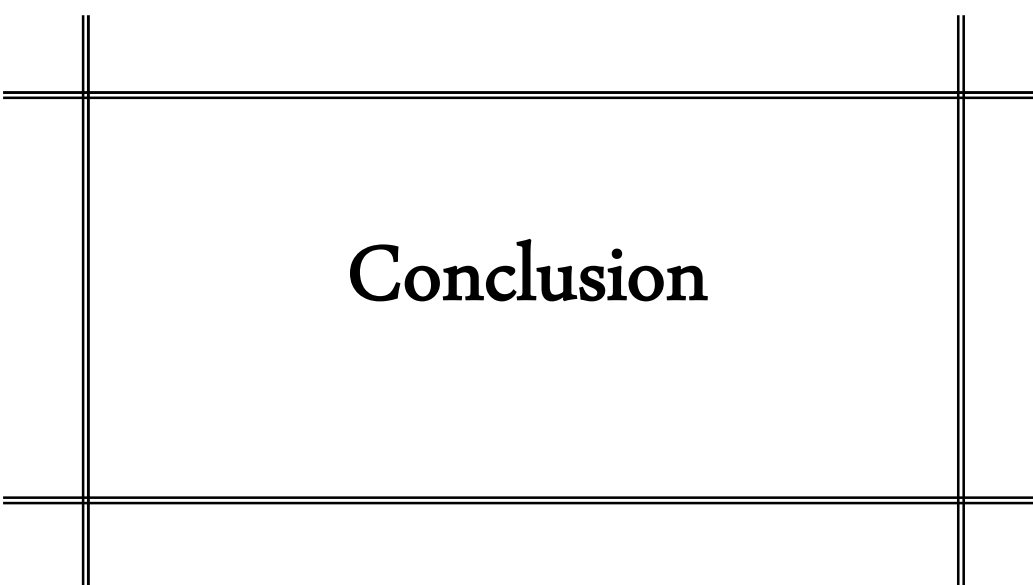


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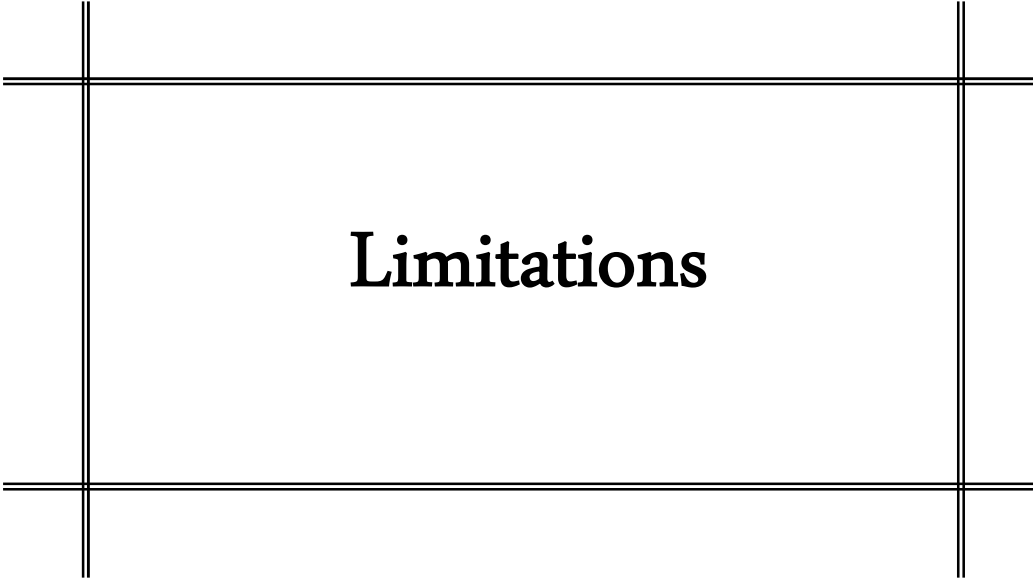
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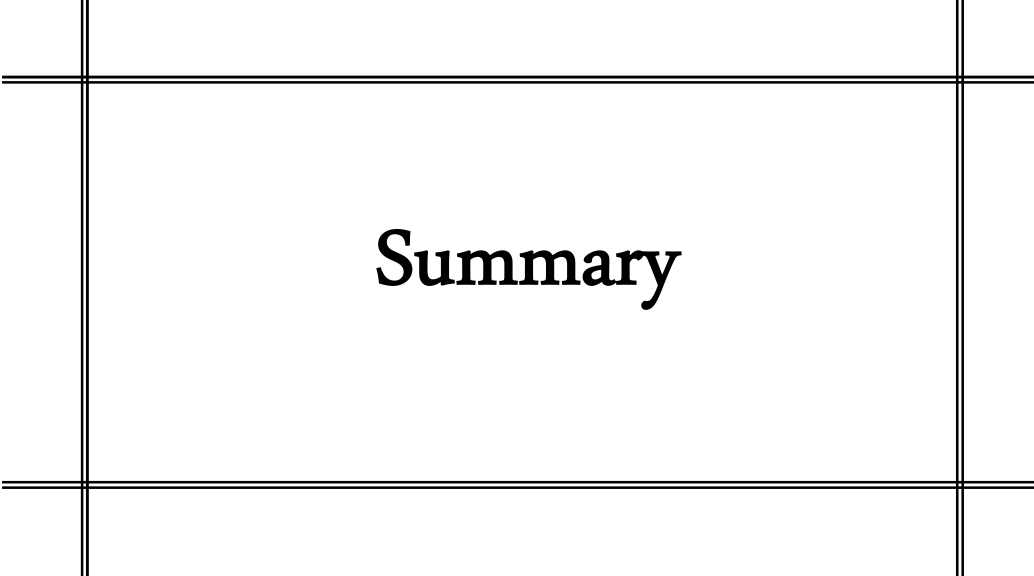
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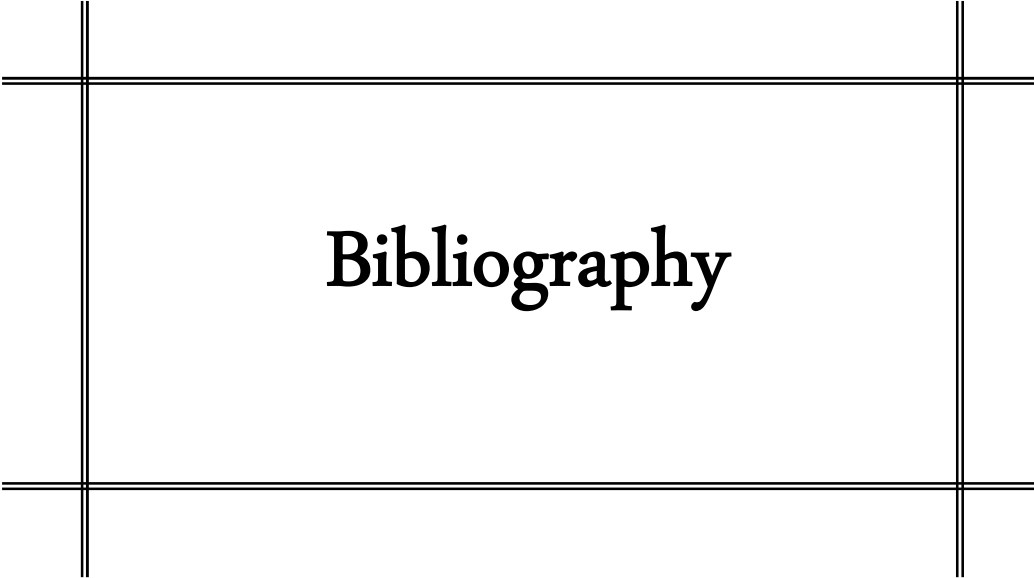
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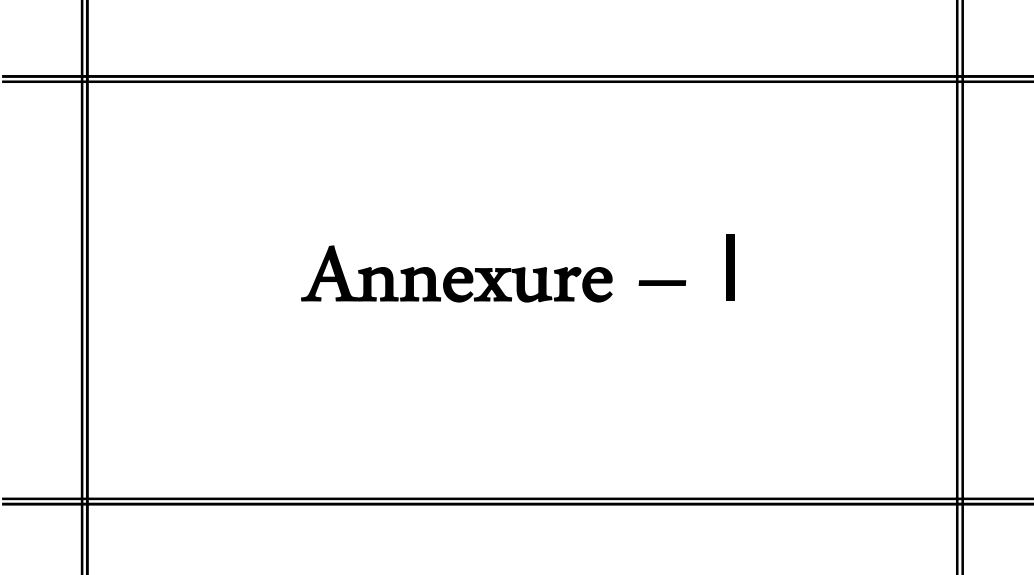
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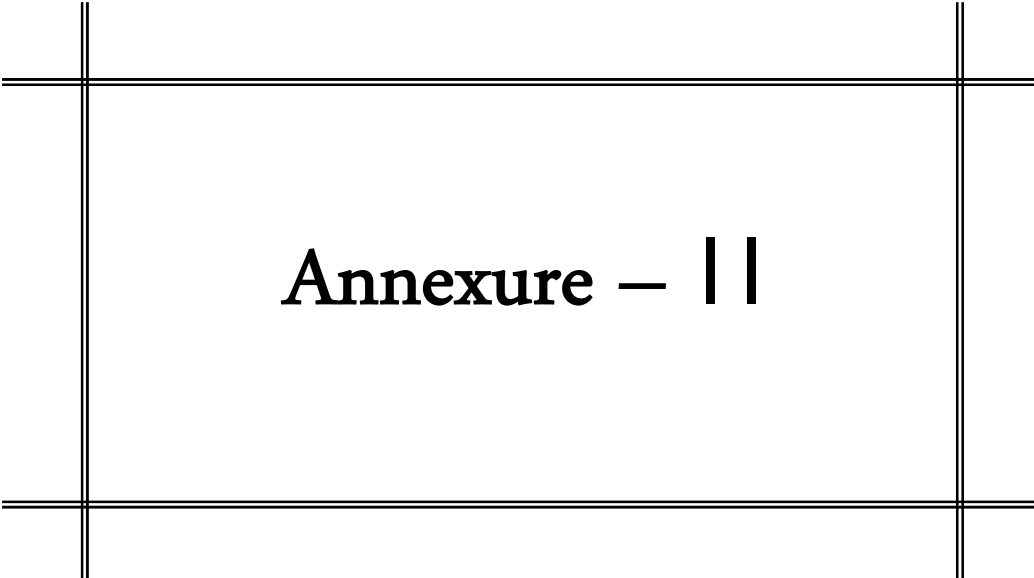
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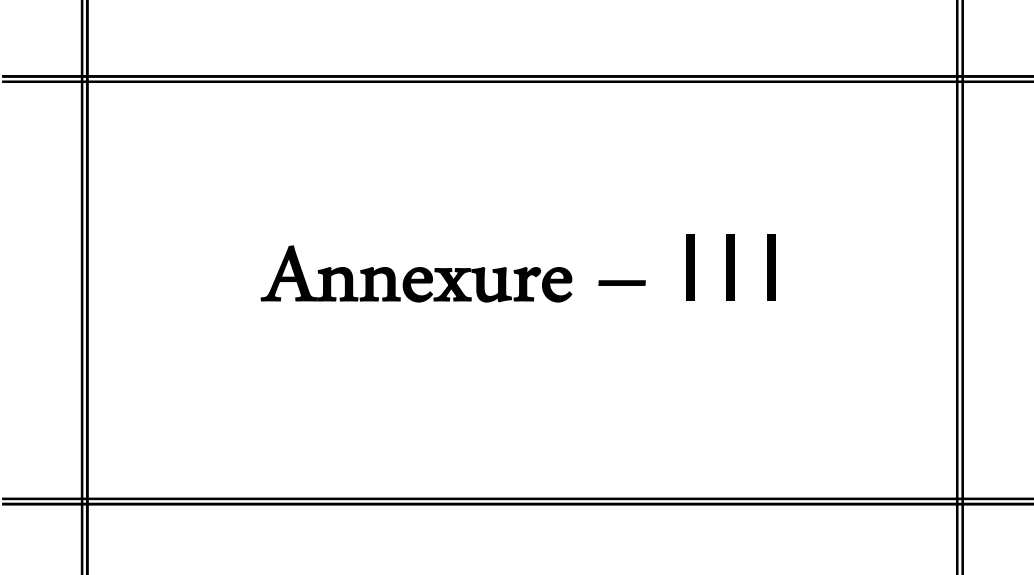
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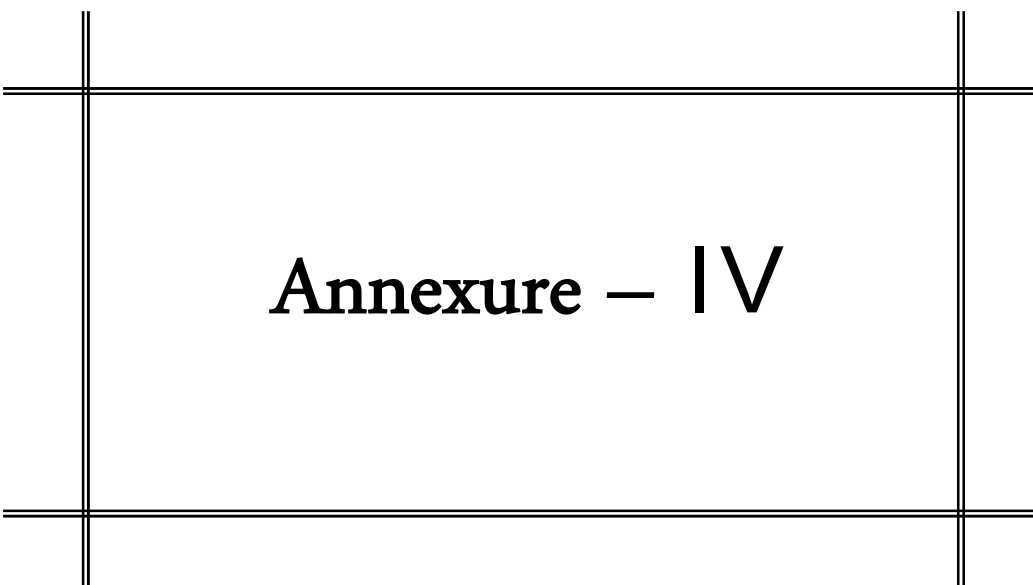
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INTRODUCTION

Tobacco consumption is the single most important avoidable risk factor in the growth of noncommunicable diseases all over the world.¹ Tobacco use is world's number one killer and it kills up to half of its regular users. Tobacco Causes 10% of deaths worldwide, nearly 5.4 million a year of which 80% occur in developing countries.² About 250 million women in the world are daily smokers. About 22% of women in developed countries and nine percent of women in developing countries smoke tobacco. In addition, many women in south Asia chew tobacco.³

