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Original Research Article

Prevalence of Tobacco Users (Smoking and Smokeless) among Rural Areas in Bangladesh

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Abstract

Background: Tobacco consumption, encompassing both smoking and smokeless forms, remains a significant public health challenge globally, particularly prevalent in rural areas of Bangladesh. Despite efforts to curb its usage, tobacco continues to impose a substantial burden on public health, socioeconomic development, and community well-being, especially in rural regions. ***Objective:*** This study aims to assess the prevalence of tobacco use among rural areas of Bangladesh, exploring factors driving its uptake and persistence. ***Method:*** Between January and June 2023, a cross-sectional epidemiological investigation took place across multiple regions in Bangladesh, spanning Sylhet, Shunamgonj, Moulvibazar, Hobigonj, Chattogram, Pabna, Brahman Baria, Kishorgonj, and Chandpur districts. The study targeted a randomized selection of 250 adults aged 18 years and above, who had resided in their respective areas for at least five years. These individuals were recruited during consultations for various health concerns. Subsequently, they were surveyed regarding their history of tobacco consumption, and with their consent, data was systematically collected using structured questionnaires, physical assessments, and anthropometric measurements. The gathered data underwent statistical analysis through SPSS v. 20.0. ***Results:*** The study revealed a diverse demographic profile, with a majority falling within the 18-39 age bracket (40%) and a slight predominance of males (55%). Educational attainment varied, with 50% having primary dropout status. Regarding tobacco use, 30% reported smoking bidi, cigarettes, or self-rolled tobacco, 50% were non-smokers, and 20% used both smoking and non-smoking forms. The onset of tobacco use varied, with 30% starting after the age of 30. Association of impact of chronic long term tobacco use on health was also significant with 76% long term users having health related issues. Additionally, 30% of tobacco users engaged in other forms of recreation, while 25% attempted to quit smoking. Limited psychiatric awareness was evident, with only 10% understanding psychiatric disorders. ***Conclusion:*** The study highlights the significant prevalence of tobacco use in rural Bangladesh and underscores the urgent need for comprehensive strategies to address this public health issue. Targeted interventions and evidence-based policies are essential to mitigate the adverse effects of tobacco use, safeguard public health, and promote healthier communities in rural areas.

Keywords: Tobacco use, prevalence, rural Bangladesh, public health, socioeconomic factors, smoking, smokeless tobacco, intervention strategies.

INTRODUCTION

Tobacco consumption, both in smoking and smokeless forms, remains a significant public health concern globally, with particular prominence in rural areas of Bangladesh. Despite concerted efforts to curb its usage, tobacco continues to exert a considerable toll on public health, socioeconomic development, and the overall well-being of communities, especially in rural regions. Understanding the prevalence of tobacco use in these areas is crucial for implementing targeted

interventions and shaping effective public health policies [1-5].

Bangladesh, characterized by its predominantly rural landscape, faces unique challenges in addressing tobacco consumption. The allure of tobacco products, deeply ingrained cultural practices, and limited access to healthcare and educational resources contribute to the high prevalence rates observed in rural communities. Smoking tobacco, in forms such as cigarettes and bidi (hand-rolled cigarettes), along with smokeless tobacco products like betel quid and zarda (chewing tobacco), permeates various facets of rural life, affecting individuals across age groups and socioeconomic strata [6-8].

In addition to prevalence rates, understanding the risk factors associated with tobacco use is paramount. Factors such as low socioeconomic status, lack of awareness about the health consequences, and social norms endorsing tobacco consumption contribute to its pervasive presence in rural areas [8]. Furthermore, the health consequences of tobacco use, including respiratory diseases, cardiovascular disorders, and various forms of cancer, significantly impact rural populations, exacerbating existing healthcare challenges and perpetuating cycles of poverty [9-12].

This exploration aims to shed light on the prevalence of tobacco use in rural Bangladesh, considering the multifaceted factors driving its uptake and persistence. By examining prevalence rates, sociodemographic correlates, risk factors, and associated health implications, we underscore the urgent need for comprehensive strategies that address the complex interplay of cultural, economic, and environmental influences on tobacco consumption in rural settings. Through concerted efforts and evidence-based interventions, it is imperative to mitigate the adverse effects of tobacco use, safeguard public health, and foster healthier communities across rural Bangladesh.

Objective

To assess the prevalence of tobacco (smoking and smokeless) among rural areas of Bangladesh.

METHODOLOGY

The methodology deployed in this cross-sectional epidemiological inquiry has been detailed comprehensively elsewhere. From January to June 2023, our investigation unfolded across diverse regions of Bangladesh, encompassing the districts of Sylhet, Shunamgonj, Moulvibazar, Hobigonj, Chattogram, Pabna, Brahman Baria, Kishorgonj, and Chandpur. These areas host a populace comprising a mosaic of rural and peri-urban residents, spanning across the districts.