Within 150 years of Columbus's finding "strange leaves" in the New World, tobacco was being used around the globe. Its rapid spread and widespread acceptance characterize the addiction to the plant *Nicotina tobacum*. Only the mode of delivery has changed. In the 18th century, snuff held sway; the 19th century was the age of the cigar; the 20th century saw the rise of the manufactured cigarette and with it a greatly increased number of smokers.³

Roughly 10% of the world's tobacco smokers live in India representing the second largest group of smokers in the world after China. India is also the third largest producer of tobacco leaves in the world. Tobacco use patterns in India are unique and reflect longstanding cultural practices. Two features stand out; bidis are more common than cigarettes; and chewing tobacco is widely prevalent.¹

In India, each year nine lakh people die due to tobacco related diseases and more than 2200 Indians die every day due to tobacco use. Tobacco use is responsible for 40% of all cancers in India. India is having highest number of oral cancer cases in the world among which 90% are tobacco related.² According to NFHS-3 estimates, 120 million Indians smoke of whom 11% of women aged 15 to 49 years consume some form of tobacco either smoked or non-smoked. The prevalence of tobacco use in any form among rural women in the age group of 15 to 49 years is 12.9% as compared to 6.7% in the urban women. Estimates show that, 8.5% of pregnant mothers and 10.8% of breastfeeding mothers use tobacco in some form.⁴

Tobacco causes negative effects on a person's health as soon as he/she starts using it in any form either regularly or occasionally. Short term effects include tooth decay, breathing problems exaggeration of asthma. Long term effects include cardio-vascular diseases, reproductive disorders, birth defects, brain shrinkage/cognitive dysfunction, Alzheimer's disease, stroke, cataract/blindness, cancers and respiratory disorders.^{2,3}

Tobacco kills both men and women but sex-specific differences exist. A high prevalence of smokeless tobacco use is an additional risk for premature death, especially among women. Tobacco use is one of the top six leading attributable risk factors for chronic diseases in women aged 20 years and above.³ Second Hand Smoking (SHS) exposure leads to added morbidity in pregnant women and their newborns. Studies have also shown association of SHS with low birth weight and genetic mutations in the newborn. Poor pregnancy outcomes

from tobacco use during pregnancy include still births, increase in placental weight, male fetus wastage, low birth weight, lower gestational periods (preterm),^{3,5} delayed conception, sudden infant death syndrome, premature rupture of membranes, abruptio placenta and placenta previa.^{3,6}

Ironically, despite known dangers of tobacco, the tobacco industry promotes cigarettes to women using seductive but false images of vitality, slimness, modernity, emancipation, sophistication and sexual allure. In reality, it causes disease and death. Tobacco companies have now produced a range of brands aimed at women.³

India, has now become the signatory nation to “Framework Convention on Tobacco Control” (FCTC-WHO, 2003)⁷, a first ever international public health treaty on any one health issue, and is coming out with stringent tobacco control policies. It has become the need of the hour to provide enough evidence on the correlates of tobacco use in the community to assist government policy makers, health professionals and the public in developing realistic models towards effective tobacco control to cater to different sections of community in need.

The use of multiple forms of tobacco in India complicates the efforts to reduce its overall impact on public health. In order to reverse the rising tobacco epidemic by effective health policies, community based epidemiological studies on tobacco use are required to quantify the problem and to identify the determinants and their distribution. This information has to be area specific

because of a strong correlation with socio-cultural characteristics and existence of wide variations in tobacco use prevalence as in nationwide surveys.⁸

There are many gaps in the data about the health impact of tobacco use on girls and women of all ages and throughout the life-course.⁹

Tobacco use among women in the reproductive age group has various negative effects and the data available in this field is less. So far, no studies on tobacco use are reported in this region especially among the women in reproductive age group residing in rural area of North Karnataka.

Hence this study was undertaken to estimate the prevalence of tobacco consumption among rural women in the reproductive age group and to assess socio-economic, demographic and the behavioral determinants of tobacco consumption.

The objectives of the present study were

1. To estimate the prevalence of tobacco consumption among rural women in the reproductive age group.
2. To study the socio-economic, demographic and the behavioral determinants of tobacco consumption in these women.

REVIEW OF LITERATURE

Historical overview of Tobacco

“Tobacco” appears as old as human civilization. There are various theories which explore the origin of the word Tobacco. The word “tobacco” is thought to be derived from the Arabic word “Tabaq” which means ‘Euphoria producing herb’. It is also said that the word tobacco comes from the island of Tobago in the Caribbean. Sources also refer the origin of this word to Tabasco State in Mexico. Another theory states that the word Tobacco is derived from the Spanish word ‘Tobaca’ which is a Y-shaped instrument used by the early American Indians to inhale snuff.⁶

The cultivation of tobacco plant dates back probably to 8000 years, when *Nicotina rustica* and *Nicotina tabacum*, the two species of the plant were dispersed by American Indians throughout the southern and northern American continent. Tobacco was known to be an important article of the inhabitants of South America since tobacco seeds were discovered in the archeological excavations of Mexico and Peru, and in the remains of permanent settlements built around 3500 BC.¹⁰

Tobacco belongs to the plants’ family of nightshade or family Solanaceae which contains the genus *Nicotina*. All modern commercial varieties of tobacco descend directly from *N.tobacco*.¹¹

Portuguese traders introduced tobacco in India during 1600. Tobacco was first introduced in the kingdom of Adil Shahi, the capital city of Bijapur, presently in Karnataka, in South India along the trading routes of Portuguese which were mainly the Cochin and Goa, on the West coast of India and

Machalipatnam along the East coast. Keeping the health hazards of tobacco in mind, the King Akbar advised tobacco smoke to be first passed through water for purification. This created Hookah (Hubble-bubble). The use of tobacco is mentioned even in the Subhashitratnabhandara, the seven Sanskrit verses of unknown date and authorship.^{6, 10, 12, 13}

Tobacco was easily assimilated into the cultural rituals of many societies and this was attributed mainly to its medicinal and also intoxicating properties. Tobacco soon became a valuable commodity in barter trade and its use spread rapidly.⁶ By 20th century, tobacco use had spread all over the world in numerous forms and at the same time, research have attributed to various new diseases due to tobacco.

Tobacco and Economics

India is the world's third largest tobacco producing country after China and Brazil and produced more than 10% of the world's raw tobacco during 2003-04, but ranked only ninth globally as an exporter of tobacco and tobacco products.¹ Andhra Pradesh, Gujarat, Karnataka and Uttar Pradesh together produce over 90% of the total tobacco in the country. In India, the annual tobacco consumption has increased from 360 million kgs in 1981 to 470 million kgs in 2001, with the production of tobacco increasing from 480 million kgs in 1981 to 601 million kgs in 2001.⁶

In India, tobacco is the fourth largest contributor with an average of 10% to the union excise revenue collection, after textiles, petroleum products and iron and steel industries. But its contributions are easily outweighed by the

conservatively estimated costs incurred due to tobacco related diseases. Its total contribution in terms of excise revenue and foreign exchange was 8681crores(2004-05) whereas an Indian Council of Medical Research(ICMR) study reported that the total cost to the country was estimated to be 27,761crores which is three folds the contributions from tobacco industry mainly due to tobacco related cancers, coronary artery disease and chronic obstructive lung diseases.^{6,14,15}

Tobacco is a labor-intensive crop in India. Growing, harvesting and processing tobacco represent the means of livelihood of a large number of agricultural laborers. National employment surveys by the National Sample Survey Organization (NSSO) place the direct and indirect tobacco workforce in India at approximately 7 million during 2004-05, representing approximately 1.5% of overall employment in the formal sector. This includes workers engaged in tobacco farming, manufacturing and the wholesale/retail trade, either full or part time. The vast majority of these jobs, perhaps more than 4 million, are in bidi manufacturing, with women making up half of the tobacco-related workforce. Tobacco farming and processing of tobacco products is considered as economically profitable and a major source of employment and revenue by governments. There are popular misconceptions that tobacco control measures such as an increase in tax and price will lead to smuggling and banning tobacco in restaurants and bars will hurt business.^{1, 16, 17}

Tobacco and its Contents

With only little knowledge about the individual effects of hundreds of chemical substances present in tobacco, its use reflects a complex interplay of pharmacological, psychological and socioeconomic factors. With more than 599 additives (approved as food additives) used in manufacturing cigarettes, over 4000 chemical compounds are produced by burning a cigarette, many of which are toxic and/or carcinogenic. Forty three known carcinogens are in the main stream smoke or side stream smoke or both.^{18, 19}

Smokeless tobacco, also known as chewing tobacco or spit tobacco contain a minimum of 28 cancer causing chemicals with formaldehyde (an embalming fluid), nitrosamine being the major carcinogens and Uranium 235 and polonium 210, the nuclear products.²⁰

With Nicotine an alkaloid, being the most active tobacco ingredient that acts on brain and produces the addiction effect, it produces various physiological effects such as arousal or relaxation, enhanced concentration, vigilance, appetite suppression. Hematological effects mainly include increase in the adhesiveness of platelets. Increased growth hormone and inhibition of prostacyclin synthesis are the endocrine effects. Lipolysis and increased energy expenditure are the metabolic effects. Effects of nicotine on cardiovascular system include increased heart rate and cardiac contractility, increase in the blood pressure, cutaneous vasoconstriction, systemic venoconstriction and catecholamine release.^{21, 22}

Women and Tobacco:

“Gender and tobacco with an emphasis on marketing to women” was the theme for 2010’s World No Tobacco Day, which is celebrated every year on 31st May. Tobacco use is also one of the top six leading attributable risk factors for chronic diseases leading to death in women aged 20 years and above. Of more than 5 million people who die every year from tobacco related cause, approximately 1.5 million are women. Most (75%) of these women live in low- and middle-income countries. Unless urgent measures are taken, tobacco could kill up to 8 million people every year by 2030, of which 2.5 million would be women.²³ There is an alarming trend that links poverty with tobacco use. Poor families are more likely to include smokers than richer families. Poor families spend a substantial part of their total expenditures on tobacco—often more than they spend on education or health care.⁹

Women are one of the biggest targets of the tobacco industry.

The tobacco industry has long fostered the false idea that tobacco is linked to women’s empowerment by suggesting that cigarette smoking symbolizes high fashion, freedom, and “modern” styles and values, and that it even promises weight reduction. The industry actively targets women because comparatively few women currently use tobacco, and women are increasingly able to afford tobacco.

Large companies sponsor events such as women’s tennis tournaments and disco dances to create a public image of smoking as a promoter of health and relaxation. “Female brands”, “light” cigarettes, low prices, easy availability, and free samples help these marketing strategies succeed among young women. In

India, where it may not be culturally “correct” for women to buy cigarettes openly, companies have offered to deliver them to the home.

Modern marketing seeks to attach symbolic meaning to brands, associating products with psychological and social needs in a coordinated strategy that surrounds the consumer with stimuli. Advertising is used to reduce fears about tobacco use and to associate products with dazzling blue skies and mountains, happiness, and healthy sports activities.⁹

According to the National Family Health Survey 2005-2006, tobacco use is more prevalent in rural areas than in urban areas both among men and women. Among women, 0.5% in urban areas and 2% in rural areas used smoking form of tobacco products and about 6% of urban women and about 12% of rural women used smokeless tobacco. About 8% percent of Indian women aged 15-49 years chewed tobacco in the form of paan masala and gutka. 8.5% of antenatal mothers and 10.8% of breastfeeding women use tobacco in some form.⁴

A cross sectional study done during 1985-86 surveyed 13,588 men and women aged 25-64 years in Delhi, India, reported that women with no education were 3.7 times(95%CI=2.86-4.82) more likely to be smokers. As compared to Hindu women, Muslim women were more likely to be smokers (OR=3.47,95%CI=2.81-4.28).²⁴

A study carried out in coastal South India in 1994 reported that 2% of females were regular pan tobacco chewers whereas 11% females chewed occasionally. Furthermore, 14% of females under the age of ten years had at least one habit. (Chewing pan-tobacco, smoking bidi or cigarettes, or drinking alcoholic beverages).²⁵

A 1997 survey in Mumbai amongst the adults aged 35 years and above showed a high prevalence (57.5%) of tobacco use among women, consuming exclusively smokeless tobacco products. The most common form being mishri.²⁶

In 1997, a house to house survey was done to study the chewing habits among 110 women aged 15 years and above in the rural Pondicherry. Though the study reported that the prevalence of betel quid with tobacco was as high as 13.7%, the mean age of starting betel quid with tobacco was 16.5 years.⁸

A cross sectional study was conducted in a rural area of Akhta village of Sitamarhi district in Bihar to study the tobacco use during June-July 2000 showed 0.3% smoking and 6.2% smokeless tobacco use among children (<15years). Smokeless tobacco use among adults was 32.7% with 21.7% in females. Tobacco tooth powder (41.3%) among females was most commonly used smokeless tobacco products. Prevalence of smoking was 23.4% in females, the most prevalent form (>80%) was beedi smoking both in men and women. The study does not tell us about the quitting patterns nor social factors such as initiation age of tobacco etc.²⁷

A study on tobacco use among school personnel in Bihar in 2001 reported that prevalence of tobacco use among women was as high as 77.0%. The smokeless tobacco use among women was 53.4%. Although smoking among women in India is generally socially not acceptable, prevalence of smoking among women in this sample was quite high (31%) and most of it was cigarette smoking (26.9%).²⁸

The study on prevalence of Tobacco Use in Karnataka in 2001 reported current tobacco use of 15.2% among females and the prevalence increased with

age reaching the peak level above the age of 70 years. Prevalence of tobacco use was higher in rural areas as compared to urban areas in most age groups, except among teenagers where prevalence was comparable or higher than rural areas. This study also reported that prevalence of current smoking was less than the prevalence of current smokeless tobacco use. Most of the current tobacco users were smokeless tobacco users. According to this study, only 0.6% of females in Karnataka smoked. The prevalence of smokeless tobacco users among females was higher than males. Prevalence of smokeless tobacco use increased with age for both sexes. It was lower among educated women although clear-cut reducing trends with increasing education were not observed in all age-groups among men. Prevalence of smokeless tobacco use was comparatively lower among women with family income above Rs 5000 per month. According to this study, Betel-tobacco quid was found to be fairly popular in Karnataka with prevalence being 14.2% (26.9% among males and 0.6% among females) in Karnataka.

An inverse association of decrease in prevalence rates of betel-tobacco quid use with increasing educational levels was observed in different age-groups in Karnataka. An inverse association of betel-tobacco quid use with increasing family income levels was observed in this study.²⁹

Three annual urban and rural cross-sectional surveys were carried out between 2001 and 2003 involving a total of 35 446 adults, of whom 54.3% were females and 51.0% were rural dwellers. The survey was carried out to determine the extent of all forms of tobacco usage in adult Bangladeshis in relation to gender and locality. The results revealed that current smoking and gul usage in females were 2.3% and 1.5% respectively. Chewing tobacco was more common

in females (21.6%) than males (19.4%). Females were less likely to smoke or use gul or use dual tobacco but more likely to chew tobacco.³⁰

A study was done in 2003-2004 on 7891 in Ballabgarh block of Faridabad dist to determine the rural, urban and urban-slum differences in patterns of tobacco use. The study revealed that the prevalence of tobacco was higher in rural areas (7.7%). Although the overall prevalence was low in urban areas, it was much higher in the urban slums (11.9%).³¹

In the study done in 12 districts of Karnataka during GATS survey in 2003- 2004, point prevalence of tobacco use amongst 13-15 year old was 4.9%. Current tobacco use was 2.1% in females. At home, more females were using smokeless form of tobacco as compared to smoking form (28.2% Vs 13.1%).³²

A cross-sectional survey using personal interviews was carried out on 832 individuals >15 years of age in 2004 at Manipal, Karnataka. The prevalence of tobacco use was 15.7% among women. Among current daily users of tobacco, 55.7% of women used tobacco only in the chewing form. Use of snuff alone was reported by 4.3% (95% CI: 2.9–5.7) of the population, and most snuff users were women. None of the women in this study reported smoking.³³

In a study on prevalence of risk factors for non communicable diseases in a rural area of Faridabad district of Haryana done in 2004, the age adjusted prevalence of daily smoked tobacco was 13% for women where as smokeless tobacco use was 1.2% women.³⁴

A study was conducted in Noida city during July- December 2005 among adolescents. It reported that 5.3 per cent had ever smoked cigarette exclusively with 5.0% in girls. Amongst the girls ever used zarda was reported as 0.4% and

0.4% smoked beedis. Nearly 80 per cent of girls ≤ 15 yrs initiated the habit of tobacco before the age of 11 yrs.³⁵

A study done to assess pattern and risk factors associated with tobacco consumption in various forms among adult women above 18 years of age in a low socioeconomic community of Manora Island, Karachi reported 52% tobacco consumption. Use of huqqa (hubble bubble) was more prevalent (79%). Tobacco consumption (OR=3.16, 95% CI=1.13-7.72). Tobacco consumption was more in illiterates, in married women, in women aged above 30 years and those living in joint families. Women having household income more than Rs 5000 were in the habit of consuming tobacco (OR=2.63, 95% CI=1.36-5.09) resulting in more financial difficulties.(OR=4.72, 95% CI=2.45-9.81). Women consuming tobacco reported anxiety related symptoms more as compared to women who did not consume tobacco.³⁶

The study conducted in 2005, reported that out of 1255 adolescents, 35.6% were girls, ever use of tobacco was reported to be 30.2% in females where as current use of tobacco in girls was 31.6%. The smokeless use of tobacco was common among girls when compared to boys. 26.4% of girls reported that the first the thing in the morning they needed is tobacco.³⁷

A cross-sectional study was conducted in the rural area of Saoner, Nagpur district of Maharashtra from May 2008 to November 2008 to estimate the prevalence of common risk factors for noncommunicable diseases among people above 15 years in rural population. The study reported that among women none were smoking tobacco; while the prevalence of smokeless tobacco use was

32.8% (95% CI 30.6% - 35.0%). It was more in the older age group of 55-64 years. Snuff and tobacco toothpaste were the most common forms used.³⁸

In a study done in Bangalore during 2009-2010, it was reported that majority of respondents (84.6%) reported negative perceptions about smokers while 20.4% of respondents reported positive perceptions. Female students reported significantly higher disapproval rate (negative perceptions) for smoking compared to male students (89.7% Vs 71.6% in case of male smoker; 81.2% Vs 67.3% in case of female smokers).³⁹

To study the prevalence of non-communicable disease risk factors in Cambodia, a nationwide cross sectional survey was carried out from February to April 2010 in which 4.8% smoking was reported among women. The proportion of current users of smokeless tobacco was 6.8 times higher in women than men. Betel quid was on average used more frequently by women than by men (3.5 vs. 2.3 times per day).⁴⁰

A study done to assess the prevalence of tobacco use and the extent of awareness about the prominent legislative measures against tobacco in 15 randomly selected high schools in an educational sub district of Kerala reported that out of total 1473 students who participated in the study, 21% of them were females. The overall prevalence of current tobacco users was 8%. Females were more aware of the smoking ban than males it also reported that 41.5% of the students knew about the link between oral cancer and tobacco with the awareness being greater among females than males.(64.3% vs. 35.4%).⁴¹

Global Adult Tobacco survey was done during 2009-2010 in India. This survey reported that the current tobacco use in any form is 47.9% in males and

20.3% in females out of which current female smokers are 2.9% of which 1.9% of them smoke bidi. 18.4% of the women use smokeless tobacco and 25.8% of the females started using tobacco before the age of 15 years.⁴²

Women, Tobacco and Health:

Tobacco-related illnesses such as cancer, cardiovascular and respiratory diseases are already major problems in most countries. WHO estimates that there are currently 4.9 million deaths a year related to tobacco, a figure expected to rise to more than 10 million by the year 2030 with 70% of them in the developing countries. By 2030, tobacco will account for more deaths than the total deaths from malaria, maternal conditions, and injuries combined.^{1, 6, 9, 43}

India has one of the highest incidences of oral cancers in the world. Tobacco related cancers account for about half of all cancers among men and one-fourth among women.⁴³

In 1964, the first US Surgeon's report on Smoking and Health revealed that smoking caused lung cancer in men, the health consequences of tobacco use have been extensively studied in most parts of the world. Tobacco used in any form, smoking or smokeless (chewable, snuff), are the root cause of number of diseases. Health consequences of tobacco use are so well established by various studies that even the tobacco companies now display the diseases caused by it on their websites.⁴⁴

Women are held responsible for reproductive health; they may be blamed for their addiction to tobacco and its negative impact on their children.

Much less medical attention has been paid to the negative health effects of paternal smoking on fertility and the health of the fetus.

The majority of victims of second-hand smoke (SHS) are women and children, exposed in their homes through the smoking of men. Many women are still unaware of various risks caused by the toxic and carcinogenic compounds in tobacco smoke. The reasons for both men and women failing to get accurate health information concerning sex-specific impacts of tobacco use on health need further study, followed by intervention.^{9, 45}

Along with the risk of suffering from the various health hazards from tobacco use, women are more prone for reproductive health hazards. Women who consume tobacco experience unique risks related to menstrual and reproductive function. They have:

- An increased risk for primary and secondary infertility
- An increased risk for delay in conception.
- An increase in risks for ectopic pregnancy and spontaneous abortion
- An increased risk for adverse pregnancy outcomes:
 - premature rupture of membranes
 - abruptio placentae
 - placenta praevia
 - preterm delivery
 - giving birth to low-birth-weight babies and small for gestational age babies which is associated with perinatal, neonatal, and infant morbidity and mortality, the longer the mother smokes during pregnancy, the greater the effect on the infant's birth weight.

- giving birth to stillborn child
- death of infant in peri-natal period and the risk for Sudden Infant Death Syndrome.
- Women who smoke are less likely to breast-feed their infants than are women who do not.

Women who quit smoking before or during pregnancy have reduced risk for adverse reproductive outcomes, including difficulties in becoming pregnant, infertility, and premature rupture of membranes, preterm delivery and low-birth weight.

Some studies suggest that cigarette smoking may alter menstrual function by increasing the risks for painful menstruation, secondary amenorrhea and menstrual irregularity. Women smokers have natural menopause at a younger age than nonsmokers, and they may experience more severe menopausal symptoms.^{2,9,43}

In a study done in 1983 in Jabalpur, a large majority of pregnant women ingested tobacco. The study reported significantly lower birth weights in offspring of tobacco users when compared to babies of nonusers. In a study, 70 mother and newborn pairs, where mothers consumed tobacco, were compared with an equal number of pairs serving as controls, precisely matched for socio-economic status, maternal literacy, and parity of the mother, birth interval, age, height and weight of mother, gestational age and sex of the baby. The birth weight, length and circumference of skull were studied. A statistically significant lower birth weight by an average of 395.3 g. and lower birth length by 0.518 cm. was observed in the tobacco consumer group. Tobacco consumption exceeding

200 mg/day during pregnancy distinctly influenced birth weight particularly in the forms that were more likely to be ingested than merely chewed. In qualitative terms, tobacco consumption during pregnancy significantly diminished birth weight and length.⁴⁶

A preliminary survey on tobacco use during pregnancy was conducted at N. Wadia Maternity Hospital, Mumbai in April 1987, and 500 women were interviewed. The main objective of this study was to determine the incidence of Low Birth Weight (LBW) babies amongst tobacco users and nonusers. Out of the 500 women, 167 (33.4%) consumed tobacco during their pregnancy. Among users, 158 used it by applying to teeth and gums, 8 chewed tobacco and only one smoked. The LBW incidence for the hospital was 46.63%. In women who used no tobacco, the proportion of LBW was 36.28%, and amongst those who consumed tobacco in pregnancy the incidence was 64.62%.⁴⁷

In the study done in 1992 on passive maternal smoking and birth weight in a South Indian population among cohort of consecutive singleton live births, it was reported that 52% were passive smokers while the remaining were not exposed to tobacco smoke. Infants born to passive smokers were on the average 55 g lighter than those born to non-smokers. Passive smoking was associated with a decrease in birth weight of 63 g (95% CI 12-114 g) even after adjusting for other variables known to affect birthweight.⁴⁸

A study was done on gender differences and low birth weight with maternal smokeless tobacco use in pregnancy in which a preliminary study of maternal smokeless tobacco use, mostly oral applications of burnt tobacco or 'mishri', in pregnancy showed 65 of 178 singleton liveborns occurred to users and

113 to non-users in Bombay, India. Eighty-three newborns, 42 to maternal tobacco users and 41 to non-users were < 2.5 kg birth weight, i.e. low birth weight. Male: female newborns were 80.6:100 in maternal tobacco users compared to 105.5:100 in non-users. The study concluded that Maternal use of 'mishri' tobacco in pregnancy may be associated with (1) the offsprings' low birth weight, (2) low birth weights in girls more than in boys; (3) decreased male: female ratio in live newborns, and (4) low birth weight of < 2.0 kg more than of 2-2.5 kg.⁴⁹

A cohort study done on 210 pregnant women from Jan to May 1994 with the objective of studying the prevalence of low birth weight (LBW) and its association with maternal factors concluded that tobacco exposure is the significant risk factor for LBW.⁵⁰

According to the report in 1997, maternal tobacco use may also contribute to fetal growth retardation and still-birth. Studies from South Asia show that tobacco, if chewed, applied orally, actively smoked or passively smoked:

- Increases still-birth by nearly 3 fold
- Reduces birth weight by 100-400gms, with females at greater risk for LBW than males (7 fold and 2 fold, respectively)
- Significantly increases the placental weight (66 gms)
- Is associated with up to 30% male fetal wastage and
- Is associated with 2 fold higher perinatal mortality.

The impact of tobacco use on reproductive outcome can be direct or indirect. Direct effect manifests as IUGR. The degree of impact depends greatly on the prevalence of maternal tobacco use and the relative risks of adverse reproductive

outcome. It has been suggested that 16.7% of the total prematurity and still-births in the population may be related to smokeless and 48% to smoked tobacco.⁵¹

A cohort study done was during March 2003 to July 2005 to determine the effects of Mishri (tobacco containing tooth powder) on the fetus during pregnancy and perinatal outcome. It was found that out of 705 enrolled pregnant women, the prevalence of tobacco use was found to be 30.9%. The risk of abnormal delivery was 2.7% for users. The study also showed that there was significant increase in the number of stillbirths among tobacco users as compared to non users. ($\chi^2=5.4$, P value<0.05). This study covers pregnant women and perinatal outcome. It does not give the details regarding overall prevalence in women nor other socio-demographic parameters.⁵²

A prospective cohort study in Mumbai reported that overall occurrence of stillbirth among singleton deliveries in this population was 4.1%. Smokeless tobacco use was reported by 17% of women; 8.9% of smokeless tobacco users had stillbirths as compared to 3.1% among nonusers. The risk for stillbirth in users was 2.6 (95% confidence interval-1.4-4.8). Most women used mishri and there was a dose-response relationship between the daily frequency of use and stillbirth risk. The risk of stillbirth associated with smokeless tobacco use was greater in earlier gestational periods⁵³.

A cohort study was done in Mumbai, India to investigate pregnancy outcomes among women living with smokers. The study reported that rates of low birth weight and preterm birth were not significantly different between exposed and non-exposed. Hazard ratio for stillbirth in SHS exposed women (n = 261) was 2.2 (95% confidence interval 1.1-4.4). Survival times differed

significantly between exposed and non-exposed, $p = 0.012$. The study concluded that pregnant women living with smokers in their household have a significantly higher risk of stillbirth, independent of differences in socio-demographic characteristics and antenatal care.⁵⁴

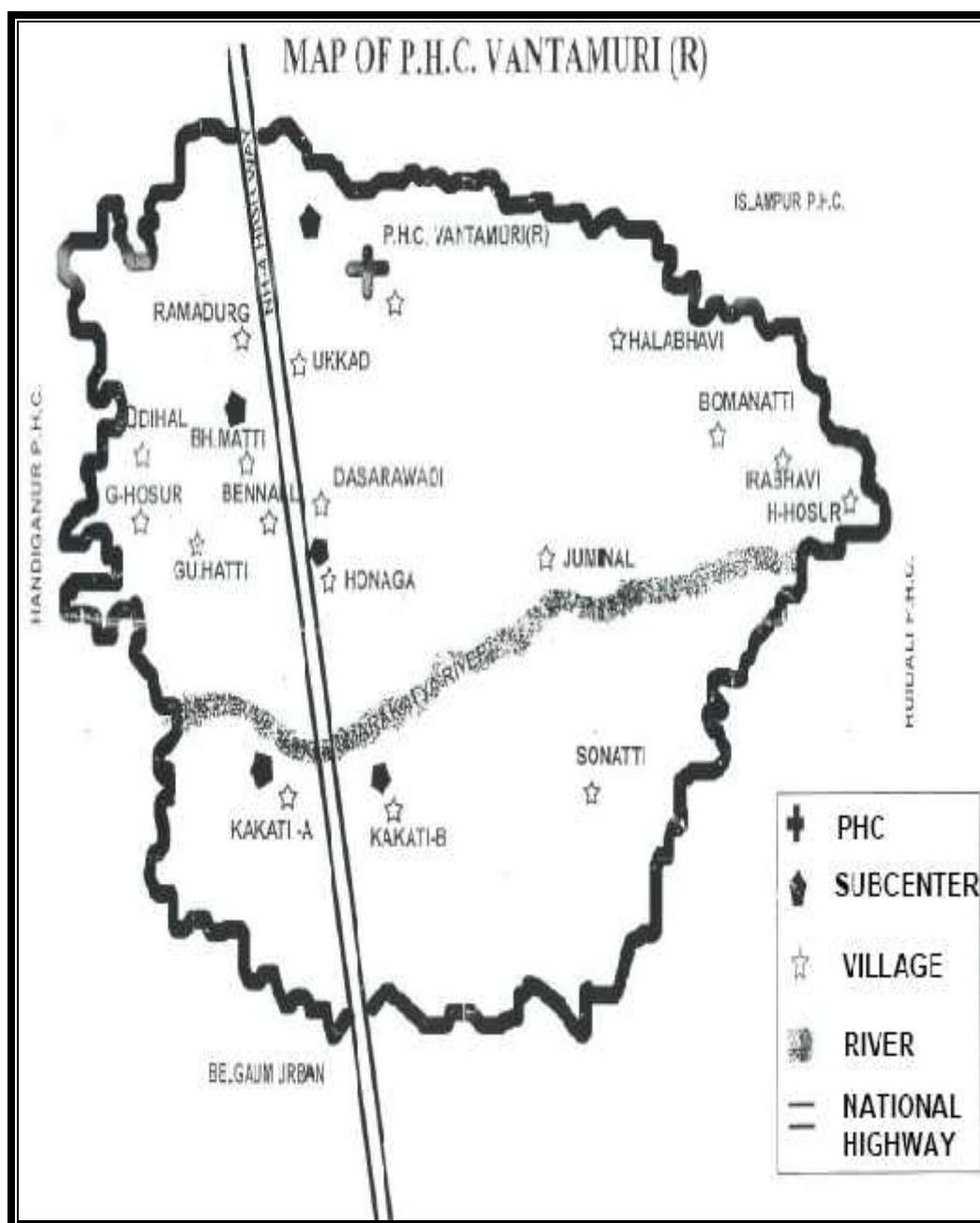
METHODOLOGY

Study Area

The study was undertaken in the area under Primary Health Centre, Vantmuri, a rural field practice area of the Department of Community Medicine, Jawaharlal Nehru Medical College, Belgaum. The Vantmuri PHC has five sub-centers catering to 18 villages, having total population of 34190. It is situated by the side of Pune-Bangalore National Highway No 4 and is 20 Kms. from Belgaum towards north (Figure 1).