For our research, we randomly enlisted 250 adults (aged ≥18 years) seeking consultation for various health issues, who had resided in their respective locales for a minimum of five years according to the Demographic Surveillance System (DSS) registry. However, individuals hospitalized during the study period and those grappling with severe illnesses, provisionally diagnosed with malignancies, mental disorders, congenital conditions, and/or physical disabilities were omitted from our analysis. Securing written informed consent, we administered pre-tested structured questionnaires, conducted physical examinations, and recorded anthropometric measurements.

Subsequently, participants were directed to visit the diagnostic laboratories in their respective regions, where blood and urine samples were collected for further morbidity investigation. Statistical scrutiny was undertaken employing SPSS v. 20.0, with categorical variables delineated as frequencies and percentages. The associations between outcome and exposure variables were scrutinized utilizing a two-tailed Pearson chi-squared test for categorical variables. Furthermore, multivariable logistic regression was executed for variables exhibiting a p-value <0.05, estimating the adjusted odds ratio (AOR) alongside a 95% confidence interval (CI).

RESULTS

The table provides a comprehensive overview of demographic characteristics and socioeconomic factors within the surveyed population. In terms of age distribution, the majority fall within the 18-39 age bracket (40%), followed by 40-59 (35%), and 60-69 (25%). Gender distribution shows a slightly higher representation of males at 55% compared to females at 45%. Educational qualifications vary, with a significant portion having primary dropout (50%) and a smaller proportion having completed higher education (2.5%). Residency patterns indicate that 40% live in tin homes, 35% in mud homes, and 25% in buildings. Occupational statuses differ between genders, with males largely engaging in day labor contracts (20%) and supervisory roles (25%), while females are predominantly homemakers (40%) with some engaging in agriculture or day labor. Marital status reveals a varied distribution with 35% married, 25% unmarried, 25% divorced, and 15% widowed individuals.

Among the surveyed population, 30% reported smoking bidi, cigarettes, or self-rolled tobacco products. Meanwhile, 50% identified as non-smokers, opting for alternatives such as jarda, gudka, chewing tobacco, or white tobacco powder. Additionally, 20% of respondents indicated using both smoking and non-smoking forms of tobacco.

Table-1: Demographic characteristics of the patients

Age Distribution	**%**
18-39 years	40%
40-59	35%
60-69	25%
Gender Distribution	%
Male	55%
Female	45%
Economical barrier	%
below 10,000 BDT	35%
10,000-20,000 BDT	30%
20,000-30,000 BDT	25%
Educational Qualification	%
Primary dropout	50%
Primary completed	25%
High school dropout	15%
High school completed	7.5%
Higher education	2.5%
Residency	%
Tin home;	40%
Mud home;	35%
Building	25%
Occupational status of male	%
Day labor contractual	20%
Day labor monthly	25%
Supervisory job	25%
Non-supervisory job	10%
Agriculture	20%
Occupational status of female	%
Home maker	40%
Home maker plus agriculture	35%
Home maker plus day labor	25%
Marital status	%
Married	35%
Unmarried	25%
Divorced	25%
Widowed	15%