Chief languages spoken in this area are Kannada and Marathi. The educational facilities available in the villages are up to secondary level. The Vantmuri Primary Health Centre along with the network of subcentres under the Arogya Bandhu Scheme of Community Medicine Department of Jawaharlal Nehru Medical College, Belgaum provide health care services.

Figure 1: Study area- PHC Vantmuri area.



Study Design

The present study was a community based cross sectional study.

Study period

The study was conducted for a period of one year from January 2011 to December 2011.

Sampling size

According to the NFHS 3(2005-2006), the prevalence of tobacco use in any form in the rural women in the age group of 15-49 years is 13%.

Relative error of 15% is considered.

$$N = 4pq / d^2$$

Where,

N = Sample size

p = prevalence of morbidity

q = (100-p)

d = Error in estimation of p (15% relative error)

Considering the above formula the sample size was calculated as 1190 taken to be 1200.

Sampling procedure

The total population of Vantmuri PHC is 34190. There are 18 villages under the Vantmuri PHC under 5 subcentres. The population of women under the reproductive age group is 22%. Accordingly the total population of women under the reproductive age group is 7522. The sample of 1200 was taken proportionately from all the villages depending upon the population of each village by Systematic Random Sampling method.

Selection criteria

Inclusion

All women in the age group of 15-49 years.

Data collection

A detailed questionnaire was prepared and was pretested and validated during the pilot study. It included the information on socio-demographic variables, type of family, educational status, menstrual and obstetric history, one month prior morbidity.

The study was approved by Institutional Ethics Committee, Jawaharlal Nehru Medical College, Belgaum. Based on the selection criteria the study subjects were selected and written informed consent (Annexure II) was obtained from all the participants. They were interviewed by using predesigned and pretested questionnaire (Annexure III).

Subjects were interviewed by the candidate in- person and detailed information regarding tobacco consumption was obtained. The entire procedure lasted for about 45 minutes.

Morbid conditions requiring further investigation and special care were referred to the KLES Dr. Prabhakar Kore Charitable Hospital and District Hospital, Belgaum.

Data analysis

The data was tabulated using Microsoft Excel Worksheet and analyzed using mean, proportions and percentages. The statistical analysis was done with SPSS 18 statistical software using chi-square test.

Definition of study variables

Age group⁴: According to NFHS 3, 15-49 years aged women were considered as women under reproductive age group. Subjects were asked about their age and it was confirmed with appropriate documents (Ration card). Age was recorded to the nearest completed year. Those who did not have ration card, age was confirmed by menstrual history.

Religion: The women's religion was noted and was grouped as "Hindu", "Muslim", and "Others" (Jain, Christian).

Student: A study participant attending school or college.

Occupation^{4, 55}:

Housewife: Women engaged in household duties but doing no other productive work to augment family income.

Agricultural workers: A woman who works in farm/field.

Other: Any other Profession – A woman who is employed in any profession other than these like teacher, tailor, clerk, receptionist, daily wages etc.

Educational status: The subjects were asked about their educational qualifications and were grouped into

Illiterate: A person who could not read and write with understanding in any language.

Primary school education: A person who had studied up to 4th standard.

Secondary school education: A person who had studied up to 7th standard.

High School: A person who had studied up to 10th standard.

College and above: A person who had studied up to pre-university / diploma/ Tch/degree class.

Type of family⁵⁶

Nuclear family: Married couple, along with their dependent children living in the same house.

Joint family: Many married couples and their children who live in the same household. Males are blood relatives and females of the family are related by either marriage or blood relation

Socio-economic status^{57, 58}:

Information regarding per capita income (in Rupees / month) was collected and socio-economic status was determined using Modified B G Prasad's classification for the study period (2011 – 12).

Average consumer price index for the year 2011 – 12 = 887

Modification was done with the aid of multiplication factor (M.F), which was obtained as below:

$$\begin{aligned} \text{M.F.} &= \frac{\text{Average consumer price index for the study period (2011 - 12)}}{100} \times 4.93 \\ &= 887 / 100 \times 4.93 = 43.73 \end{aligned}$$

Social-economic class.	Prasad's classification 1961 (per capita income in Rs/month)	Modified Prasad's classification In study period 2011 - 12 (per capita income in Rs/month)
I	100 and above	4373 and above
II	50—99	2187 – 4372
III	30-49	1312 – 2186
IV	15-29	656 – 1311
V	<15	655 and below

Menstrual History:^{59, 60}

Menarche: Menarche is defined as beginning of the cycle of menstruation.

Dysmenorrhoea: It is painful menstruation.

Regular/Normal Menstruation: Cyclically at the intervals of 21-35 days with mean of 28 days, for 4-5 days duration with an average of 50ml blood loss.

Irregular/Abnormal Menstrual bleeding⁶⁰

Oligomenorrhoea: Menstrual bleeding more than 35 days apart and remains constant at that frequency.

Menorrhagia: Cyclic bleeding at normal intervals; the bleeding is either excessive in amount (>80ml) or duration or both.

Polymenorrhoea: Cycle is reduced to an arbitrary limit of 21 days or less and remains constant at that frequency.

Menopause: Means permanent cessation of menstruation at the end of reproductive life due to the loss of ovarian follicular activity.

***Obstetric History*^{61,62}**

Those who did not have records/ reports, they were asked in the vernacular/ non formal language and history was obtained.

Spontaneous abortion: Expulsion from its mother of an embryo or fetus weighing 500 gm or less/ less than 22 weeks of gestation when it is not capable of independent survival.

Preterm delivery: Labor before the 37th completed week (<259 days) counting from the 1st day of last menstrual period.

Stillbirth: Birth of the newborn after 28 completed weeks (>1000gms), when the baby does not breathe or show any signs of life after delivery.

Low Birth weight: Birth weight less than 2500 gms irrespective of the gestational age.

***Tobacco user Classification*^{29, 63}**: Tobacco users were classified according to WHO classification-

(*Tobacco consumption and Tobacco use are used synonymously in our study*).

Never user/ Non users: Not tried tobacco any time in life.

Ever user: Should have consumed tobacco atleast once in her life time.

Current user: History of consuming tobacco within 30days preceding the survey.

Occasional users: Consuming tobacco for three or less number of days in a week.

Light users: Use of tobacco less than 6 times a day.

Heavy users: Tobacco use six or more than six times a day.

Quitter: A person with the history of previous tobacco use and abstinence from tobacco for at least 1 year preceding the survey.

Quit rate= Quitters/ Ever users x 100.

Types of Tobacco consumption:^{3, 5, 52}

Dentrifice:

Application of dried powdered tobacco to clean the teeth. Other forms include *Mishri* which is a roasted, powdered preparation made by baking tobacco on a hot metal plate until it is uniformly black later on it is powdered. Other forms include Gul, lal dantmanjan, etc.

Smoking forms:

Beedis: Made by rolling a dried square or rectangular piece of tendu leaf with 0.15-0.25 grams of sundried, flaked tobacco.

Cigarettes: slender roll of cut tobacco enclosed in paper and meant to be smoked.

Smokless forms:

Gutka: dry, relatively non-perishable, commercial preparation containing areca nut, slaked lime, catechu and condiments and powdered tobacco (tobacco waste).

The same mixture without tobacco is called *pan masala*.

Paan /Betel quid masala: Betel quid consists of four main ingredients - betel quid leaf (*Piper betel*), areca nut (*Areca catechu*), slaked lime [Ca(OH)_2] and catechu (*Acacia catechu*). Condiments and sweetening agents may be added as per regional practices and individual preferences.

Khaini: a mixture of sun-dried tobacco and slaked lime. It is also called as *Sada*, *Surti*.

Zarda: *Zarda* is prepared by cutting tobacco leaves into small pieces and boiling them in water with slaked lime and spices until the water evaporates.

Snuff: Dry snuff is powdered tobacco that is inhaled through the nose or taken by mouth.

RESULTS

The present study was conducted in the rural field practice area of Primary Health Centre, Vantmuri, attached to the Department of Community Medicine, Jawaharlal Nehru Medical College, Belgaum. One thousand two hundred women in the reproductive age group were studied, during the period of one year from January 2011 to December 2011. The data obtained was tabulated and analyzed as below.

Table 1. Distribution of the study participants according to their age.

Age (Years)	Study participants	
	Number	Percentage
15 to 19 years	188	15.7
20 to 24 years	83	6.9
25 to 29 years	62	5.2
30-34 years	106	8.8
35-39 years	382	31.8
40-44 years	182	15.2
45-49 years	197	16.4
Total	1200	100%

Out of 1200 study participants, 188(15.7%) were between the age of 15 to 19 years of age. 83(6.9%),62(5.2%),106(8.8%),382(31.8%),182(15.2%), 197(16.4%) belonged to the age groups of 20 to 24 years, 25 to 29 years, 30 to 34 years, 35 to 39 years, 40 to 44 years and 45 to 49 years respectively. The mean age was 33.75(SD±9.6) years.

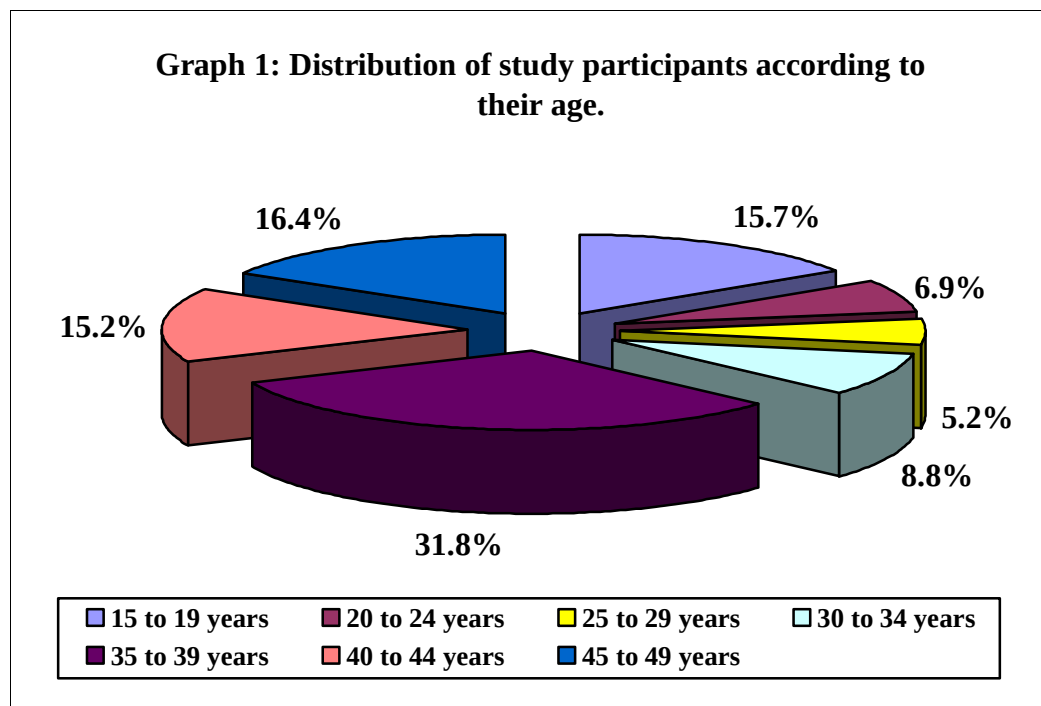
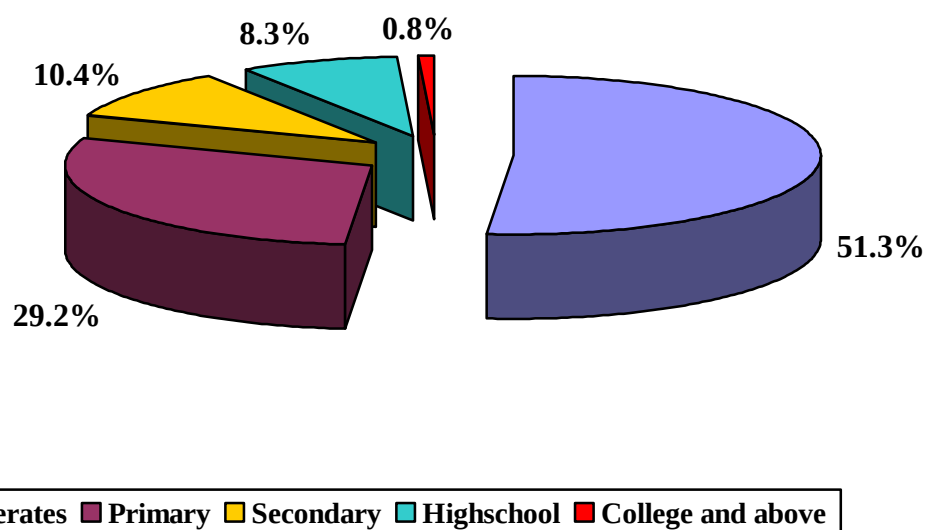


Table 2. Distribution of the study participants according to their educational status.

Educational status	Study participants	
	Number	Percentage
Illiterate	615	51.3
Primary School	350	29.2
Secondary School	125	10.4
High School	100	8.3
College and above	10	0.8
Total	1200	100

615(51.3%) were illiterates. 350(29.2%) were educated up to primary school followed by 125(10.4%) up to secondary school, 100(8.3%) up to high school and 10(0.8%) up to college and above.

Graph 2: Distribution of study participants according to their educational status



Religion

Out of total women studied, majority 87.9% were Hindus, 11.5% were Muslims and 0.6% were others.

Table 3. Distribution of study participants according to their occupation.

Occupation	Study participants(n=1172)	
	Number	Percentage
Housewife	605	51.6%
Agricultural workers	355	30.3%
Other	212	18.1%
Total	1172	100%

Out of 1200 women in the reproductive age group, 28(2.3%) were students.

Among the 1172 women, 605(51.6%) were housewives, 355(30.3%) were doing work in the fields (farms/agricultural workers) and 212(18.1%) were doing other work.

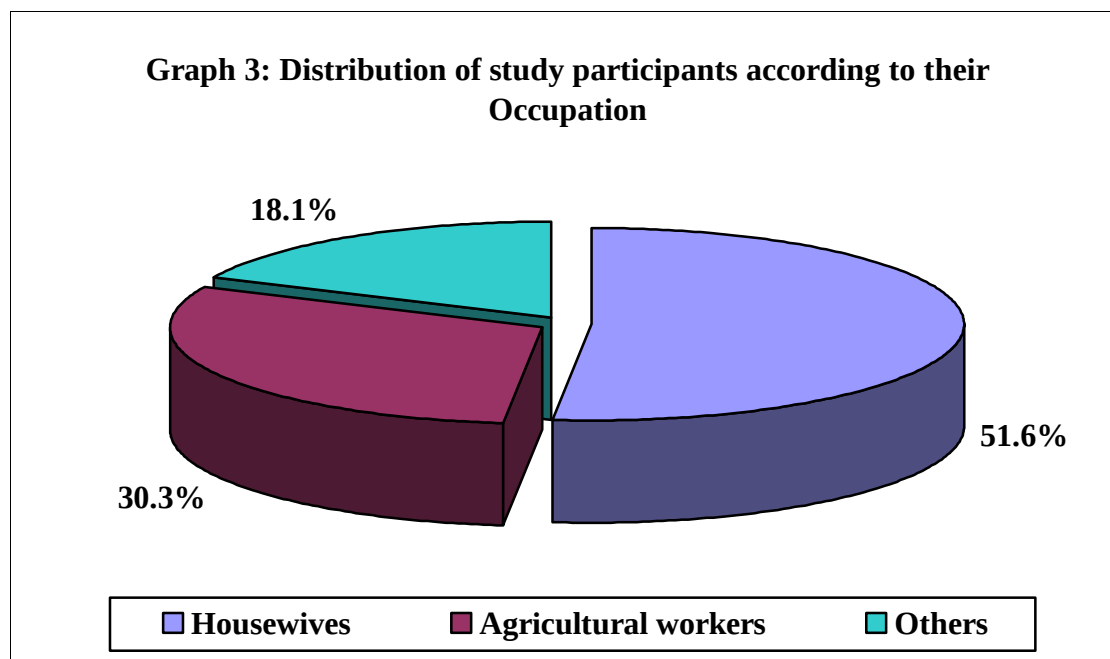
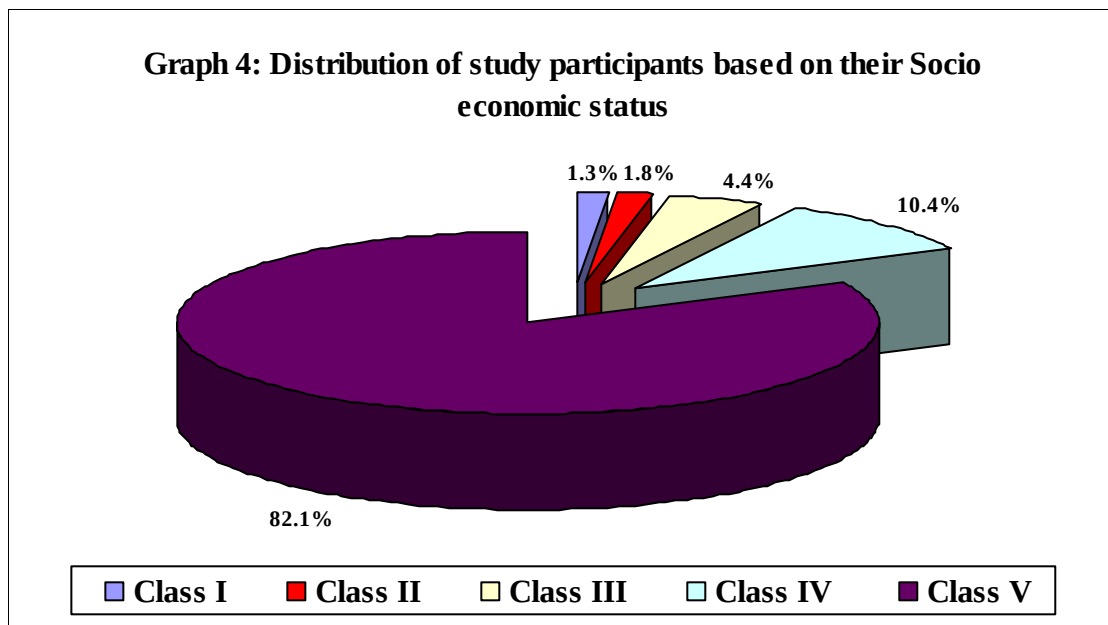


Table 4. Distribution of study participants according to their Socio economic status.

Socio-economic status	Study participants	
	Number	Percentage
Class I	16	1.3
Class II	21	1.8
Class III	53	4.4
Class IV	125	10.4
Class V	985	82.1
Total	1200	100.0

In this study, out of 1200 study participants, 16(1.3%) belonged to Class I, 21(1.8%) to Class II, 53(4.4%) to Class III, 125(10.4%) to Class IV and 985(82.1%) belonged to Class V.



Type of Family

Out of 1200 majority 740(61.7%) of the women belonged to nuclear family and 38.3% to joint family.

Out of 1200 study participants, 2(0.2%) had not attained menarche and 108(9%) had attained menopause. 1069(89.1%) of them were married. 247(20.5%) were never pregnant. 261(21.8%) women were pregnant only once. 340(28.3%) women were pregnant for two times, followed by 246(20.5%) women, who were pregnant for three times and 106(8.8%) were pregnant for four or more times. 100(8.4%) of study participants were currently pregnant.

Prevalence of Tobacco Consumption

Out of the 1200 study participants, 117 had ever consumed tobacco. The prevalence of tobacco consumption was 9.7%.

11(10.9%) of currently pregnant women were consuming tobacco.

Table 5. Distribution of tobacco users based on current consumption, frequency, age of initiation and duration of consumption.

Status of tobacco consumption	Tobacco users(n=117)	
	Number	Percentage
Currently consuming	98	83.8
Occasional (<3days/week)	14	12
Previously consuming	5	4.3
Frequency		
Light users (<6times/day)	79	67.5
Heavy users (>6times /day)	38	32.5
Age of Initiation		
< 18 years of age	71	60.7
>18 years of age	46	39.3
Duration of consumption		
< 5 years	22	18.8
5-10 years	16	13.7
> 10 years	79	67.5

Out of total 117 ever users of tobacco, 98(83.8%) were currently consuming tobacco, followed by 14(12%) consuming occasionally. 5(4.3%) were currently not using tobacco.

Out of 117 ever tobacco users, 79(67.5%) used tobacco for less than 6 times in a day whereas 38(32.5%) used tobacco for more than 6 times.

Majority, 71(60.7%) of the women started using tobacco before eighteen years of age as against 46(39.3%) who initiated tobacco use after 18 years of age.

A very high percentage of 79(67.5%) had more than 10 years of exposure to tobacco use, followed by 22(18.8%) having less than five years of exposure. 16(13.7%) had more than five but less than 10 years of exposure.

Table 6. Distribution of tobacco users based on patterns of Tobacco consumption

Pattern of tobacco consumption		Tobacco users		
		Number	n=117(%)	N=1200(%)
Dentrifice		100	85.5	8.3
Chewing form	Plain Tobacco	32	27.4	2.7
	Pan with Betel quid	30	25.6	2.5
Snuff		9	7.7	0.8
Multiple Forms		49	41.9	4.1

In this study, 49(4.1%) consumed multiple forms of tobacco, most common being dentrifice along with plain tobacco or paan with beetelquid or used snuff. 100 women (8.3%) used dentrifice followed by 32(2.7%) and 30(2.5%) chewing plain tobacco and tobacco with paan/betel quid respectively. 9(70.8%) used snuff form whereas smoking was not found in any participant. However, amongst the users, dentrifice was the most common form of tobacco used(85.5%) followed by 32(27.4%) plain tobacco consumption.

Table 7. Influencing factors for initiation of tobacco use.

Influencing factors for tobacco use	(Tobacco users) n=117	
	Number	Percentage
Family members	84	71.8
Friends	26	22.2
Advertisements	1	0.9
Multiple	6	5.1

84(71.8%) of the ever tobacco users were influenced by their family members to use tobacco, whereas 26(22.2%) were influenced by their friends. While 6(5.1%) were influenced by multiple factors, 1(0.9%) was influenced by the advertisements to use tobacco.

Table 8. Reasons for initiation of tobacco use.

Reasons for Initiation	(Tobacco users) n=117	
	Number	Percentage
Toothache	67	57.3
Peer Pressure	30	25.6
Curiosity	7	6.0
Pleasure	5	4.3
Hobby	3	2.6
Others	3	2.6
Multiple	2	1.7
Total	117	100.0

Toothache was the main reason for initiating tobacco use among 67(57.3%) tobacco users followed by peer pressure 30(25.6%) whereas 3(2.6%) each had started using tobacco as a hobby and for pleasure. For 3(1.7%) women, tension and depression were the other reasons for starting tobacco use.

Monthly expenditure on tobacco

Among the tobacco users, the monthly expenditure for 96(82.7%) was less than twenty rupees, for 16(13.7%) it was 20-40 rupees per month and for 5(4.3%) the expenditure on tobacco was more than forty rupees per month.

Table 9. Distribution of study participants based on tobacco consumption during pregnancy

Tobacco consumption during pregnancy	Tobacco users (n=117)	
	Number	Percentage
Never Pregnant	19	16.2
Continued tobacco use during pregnancy	91	77.8
Started during pregnancy	1	0.9
Stopped during pregnancy and started later	6	5.1
Total	117	100.0

Of the 117 tobacco users, 19(16.2%) were never pregnant. 91(77.8%) continued using tobacco during their pregnancy while 6(5.1%) stopped tobacco use during pregnancy and started it later again, whereas 1(0.9%) woman started tobacco use during pregnancy.

Tobacco as first use in the morning

79(67.5%) of the ever users consumed tobacco as first thing in the morning as against 38(32.5%) women who did not use tobacco as first thing in the morning.

66(56.4%) of ever users believed that tobacco use helps in decreasing toothache whereas 29(24.8%) believed that tobacco use helps in bowel movement and 20(17.1%) believed that tobacco consumption decreases headache.

Attitude on Quitting

5(4.3%) of the ever users had quit using tobacco completely. 45(38.5%) never thought of quitting tobacco consumption, whereas 39(33.3%) had previously thought of quitting as against 28(23.9%) who were thinking presently to stop tobacco consumption.

Table 10. Distribution of the study participants according to their age and tobacco use.

Age (In years)	Study participants		Total
	Nonusers	Users	
15 to 19 years	173 92%	15 8.0%	188 100%
20 to 24 years	72 86.7%	11 13.3%	83 100%
25 to 29 years	51 82.3%	11 17.7%	62 100%
30 to 34 years	96 90.6%	10 9.4%	106 100%
35 to 39 years	369 96.6%	13 3.4%	382 100%
40 to 44 years	163 89.6%	19 10.4%	182 100%
45 to 49 years	159 80.7%	38 19.3%	197 100%
Total	1083(90.3%)	117(9.7%)	1200(100%)

$$\chi^2=44.299$$

$$df=6$$

$$p<0.001$$

Amongst the users, tobacco consumption was more i.e. 38(19.3%) in women belonging to the older age group of 45 to 49 years. It was 15(8%), 11(13.3%), and 11(17.7%) among the users of the age groups 15 to 19 years, 20 to 24 years and 25 to 29 years respectively. Tobacco consumption was 10(9.4%), 13(3.4%) and 19(10.4%) in women belonging to 30 to 34 years, 35 to 39 years and 40 to 44 years. This difference was statistically significant. ($\chi^2=44.299$, $df=6$, $p<0.001$).

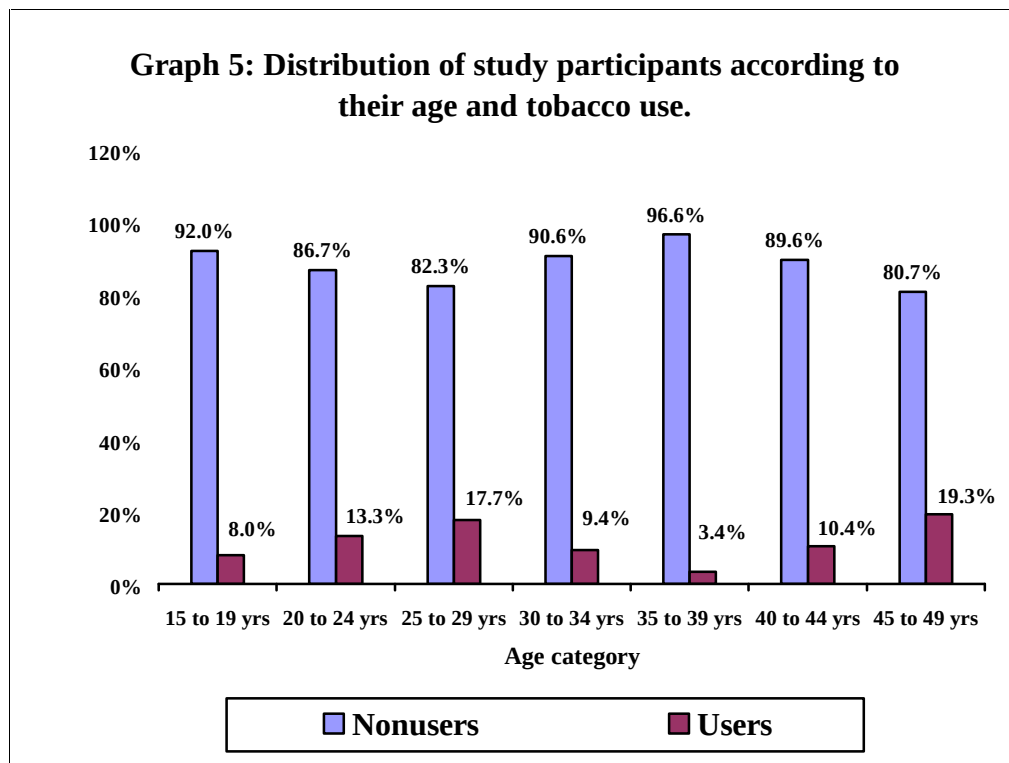


Table 11. Association of tobacco consumption and educational status of study participants.

Educational status	Study participants		Total
	Nonusers	Users	
Illiterate	517 (84.1%)	98 (15.9%)	615 (100%)
Primary School	344 (98.3%)	6 (1.9%)	350 (100%)
Secondary School	118 (94.4%)	7 (5.6%)	125 (100%)
High School	94 (94%)	6 (6.0%)	100 (100%)
College and Above	10 (100%)	0 (0%)	10 (100%)
Total	1083(90.3%)	117(9.7%)	1200(100%)

$$\chi^2=57.172$$

$$df=3$$

$$p < 0.001$$

In this study, a very high prevalence of tobacco use of 98(15.9%) was observed among the 615 study participants who were illiterate, followed by 6(1.9%) out of total 350 study participants educated up to primary school, as against 7(5.6%) out of 125 women educated up to secondary school. 6(6%) out of 94 high school educated women consumed tobacco. Women educated up to high

school and college and above were grouped together to find the association. The difference that was observed between those educated up to high school and above and educated below high school level and illiterates was statistically significant. ($\chi^2=57.172, df=3, p < 0.001$).