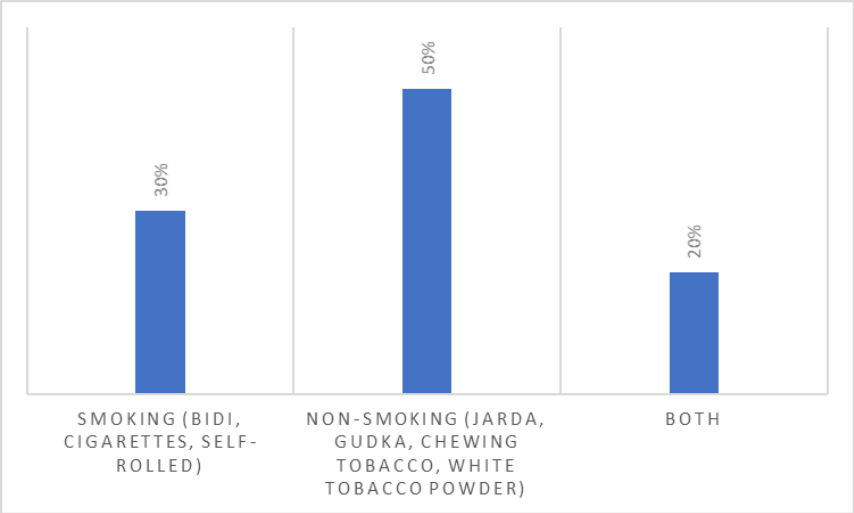

Figure-1: Types of Tobacco Use

The onset of tobacco use indicates that 20% began under the age of 16, while 25% started between ages 16-20 and 20-30 respectively, and 30% started after the age of 30. Regarding the duration of tobacco use, 25% have used it for less than 5 years, 35% for 5-10 years, 25% for 10-15 years, and 15% for over 15 years. Analysis of recreational habits reveals that 30% of tobacco users engage in other forms of recreation, while 70% do not. Concerning attempts to quit tobacco, 25% have tried to quit, while 75% have not. Lastly, in terms of consulting with doctors when required, 20% do so, while 80% do not seek medical advice when needed.

Table-2: Status of Tobacco use

Start of tobacco use	**%**
under 16	**20%**
16-20	**25%**
20-30	**25%**
30 above	**30%**
Duration of tobacco use	**%**
below 5 years	**25%**
5 – 10 years	**35%**
10 – 15 years	**25%**
15 years above	**15%**
Do the smoking and non-smoking tobacco users have other means of recreation?	%
Yes	**30%**
No	**70%**
Did you ever try to quit tobacco?	**%**
Yes	**25%**
No	**75%**
Do you consult with doctors when required?	**%**
Yes	**20%**
No	**80%**

In the study group, 20% reported experiencing symptoms of GERD (Gastroesophageal Reflux Disease), while 15% reported hyperacidity. Abdominal pain was prevalent among 40% of the participants, whereas constipation or stool problems affected 30% of them. Additionally, 15% reported experiencing symptoms of indigestion.

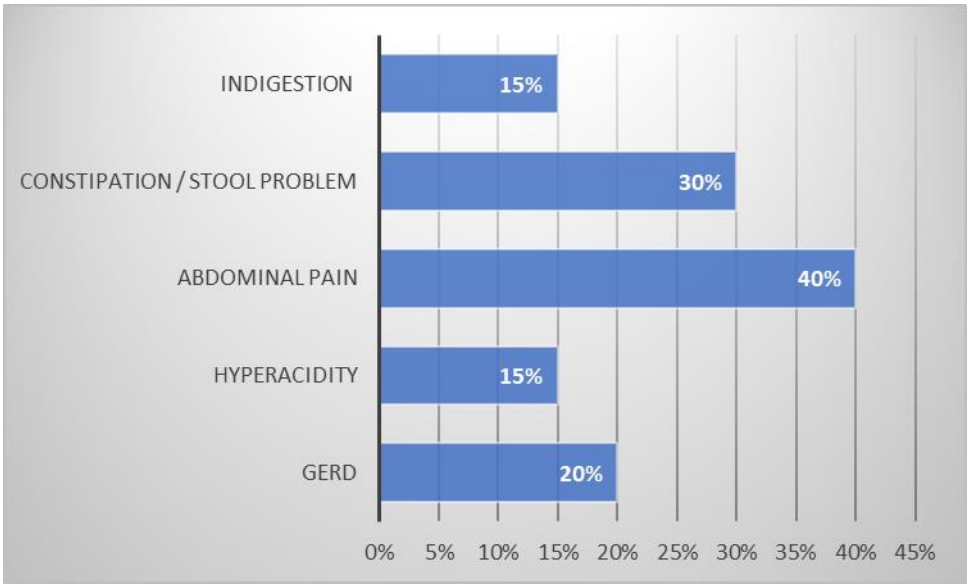

Figure-2: GI Health Status of the study group

Among the participants, 45% reported experiencing dental problems, indicating a significant prevalence within the study group. Hypertension was reported by 20% of the respondents, suggesting a notable presence of this condition. Osteoporosis and bone health concerns were noted by 21% of the participants, while 15% reported issues related to cerebrovascular health.