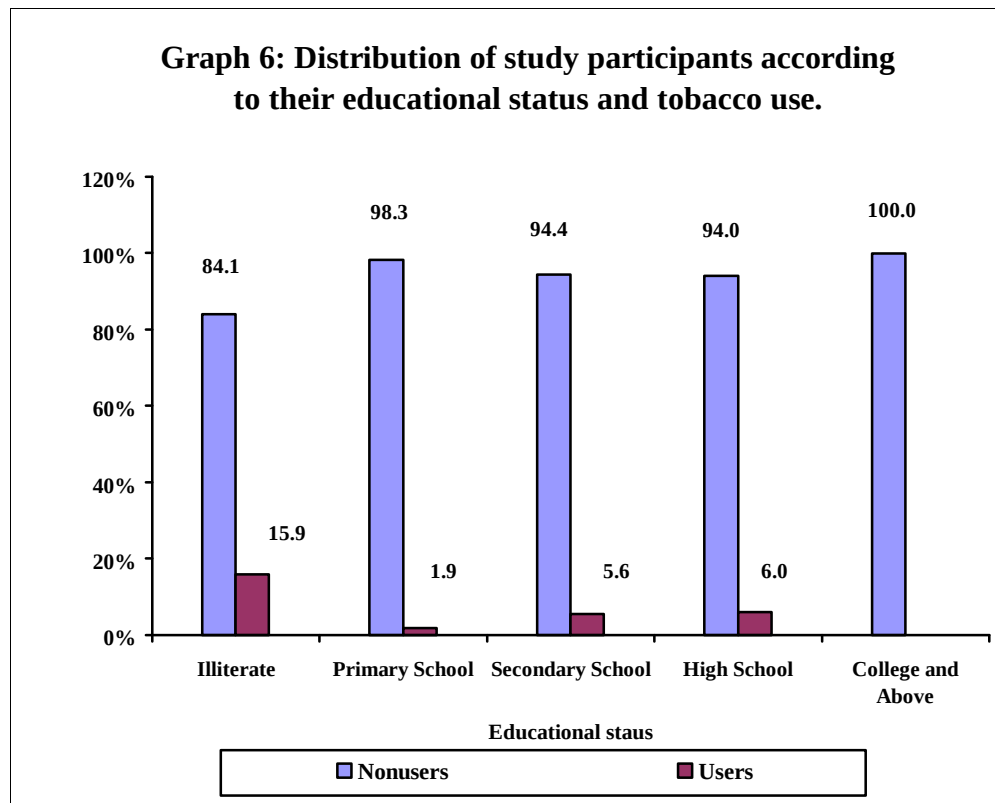


Table 12. Association between prevalence of tobacco consumption and occupation of study subjects.

Occupation	Study participants		Total n=1172
	Nonusers	Users	
Housewife	580 95.9%	25 4.1%	605 100%
Agricultural labors	282 79.4%	73 20.6%	355 100%
Other	194 95.5%	18 8.5%	212 100%
Total	1056(90.1%)	116(9.9%)	1172(100%)

$$\chi^2=68.308$$

$$df=2,$$

$$p<0.001$$

A higher prevalence of 73(20.6%) was seen among 355 working women who worked in the farms or doing field work. 25(4.1%) of the 605 housewives consumed tobacco whereas 18(8.5%) of those doing other work like tailoring, clerical job, factory work, etc were consuming tobacco. This difference was statistically significant. ($\chi^2=68.308$, $df=2$, $p<0.001$).

Out of 1200 study participants, 28 were students out of whom 1(3.6%) person consumed tobacco.

Table 13. Association between tobacco consumption and socioeconomic status of the study participants

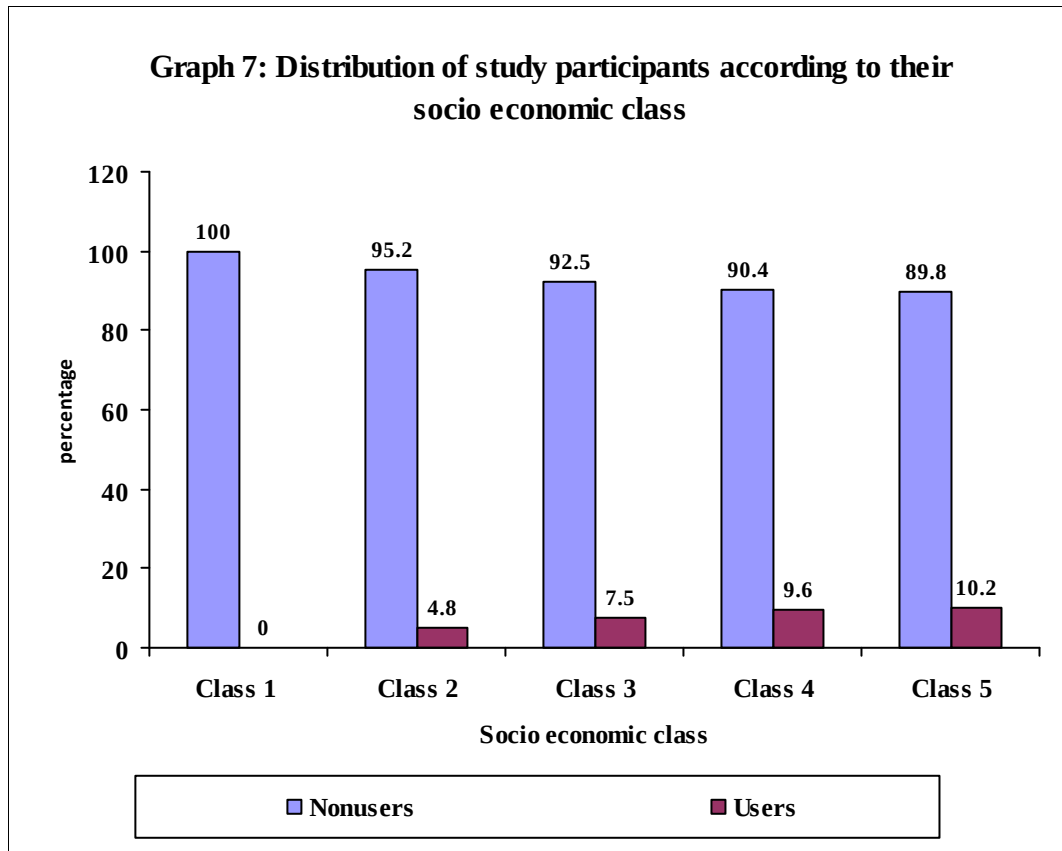
Socio economic Status	Study participants		Total
	Nonusers	Users	
I	16 100%	0 0%	16 100%
II	20 95.2%	1 4.8%	21 100%
III	49 92.5%	4 7.5%	53 100%
IV	113 90.4%	12 9.6%	125 100%
V	885 89.8%	100 10.2%	985 100%
Total	1083 90.3%	117 9.7%	1200 100%

$$\chi^2=2.799$$

$$df=4$$

$$p=0.592.$$

Percentage of people consuming tobacco steadily increased across the groups from 1(4.8%) in Class II to 4(7.5%) in Class III, to 12(9.6%) in Class IV. A high proportion 100(10.2%) of people consuming tobacco was seen in women belonging to Class V socio economic class. However this difference was statistically not significant. ($\chi^2=2.799$, $df=4$, $p=0.592$).



Prevalence of tobacco consumption and type of family

Out of 1200 study participants, 740 belonged to nuclear family and 61(8.2%) of them consumed tobacco, whereas there was high prevalence of tobacco use in women belonging to joint family with 56(12.2%) out of 460 women consuming tobacco. This difference was statistically significant. ($\chi^2=4.981$, $df=1$, $p=0.026$).

Table 14. Association of Age of the study participants and Frequency of tobacco consumption

Age (Years)	Number of tobacco consumers and frequency of tobacco use/day		Total
	< 6 times/ day	>6 times/day	
15 to 19 years	15 100%	0 0%	15 100%
20 to 24 years	8 72.7%	3 27.3%	11 100%
25 to 29 years	8 72.7%	3 27.3%	11 100%
30 to 34 years	9 90%	1 10%	10 100%
35 to 39 years	11 84.6%	2 15.4%	13 100%
40 to 44 years	6 31.6%	13 68.4%	19 100%
45 to 49 years	22 57.9%	16 42.1%	38 100%
Total	79 67.5%	38 32.5%	117 100%

 $\chi^2=24.322$
 $df=6$
 $p<0.001$

Tobacco consumption for more than 6 times a day was found in none of the study participants aged 15 to 19 years, whereas higher percentage of women above forty years of age were consuming tobacco for more than 6 times a day as compared to younger age groups. 13(68.4%) and 16(42.1%) were consuming tobacco for more than six times a day in the age groups 40 to 44 and 45 to 49 years respectively. 3(27.3%) of them each in the age group of 20 to 24 years and 25 to 29 years were consuming for more than six times a day. 1(10%), 2(15.4%) of them in the age groups of 30 to 34 years and 35 to 39 years respectively were consuming tobacco for more than six times a day. This association was statistically significant. ($\chi^2=24.322$, $df=6$, $p<0.001$)

Table 15 Association of Tobacco consumption with regularity of menstrual cycles and Dysmenorrhoea.

Tobacco consumption	Study participants		Total n=1198	
	Regular menstrual cycle	Irregular menstrual cycles		
Non Users	914 84.6%	167 15.4%	1081 100%	$\chi^2 = 5.575$ df= 1 p= 0.018
Users	89 76.1%	28 23.9%	117 100%	
Tobacco	Dysmenorrhoea		Total n=1198	
	Present	Absent		
Non Users	189 17.5%	892 82.5%	1081 100%	$\chi^2 = 266.593$ df= 1 p<0.001
Users	100 85.5%	17 14.5%	117 100%	

Out of 1081 non users of tobacco, 914(84.6%) had regular menstrual cycles as compared to the tobacco users, where 89(76.1%) had regular cycles. 167(15.4%) of the nonusers and 28(23.9%) of the users had irregular cycles. This association of tobacco consumption with irregular menstrual cycles was statistically significant. ($\chi^2 = 5.575$, $df = 1$, $p = 0.018$).

In this study, out of 1198 study participants who had attained menarche, 189(17.5%) non users had dysmenorrhoea whereas a very high percentage of 100(85.5%) of the tobacco users had dysmenorrhoea. This difference was statistically strongly significant. ($\chi^2 = 266.593$, $df = 1$, $p < 0.001$).

Among the tobacco users with irregular menstrual cycles, the most common manifestation was Oligomenorrhoea 12(42.9%) followed by 9(32.1%) and 7(25%) of menorrhagia and polymenorrhoea respectively. Among the non users, polymenorrhoea was more common.

Table 16. Association of tobacco consumption with outcomes of Pregnancy.

Pregnancies (Gravida)	Outcomes	Study participants		Total	
		Nonusers	Users		
First	Normal	775(94.5%)	83(92.2%)	858(94.3%)	$\chi^2 = 0.79$ $p=0.374$
	Abortions	10(1.2%)	1(1.1%)	11(1.2%)	
	Preterm	35(5.2%)	6(6.7%)	41(4.5%)	
Total		820(100%)	90(100%)	910(100%)	
Second	Normal	553(93.9%)	66(81.5%)	619(92.4%)	$\chi^2=15.59$ p=0.00008
	Abortions	18(3.0%)	6(7.4%)	24(3.6%)	
	Preterm	18(3.0%)	8(9.9%)	26(3.9%)	
	Stillbirths	0(0%)	1(1.2%)	1(0.1%)	
Total		589(100%)	81(100%)	670(100%)	
Third	Normal	248(90.2%)	43(78.1%)	291(87.9%)	$\chi^2=6.33$ p=0.012
	Abortions	8(2.9%)	7(12.7%)	15(4.5%)	
	Preterm	19(6.9%)	2(3.6%)	21(6.5%)	
	Stillbirths	0(0%)	3(5.5%)	3(0.9%)	
Total		275((100%)	55((100%)	330(100%)	
Fourth	Normal	69(98.6%)	19(79.1%)	88(93.6%)	$\chi^2_{yc} = 8.25$ p=0.004 Fisher exact-0.004
	Preterm	1(1.4%)	1(4.2%)	2(2.1%)	
	Stillbirths	0(0%)	4(16.7%)	4(4.3%)	
Total		70(100%)	24(100%)	94(100%)	

(To find the association, abortions, preterm deliveries and still births were grouped together as abnormal outcome and calculated against normal outcome).

Out of total 910 outcomes of the first pregnancies (excluding those currently pregnant and irrespective of subsequent pregnancies/deliveries) 820 were among non users as compared to 90 among tobacco users. Among the non users, 10(1.2%), 35(5.2%) had spontaneous abortions and preterm deliveries respectively as compared to 1(1.1%), 6(6.7%) of the tobacco users who had abortions and preterm deliveries respectively. Though the percentages of abnormal outcomes were high among tobacco users, the difference was not statistically significant. ($\chi^2 = 0.79$, $p = 0.374$)

Out of 670 outcomes of second pregnancies, 18(3.0%) spontaneous abortions and 18(3.0%) preterm deliveries were recorded among the 589 nonusers whereas 6(7.4%) spontaneous abortions, 8(9.9%) preterm deliveries and 1(1.2%) stillbirths were observed in tobacco users and the difference observed was statistically significant. ($\chi^2 = 15.59$, $p = 0.00008$).

Similarly, out of 330 study participants with three pregnancies, 8(2.9%) and 19(6.9%) nonusers had spontaneous abortions and preterm deliveries respectively. Out of 55 third pregnancies among tobacco users, 7(12.7%), 2(3.6%), 3(5.5%) were spontaneous abortions, preterm deliveries and stillbirths respectively. This difference was statistically significant. ($\chi^2 = 6.33$, $p = 0.012$).

Out of total 94 fourth pregnancy outcomes, 1 was preterm delivery among nonusers as compared to 1 preterm and 4(16.7%) stillbirths respectively among the tobacco users was recorded and this difference was statistically significant.

($\chi^2_{yc}=8.25$, $p=0.004$, Fisher exact- 0.004).

Thus in this study, except for the first pregnancy outcomes, all the subsequent outcomes of the pregnancies, the differences are statistically significant indicating an association between tobacco consumption and outcome of pregnancy.

Table 17. Association of Birth weight with consumption of tobacco.

Birth order of newborn	Birth weight	Study participants		Total	
		Nonusers	Users		
First	Normal	720(88.9%)	35(39.3%)	755(84.0%)	$\chi^2= 146.434$ p< 0.0001
	Low	90(11.1%)	54(60.7%)	144(16.0%)	
Total		810(100%)	89(100%)	899(100%)	
Second	Normal	460(80.6%)	21(28.4%)	481(74.6%)	$\chi^2=94.076$ p<0.0001
	Low	111(19.4%)	53(71.6%)	164(25.4%)	
Total		571(100%)	74(100%)	645(100%)	
Third	Normal	213(79.8%)	11(24.4%)	224(71.8%)	$\chi^2=58.221$ p< 0.0001
	Low	54(20.2%)	34(75.6%)	88(28.2%)	
Total		267(100%)	45(100%)	312(100%)	
Fourth	Normal	60(85.7%)	3(15.0%)	63(70.0%)	$\chi^2=37.041$ p<0.0001
	Low	10(14.3%)	17(85.0%)	27(30.0%)	
Total		70(100%)	20(100%)	90(100%)	

In this study, out of 899 babies of the first birth order, 810 were born to women who were nonusers and 89 were born to tobacco users. 90(11.1%) babies born to non users were of low birth weight whereas 54(60.7%) babies born to tobacco users were of low birth weight. This difference was strongly statistically significant. ($\chi^2= 146.434$, $p< 0.0001$).

Similarly, amongst the babies born of second birth order, 111(19.4%) babies born were of low birth weight in the non users whereas 53(71.6%) were of low birth weight amongst the users. ($\chi^2=94.076$, $p<0.0001$).

Among the babies born of third birth order, 54(20.2%) babies born were of low birth weight in the nonusers, whereas 34(75.6%) babies were of low birth weight amongst the tobacco users. ($\chi^2=58.221$, $p< 0.0001$)

Among the babies born of fourth birth order, 10(14.3%) babies born to nonusers and 17(85.0%) born to tobacco users were of low birth weight and the difference observed was statistically significant ($\chi^2=37.041$, $p<0.0001$)

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Table 18. Association between knowledge about the hazards of tobacco consumption and consumption of tobacco.

Knowledge about hazards of tobacco consumption	Study participants		Total
	Nonusers	Users	
No idea	604 55.8%	106 90.6%	710 59.2%
Tooth decay	17 1.6%	1 0.9%	18 1.5%
Respiratory ailments	53 4.9%	1 0.9%	54 4.4%
Cardiac ailments	18 1.7%	1 0.9%	19 1.6%
Cancer	208 19.2%	5 4.3%	213 17.8%
Any other	24 2.2%	2 1.7%	26 2.2%
Multiple	159 14.7%	1 0.9%	160 13.3%
Total	1083 100.0%	117 100.0%	1200 100.0%

 $\chi^2 = 54.800$

df = 6

p < 0.001

Majority, 106(90.6%) of the study participants who were consuming tobacco had no idea about the hazards caused by tobacco use. 5(4.3%) and 2(1.7%) users knew that tobacco use causes cancer, other health problems like infertility whereas 1(0.9%) of the users knew that tobacco causes tooth decay, respiratory ailments and cardiac ailments each simultaneously and were still consuming it. Among the non users, 604(55.8%) had no idea where as 208(19.2%),53(4.9%),18(1.7%), 17(1.6%) and 24(2.2%) knew that tobacco use causes cancer, respiratory ailments, cardiac ailments, tooth decay and other hazards like infertility while 159(14.7%) nonusers knew about the multiple hazards caused by tobacco consumption. In general, the knowledge about the hazards of tobacco consumption was better in the nonusers than the users. This association was statistically significant.($\chi^2 = 54.800$, $df = 6$ and $p < 0.001$).

Table 19. Knowledge about hazards of tobacco use on pregnancy.

Knowledge about hazards of tobacco use on pregnancy	Study participants		Total
	Nonusers	Users	
No idea	759 70.1%	106 90.6%	865 72.1%
Affects fetus	144 13.3%	5 4.3%	149 12.4%
Low birth weight	56 5.2%	4 3.4%	60 5.0%
Abortions	41 3.8%	2 1.7%	43 3.6%
Others	23 2.1%	0 0.0%	23 1.9%
Multiple	60 5.5%	0 0.0%	60 5.0%
Total	1083 100%	117 100%	1200 100%

 $\chi^2 = 23.974$

df = 5

p < 0.001

Among the users, majority 106(90.6%) had no idea about the effects of tobacco use on pregnancy whereas 5(4.3%), 4(3.4%), 2(1.7%) users knew that tobacco use has an effect on fetus, causes low birth weight, and abortions. Among the nonusers, 759(70.1%) had no idea whereas 144(13.3%), 56(5.2%), 41(3.8%) and 60(5.5%) had knowledge about tobacco affecting fetus, causing low birth weight, abortions and multiple hazards. In general, nonusers had a better knowledge about the effects of tobacco on pregnancy than the users. This difference observed was statistically significant. ($\chi^2 = 23.974$, $df = 5$, $p < 0.001$).

Knowledge about the effects of passive smoking

Only 128(10.7%) of the study participants knew that passive smoking was harmful. Majority 901(75%) of the study participants had no idea about passive smoking and the ill effects caused by it against 171(14.3%) were of the opinion that passive smoking was not harmful.

Knowledge about the economic impact of tobacco use

780(65%) of the study participants had no idea about the economic impact of tobacco use where as only 189(15.8%) of them said that tobacco use had an impact on their economy and it made them poorer as against 231(19.3%) of those who believed it did not affect economy.

DISCUSSION

Tobacco is packed with harmful and addictive substances. Scientific evidence has shown conclusively that all forms of tobacco cause health problems throughout life, frequently resulting in premature death or disability. The epidemic of tobacco-related diseases has expanded from developed to developing countries and tobacco use is increasingly becoming a major health issue for women as well as men. Consumption of tobacco varies widely from region to region and there is lack of information regarding the tobacco use among the women in reproductive age group.

Socio demographic profile

The age groups covered by various studies are diverse. In the present study almost 31% of the women were in the age group of 35-39 years followed by more than 15% each in the age group 45-49 years and adolescence. (Table.1). As against this, NFHS 3⁴ reported that, age distribution decreased from 20% in the age group 15-19 years to 8% in the age group of 45-49 years.

Majority of our study subjects, 87.9% were Hindus. This was comparable to NFHS 3⁴ in which Hindus were 81%.

Slightly more than half of our study participants (51.3%) were illiterates. Amongst the literates, around 30% were educated up to primary school (Table 2). As against this, NFHS 3⁴ reported that 41% of the females were illiterates. Vantmuri is a resettlement area where majority of population are illiterates.

Among the study participants 2.3% were students. Out of the remaining 1172 study participants, slightly more than 50% were housewives followed by 30.3% who were working women, majority being agricultural workers (Table.3). The distribution was comparable with NFHS 3⁴ where 36% were reported to be working and maximum were agricultural workers.

Majority 82.1% of the study participants belonged to Class V socio economic class, followed by 10.4% of them to Class IV (Table.4). In the national survey⁴, 17.5% and 19% of women belonged to lowest and 2nd category of wealth index.

Prevalence of tobacco consumption (Table 5)

In our study, the prevalence of tobacco consumption was 9.7%. This is less when compared to that of NFHS 3⁴ where the prevalence of tobacco among women in rural areas was 13% in India and in Karnataka, 6.6% of the women used some form of tobacco. In our study, 10.9% of the currently pregnant women were consuming tobacco as against 8.5% and 1% in India and Karnataka respectively according to NFHS 3.⁴ Global Adult Tobacco Survey (GATS)⁴² in 2010 reported current tobacco use in any form in females was 20.3%. ICMR study²⁹ reported 11.7% ever use of tobacco among the women aged 15 to 49 years.

In this study it was found that two thirds used tobacco for less than 6 times in a day. As against this, ICMR study²⁹ in Karnataka reported that slightly more than 50 % (53.5%) of the females used tobacco less than 6 times a day.

Majority (60.7%) of our study subjects started tobacco consumption during adolescence. ICMR study²⁹ reported that regular habit of tobacco use in

Karnataka started above 10 years in more than 99% cases. Global Adult Tobacco Survey (GATS) ⁴² in 2010 reported that in India, 25.8% of the females started consuming tobacco before the age of 15 years. The age of initiation of tobacco use is decreasing resulting in increased duration of exposure to tobacco use during their life time. These individuals will eventually succumb to the harmful effects at a younger age. Adolescent age group especially in the rural areas is neglected group. In the absence of the special services to this group, the prevalence is likely to go up.

More than two thirds of the tobacco users in our study had more than 10 years of exposure to tobacco use where as ICMR study²⁹ reported that 41.2% in the reproductive age group had more than 10 years of exposure tobacco consumption. This suggests that once a person/ woman start consuming tobacco then she will probably end up in higher frequencies of use per day and also for a longer duration (probably lifelong). Tobacco is easily available to the residents in this area as it is a crop cultivated in the surrounding region.

Patterns of tobacco consumption (Table 6)

In our study, 4.1% consumed multiple forms of tobacco, most common being dentrifice along with plain tobacco or paan with betel quid or used snuff. 8.3% used dentrifice followed by 2.7% and 2.5% chewing plain tobacco and tobacco with pan/betel quid respectively. 0.8% used snuff form where as none of our women were smoking. This suggests that dentrifice is the most common form followed by chewing plain tobacco or with beetelquid. This could be probably due to the belief among the population that tobacco use helps in relieving tooth ache. As against this, NFHS 3⁴ reported that, in Karnataka, 0.1% women were

smoking whereas 6% of them chewed pan, gutka or used other forms of tobacco and 0.5% used snuff form of tobacco. Whereas in India, 2% of rural women smoked cigarettes or bidis, while 10% chewed tobacco and 0.9% used snuff. Global Adult Tobacco Survey (GATS) ⁴² in 2010 reported that 2.9% females in India are current smokers 18.4% are current users of smokeless tobacco. In ICMR study²⁹, 0.5% of the rural women among the age group of 15-49 years were currently smoking and 0.5% used pan- tobacco quid. Similar findings were reported by various other studies.^{33,36,37,40}

Influencing factors, reasons for initiation and monthly expenditure on tobacco consumption (Table 7 - 8)

Almost 70% of our tobacco users were influenced by their family members to use tobacco, whereas 22% were influenced by their friends. It can be noted that the influence of family members and friends determine the tobacco consumption.

Toothache was the main reason for initiating tobacco use among 57.3% tobacco users followed by peer pressure among 25.6%. This could probably be because of the belief that toothache is relieved by tobacco. These reasons indicate the triggering factors for initiation of tobacco use against which interventions could be planned to curb the onset of tobacco consumption.

Among the tobacco users, the monthly expenditure for 82.7% was less than twenty rupees, and for 4.3% of women the expenditure on tobacco was more than forty rupees per month. In the study done by ICMR²⁹, more than 95% of the females spent less than 200 rupees on tobacco.

In our study, more than 70% of the women who consumed tobacco continued its use even during pregnancy (Table 9). More than two thirds of the users (67.5%) consumed tobacco as first thing in the morning and more than half of our users believed that tobacco consumption reduces toothache and around 24% users believed that it helps in bowel movement. This may be the reason why dentrifice is the commonest form of tobacco used. This suggests the mindset and the fad/myth about tobacco use and its effects among the population.

Quitting

In our study, an overall quit rate of 4.3% was observed. More than a third of the ever users never thought of quitting tobacco consumption whereas one third of ever users had previously thought of quitting as against around 20% who were thinking presently to stop tobacco consumption. In the study done by ICMR²⁹, 19% of females thought previously to quit whereas more than 73% were thinking presently and around 8% had quit completely and majority of them reasoned long term health impact for cessation. GATS⁴² in 2010 reported that 46.6% smokers and 45.2% smokeless tobacco users planned to quit or at least thought of quitting. Although more than half of our users had either thought previously or were thinking presently to quit tobacco use, quit rate in our study was 4.3%. Had there been health education and counseling facilities available to these users, the quit rate would have increased.

Association of tobacco consumption and socio-demographic characteristics of the study participants (Table10-13)

In this study, higher prevalence of tobacco use was observed with elderly/higher age groups i.e. 40 to 44 years and 44 to 49 years. NFHS 3⁴ and ICMR study²⁹ also reported that tobacco use increases with increasing age group.

Our study showed that the prevalence of tobacco consumption was more than double among the illiterates when compared to those educated upto high school. Illiterates showed a higher use of tobacco than those with education. This is consistent with NFHS 3⁴ and other studies.^{29, 42} However, it also suggests that only education does not provide full protection against tobacco use as there were significant tobacco users even with high school education than with primary education. Women with no education are at a higher risk of consuming tobacco than the women with high school education.

A high prevalence of tobacco consumption was seen in women who worked in the farms/agricultural labors than the housewives and women doing other work. Thus occupation was a very significant determinant in the current study for tobacco consumption by the women. This may be because agricultural workers are more exposed to physical labor and associated stress and they believe that tobacco use helps them work consistently for long duration.

Though the association was not statistically significant, socio economic status was an important determinant of tobacco use in this study. The tobacco consumption was inversely proportional to the socio economic class. Poor socio economic status predisposes women to lead a compromised life in terms of

education, standard of living and her social belongings. A high prevalence of 10.2% of tobacco use was seen in women belonging to Class V socio economic class. NFHS 3⁴ also reported that 21.6% of the women belonging to lowest wealth index consume tobacco as compared to 3.3% women belonging to highest index. Similar observations were made by the other studies.²⁹

There was high prevalence of tobacco consumption in women belonging to joint family. Thus type of family was a major determinant of tobacco use which could be due to the fact that the elderly members in the joint family in the rural area are usually in the habit of consuming tobacco, especially if the tobacco consumption is prevalent since long time in the family and is culturally accepted.

Tobacco consumption for more than 6 times a day was found in none of the study participants aged 15 to 19 years whereas higher percentage of women above forty years of age were consuming tobacco for more than 6 times a day. ICMR study²⁹ reported a higher proportion of young tobacco-users using tobacco five or less number of times, but adults commonly used 6 or more times a day. Majority of women in the elderly age group especially after 40 years of age used for more than 6 times a day. Elderly women in the rural areas belonging to lower socioeconomic group are illiterate and are ignorant about the hazards of tobacco consumption. (Table 14)

Association of tobacco consumption and Menstrual cycles, Outcomes of pregnancy and birthweight.. (Table 15 to 17)

A significant association of tobacco consumption with irregularity of menstrual cycles and dysmenorrhoea is noted in this study.

A significant association was found between tobacco consumption and outcomes of second, third and fourth pregnancies. Also a significant association was found between tobacco consumption and low birth weight.

In a cohort study⁵² done in 2003 to 2005, a significant increase in the number of stillbirths was seen among tobacco users as compared to the non users. In other studies with similar findings, it was reported that the risk of stillbirth in tobacco users was more and there was a dose response relationship between the daily frequency of use and stillbirth risk.^{47, 53}

Tobacco consumption and knowledge about hazards of tobacco use (Table 18 and 19)

More than 90% of the tobacco users had no idea about the hazards caused by tobacco use. This could be because majority of the users are illiterates and belong to lower socioeconomic group. However up to 4% of the users consume tobacco inspite of their knowledge about the hazards of tobacco use. Cancer was the most common response about the hazards of tobacco consumption in both(users and nonusers).This was consistent with ICMR study²⁹ in Karnataka which reported that more than 50 % of tobacco users and never-users reported knowledge of at least one harmful effect of tobacco. GATS 2010 study⁴² reported that 88.8% and 87.3% females believed that smoking and smokeless tobacco use cause serious illness.

More than 70% of the study participants had no idea about the ill effects caused by tobacco consumption on pregnancy and its outcome. Only around 12% of the women knew that tobacco consumption would affect fetus causing stillbirths. They were more ignorant which could be mainly because of no/low education level and their casual attitude towards the use of tobacco.

Majority 75% of the study participants had no idea about passive smoking and the ill effects caused by it against around 14%, who were of the opinion that passive smoking was not harmful. Around 10% of the study participants knew that passive smoking was harmful. ICMR study²⁹ reported that Second-hand smoke was considered to be harmful for adults by more than 25% of female tobacco users in Karnataka. GATS 2010 study⁴² reported that 80.8% females believed that exposure to second hand smoke causes serious illness in nonusers. This could be probably due to no/low education status of the women thus having no knowledge about hazards of passive smoking.

65% of the study participants had no idea about the economic impact of tobacco use where as only around 15% of them said that tobacco use had an impact on their economy and it made them poorer as against 19.3% of those who believed it did not affect their economy. This could probably be because of the easy availability of tobacco at trivial rates resulting in negligible expenditure by the users on tobacco. However, the tobacco users donot estimate the cumulative expenditure and assess the impact on their economy. In ICMR study²⁹, more than one third of the female tobacco users and two thirds of never users felt that spending money on tobacco products makes people poorer.

CONCLUSION

Women under the reproductive age group constitute an important segment of the population. It was evident from this study that the tobacco use is widespread among the women under reproductive age group in the study area. Tobacco consumption varied with age and by the forms of tobacco. It was more in the women of lower socio economic class. It was significantly associated with age, education, occupation, and type of family. Early initiation and longer duration of tobacco use was found among the women. Significant association was found between tobacco consumption and the irregularity of menstrual cycles and dysmenorrhoea. Tobacco consumption also has a significant effect on the outcomes of pregnancy and low birth weight.

Overall, the knowledge of the health hazards and the effects of tobacco on pregnancy was poor among the study participants. There is a need for appropriate intervention to create awareness among the women about the hazards of tobacco use and to help them eventually to stop tobacco consumption.

LIMITATIONS

The limitations of the study are:

1. The study participants belong to the wide range of 15-49 years of age. Hence the possibility of the recall bias cannot be ruled out.
2. The exact quantity of the tobacco consumed per day has not been assessed.
3. As our study is a cross-sectional study, all the associations regarding tobacco consumption need to be established by conducting analytical studies.

RECOMMENDATIONS

On the basis of this study, the following recommendations have been made to tackle the multifaceted problem of tobacco epidemic.

- To implement information, education and communication activities to increase the awareness in the public especially among the women regarding hazards of tobacco consumption.
- To involve the health institutions, nongovernmental organizations and the community in controlling tobacco menace.
- Effective implementation of Laws like prohibition of sale of tobacco to minors, protection of non smokers from second hand smoking (SHS).
- Establishment of Tobacco Cessation Clinics to provide cessation services in all health care facilities.
- The information on tobacco should be included in the curriculums at all levels of education. “Tobacco free schools” concept should be encouraged by the education and health departments.
- Continuous surveillance of the trends of tobacco prevalence and its determinants and its effects on health especially in women by involving the paramedical workers.
- Female health workers to be actively involved in the tobacco cessation activities.

SUMMARY

The present community based cross-sectional study was undertaken to estimate the prevalence of tobacco consumption among the rural women in the reproductive age group and its socio demographic and behavioral determinants.

Duration of the study was for one year from 1st January 2011 to 31st December 2011. 1200 women aged between 15 to 49 years, residing in the Primary Health Centre area, Vantmuri, a rural field practice area of the Department of Community Medicine, Jawaharlal Nehru Medical College, Belgaum were included in the study. Subjects were selected by systematic random sampling.

Almost one third of the participants were in the age group of 35-39 years. More than 50% of the study participants were illiterates and majority of the study participants were Hindus (87.9%). More than 80% belonged to lower socioeconomic class.

Tobacco consumption was seen in 9.7% of the study participants with more than 80% of them using dentrifice form of tobacco. Majority (60%) of women initiated tobacco use before the age of 18 years and were consuming it for more than 10 years duration. 30% of tobacco users consumed more than 6 times a day. Almost 72% of the tobacco consuming women were influenced by the family members to use tobacco with more than half of them initiated it to get relief from toothache. Majority of the women consuming tobacco continued using it even during their pregnancies and for more than 60% of them, tobacco was the

first thing they consumed in the morning. More than 50% of the tobacco users believed that tobacco use reduced toothache.

4.3% was the overall quitting rate observed. One third of ever users had previously thought of quitting.

A high prevalence of tobacco consumption was observed in elderly age groups, among illiterates, women working in the fields/ farms and of lower socio economic class. A higher percentage of women above forty years of age were consuming tobacco for more than 6 times a day as compared to younger age groups.

A significant association of tobacco consumption with irregularity of menstrual cycles and dysmenorrhoea is noted in this study. An association was found between tobacco consumption and abnormal outcomes like spontaneous abortions, preterm deliveries and still births of 2nd, 3rd and 4th pregnancies. Also, a significant association was found between tobacco consumption and low birth weight.

Poor knowledge was noted among the tobacco users about the harmful effects of tobacco. More than 70% of the study participants had no idea about the ill effects caused by tobacco consumption on pregnancy and its outcome. Majority of the study participants had no idea about passive smoking and the ill effects caused by it.

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ANNEXURE I – ETHICAL CLEARANCE CERTIFICATE

	K.L.E.SOCIETY'S JAWAHARLAL NEHRU MEDICAL COLLEGE, NEHRU NAGAR, BELGAUM-590010 (KARNATAKA-INDIA) (Affiliated to KLE University, Belgaum)
Website: http://www.jnmc.edu E-Mail : doctojnmc@sanchamet.in : jnmc@sanchamet.in	Phone: (+ 91-0831) Office : 2471350 Principal: 2471701 Fax No. +91 (0)831 - 2470759

Ref: MDC/PG/ 2241	Date: 8/10/2010
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To,

Postgraduate Student,
Department of Community Medicine,
J.N.Medical College,
BELGAUM.

Sub: Institutional Ethical Clearance for the study.

With reference to the above, I wish to inform you that the research project "PREVALENCE OF TOBACCO CONSUMPTION AMONG RURAL WOMEN IN THE REPRODUCTIVE AGE GROUP – A CROSS-SECTIONAL", is Ethical and justifiable and has been cleared by the departmental Ethical Committee and College Dissertation and Research Committee.


(Dr. V.D. Patil,
Chairman
College Ethical Dissertation
And Research Committee,
J.N.Medical College, Belgaum.

ANNEXURE II - CONSENT FORM

“PREVALENCE OF TOBACCO CONSUMPTION AMONG RURAL WOMEN IN THE REPRODUCTIVE AGE GROUP. -A COMMUNITY BASED CROSS-SECTIONAL STUDY.”

INVESTIGATORS: Dr.

Dr.

Introduction:

You are invited to participate in the study of Prevalence of Tobacco Consumption among Rural Women in the Reproductive Age Group. You are selected as the participant in this study so as to study the prevalence of tobacco consumption. Your participation in this study is entirely voluntary.

Methodology:

In this study you have to answer a few prepared questions about consumption of tobacco and related questions. The entire procedure may take about 30 minutes.

Possible benefits:

You will not be eligible for any kind of monetary benefits or free services by virtue of your participation in the study. You will be benefitted by the health education given during the study regarding Tobacco consumption and its hazards.

Possible risks:

Methods applied to do the study are safe. No risk is involved in the study.

Cost of participation:

The participation in this study will not incur any expenditure from you. There will be no incentives provided to you to participate in this study.

Legal rights:

By signing this consent form we are not waiving any of your legal rights.

Confidentiality:

All the information collected will be kept confidential.

Authorization to publish the results:

The researcher may use the information gathered from this study for presentation in scientific journals. However participants' identity will not be revealed.

Withdrawal:

Your participation in this study is entirely voluntary. You are free to withdraw from the study at any time.

Questions:

If the participant has any queries regarding the study, she can contact

Dr.

Dr.

Consent summary:

I have been explained all the contents of this consent form in my local language and having understood and clarified all my queries about the study to the best of my knowledge, I hereby give my voluntary consent for participation in the study. I do sign the informed consent form in front of an eyewitness whom I recognize.

Name and Signature/ left thumb impression of the participant:

Date:

Name and Signature of the interviewer:

Date:

Name and Signature/ left thumb impression of the eyewitness:

Date:

Signature of the guide:

Date:

ANNEXURE III – PROFORMA

**“PREVALENCE OF TOBACCO CONSUMPTION AMONG RURAL
WOMEN IN THE REPRODUCTIVE AGE GROUP.**

-A COMMUNITY BASED CROSS-SECTIONAL STUDY.”

INVESTIGATORS: Dr.

Dr.

A. Name

B. Age

C. Address

D. Religion

1. Hindu
2. Muslim
3. Others.

E. Marital Status

1. Unmarried
2. Married.

If married, age at marriage.

3. Widow.
4. Divorcee.
5. Other.

F. Educational status.

1. Illiterate
2. Primary.

3. Secondary
4. High school.
5. College and above

G. Occupation

1. Housewife.
2. Field work
3. Student
4. Other.

H. Family Income per month.

I. No of Members in the family.

J. Socio-economic Status.

K. Type of Family

L. Menstrual History.

1. Have you attained menarche?

- a) Yes
- b) No

2. Age at Menarche.

3. Cycles

- i. -Regular
- ii. -Irregular

If irregular, then type- a) Oligomenorrhoea

b) Menorrhagia

c) Polymenorrhoea

4. Days/Cycle

5. Dysmenorrhoea

i. Yes

ii. No

M. Obstetric History.

-Score

PREGNANCY	DURATION OF PREGNANCY	OUTCOME OF PREGNANCY	SEX OF THE BABY	WEIGHT OF BABY AT BIRTH.	PRESENT AGE-ALIVE	IF DEAD-AGE AT DEATH

N. Have you attained menopause?

1. Yes – When.

2. No.

O. Knowledge about the hazards of tobacco

1. Headache

2. Tooth decay

3. Respiratory ailments

4. CVS like Heart attack

5. Cancer

6. Any other

7. No Idea

P. Knowledge about effects of tobacco consumption on pregnancy.

Q. Any other member of the family use tobacco

1. Parents.
2. Husband.
3. In laws
4. Children
5. Others

R. Knowledge about harmful effects of passive smoking:

1. Not harmful
2. Harmful
3. No idea

S. Knowledge about the economic impact of tobacco use

1. Does not make poor
2. Makes poorer.
3. No idea.

T. Any History of

1. Hypertension.
2. Diabetes
3. IHD
4. COPD.
5. Others.

U. History of any illness in last one month.

SECTION II

V. Have you ever consumed Tobacco?

1. Yes-how long?
2. No

W. Are you currently consuming tobacco?

1. Yes
2. Occasional.
3. No

X. Type of consumption

1. Dentrifice
2. Chewing -
 - i. Plain tobacco
 - ii. Gutka
 - iii. paan/beetel quid
 - iv. Khaini,Zarda
 - v. Others
3. Smoking-
 - i. beedi
 - ii. cigarette
4. Snuff
5. Multiple.

Y. No of times you consume per day:

1. Light: < 6 times /day
2. Heavy: >6 times/day

Z. Age at which you started consuming tobacco.

AA. Influencing factors:

1. Family members.
2. Friends
3. Advertisements
4. Other sources.

BB. Reason for initiating tobacco consumption

1. Tooth ache
2. Curiosity.
3. Peer pressure.
4. Hobby
5. Making impression on others.
6. Pleasure
7. Others

AB Monthly expenditure on tobacco in Rs/month

AC Tobacco consumption during pregnancy

1. Continued using tobacco during pregnancy
2. Started during pregnancy.
3. Stopped during pregnancy and later started again.

AD Do you consume tobacco as the first thing in the morning?

AE No of subjects reporting tobacco consumption helps in

1. Bowel movement.
2. Decrease tooth ache
3. Decrease Headache

4. Others

AF Would you like to stop tobacco consumption?

1. Yes
2. No

AG Attitude on stopping of tobacco consumption:

1. Thought previously to quit.
2. Thinking presently.
3. Quit completely.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

ANNEXURE IV - KEY TO MASTER CHART**Village**

1	-	Halbhavi
2	-	Bomnatti
3	-	Irabhavi
4	-	H.Hosur
5	-	Vantmuri
6	-	Bhutramnatti
7	-	Gugranatti
8	-	G Hosur
9	-	Ukkad
10	-	Ramdurg
11	-	Bennali
12	-	Dasarwadi
13	-	Godihal
14	-	Honaga
15	-	Jumnal
16	-	Kakati A
17	-	Kakati B
18	-	Sonatti

Religion

- | | | |
|---|---|--------|
| 1 | - | Hindu |
| 2 | - | Muslim |
| 3 | - | Others |

Educational Status

- | | | |
|---|---|-------------------|
| 0 | - | Illiterate |
| 1 | - | Primary School |
| 2 | - | Secondary School |
| 3 | - | High School |
| 4 | - | College and above |

Occupation

- | | | |
|---|---|------------|
| 1 | - | House wife |
| 2 | - | Field work |
| 3 | - | Student |
| 4 | - | Other |

Socio economic Status

- | | | |
|---|---|-----------|
| 1 | - | Class I |
| 2 | - | Class II |
| 3 | - | Class III |
| 4 | - | Class IV |
| 5 | - | Class V |

Type of family

- | | | |
|---|---|---------|
| 1 | - | Nuclear |
| 2 | - | Joint |

Attained Menarche

- | | | |
|---|---|-----|
| 0 | - | No |
| 1 | - | Yes |

Cycles

- | | | |
|---|---|-----------|
| 1 | - | Regular |
| 2 | - | Irregular |

Type of Irregularity

- | | | |
|---|---|-----------------|
| 1 | - | Oligomenorrhoea |
| 2 | - | Menorrhagia |
| 3 | - | Polymenorrhoea |

Dysmenorrhoea

- | | | |
|---|---|-----|
| 1 | - | Yes |
| 2 | - | No |

Marital Status

- | | | |
|---|---|-----------|
| 0 | - | Unmarried |
| 1 | - | Married |

Currently pregnant

- 0 - No
- 1 - Yes

1st, 2nd, 3rd, 4th pregnancy

- 0 - No
- 1 - Yes

Outcome of Pregnancy

- 1. - Normal
- 2. - Spontaneous Abortions
- 3. - Preterm Delivery
- 4. - Still Births

Sex of the baby

- 1. - Female
- 2. - male

Weight of the Baby

- 1. - more than 2.5 Kgs
- 2. - Less than 2.5 kgs

Present status

1. - Alive
2. - Dead

A- Age less than 1 year

Menopause

- 0 - No
- 1 - Yes

Knowledge about Hazards of Tobacco use

- 0 - No Idea
1. - Tooth decay
2. - Headache
3. - Respiratory ailments
4. - CVS like Heart Attack
5. - Cancer
6. - Any other
7. - Multiple

Knowledge about the effects of Tobacco consumption during Pregnancy

- 0 - No Idea
1. - affects fetus
2. - Low birth weight
3. - Abortions

- 4. - Others
- 5. - Multiple

Any other member of the family use tobacco

- 0 - Nil
- 1. - Parents
- 2. - Husband
- 3. - In laws
- 4. - Children.
- 5 - Others
- 6 - Multiple

Knowledge about harmful effects of passive smoking:

- 0 - No Idea
- 1. - Not harmful
- 2. - Harmful

Knowledge about the economic impact of tobacco use

- 0 - No idea
- 1. - Does not make poor
- 2. - Makes poorer.

History of Illness

- 0 Nil
- 1. Hypertension.
- 2. Diabetes
- 3. IHD
- 4. COPD.
- 5. Others.

Last one month

- 0 Nil
- 1 Tooth Ache
- 2 Fever
- 3 Others

.

Ever Consumed tobacco

- 0 - No
- 1 - Yes

Currently consuming tobacco

- 1 - Yes
- 2 - Occasional
- 3 - No

Type of consumption**Dentrifice**

1. - Yes
2. - No

Chewing

1. - Plain Tobacco
2. - Gutka
3. - Paan/Beetelquid
4. - Khaini/ zarda
5. - Others

Smoking

1. - Beedi
2. - cigarette

Snuff

1. - Yes
2. - No

Multiple

1. - Yes
2. - No

No of times you consume per day:

1. - Light: <6 times /day
2. - Heavy: >6 times/day

Influencing factors:

1. Family members.
2. Friends
3. Advertisements
4. Other sources
5. Multiple

Reason for initiating tobacco consumption

1. Tooth ache
2. Curiosity.
3. Peer pressure.
4. Hobby
5. Making impression on others.
6. Pleasure
7. Others
8. Multiple

Monthly expenditure on tobacco in rs/month

- 1 - < 20 rupees
- 2 - 20-40 rupees
- 3 - >40 rupees

Tobacco consumption during pregnancy

1. Continued using tobacco during pregnancy
2. Started during pregnancy.
3. Stopped during pregnancy and later started again.

Tobacco as the first thing in the morning?

1. Yes
2. No

Tobacco consumption helps in

1. Bowel movement.
2. Decrease tooth ache
3. Decrease Headache
4. No idea

Like to stop tobacco consumption:

1. Yes
2. No

Attitude on stopping of tobacco consumption:

1. Thought previously to quit.
2. Thinking presently.
3. Quit completely