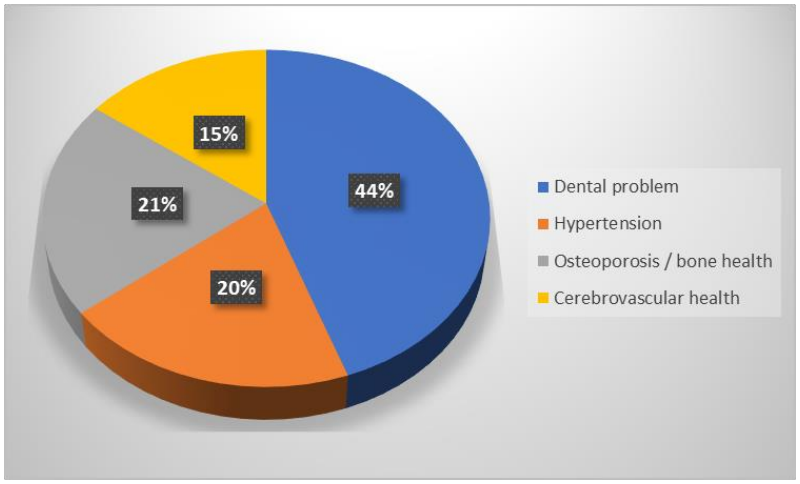

Figure-3: Non GI Health Conditions of the Study Group

In the surveyed population, 24% reported experiencing symptoms of depression, while 25% reported symptoms of anxiety. Schizophrenia was reported by 1% of the participants.

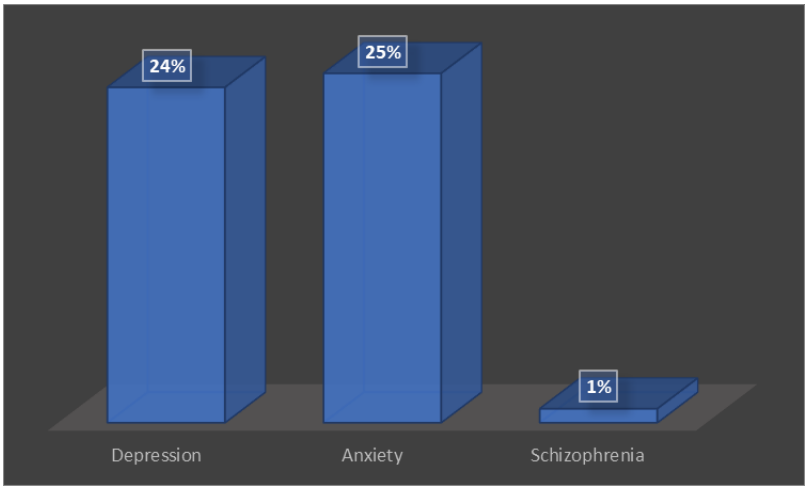

Figure-4: Psychiatric disorder of the study group

Regarding understanding psychiatric disorders, only 10% responded affirmatively, while the majority (90%) indicated a lack of understanding. Interestingly, none of the participants reported having had psychiatric consultations. When asked if smoking aids in mental stability, 30% agreed while 70% disagreed. Furthermore, 35% of participants admitted to attempting to quit smoking, while the remaining 65% had not made such attempts.

Table-3: Psychiatric awareness of the study group

Psychiatric awareness of the study group	%
Do they understand psychiatric disorders? -Yes -No	**10%** **90%**
Have they ever had psychiatric consultation? -Yes -No	**0** **100%**
Does smoking help with your mental stability? -Yes -No	**30%** **70%**
Have you tried quitting? -Yes -No	**35%** **65%**

DISCUSSION

Bangladesh is one of the few low- and middle-income nations (LMICs) that has successfully implemented tobacco control policies since the early 1990s [13], despite the fact that LMICs as a whole lag behind high-income countries when it comes to tobacco control. The 2005 implementation of the TCA, which outlawed smoking in public places and transportation, advertising and promotion, and tobacco product vending machines, was a highly prudent move by the Bangladeshi government. Packets of smoked tobacco goods were also required to have 30% text warning labels. Several tobacco tax measures were enacted after the TCA 2005, such as increasing cigarette taxes, reclassifying cigarettes into multiple pricing tiers with differing tax rates, taxing smokeless tobacco products, and imposing a levy on tobacco exports. Not only did policies change during the time period under consideration, but the cumulative effect of tobacco control measures that had their origins in Bangladesh many years earlier also contributed to the reduction in tobacco usage during that time.

During the one study's observational period (2009–2012), researchers in Bangladesh found that smokeless tobacco usage decreased at a far faster rate than regular tobacco use. The two most popular types of smokeless tobacco in the nation, zarda (chewing tobacco) and gul (oral powder), were originally subject to a 15% value added tax in 2008 as part of the tobacco control mechanism. In 2009, a 10% additional tariff was imposed on the ex-factory price of zarda and gul. In 2010–11, the additional tax was increased to 20%, and in 2011–12, it was increased to 30%. Smokeless tobacco users were likely prompted to give up the habit due to the negative impact of the tax rise, which was likely reflected in the price increase. This is supported by the large temporal effect observed in both the exclusive and mixed use of smokeless and smoked tobacco. [2] Another article citing the International Tobacco Control (ITC) study revealed that raising taxes and prices on smokeless tobacco had a detrimental impact on usage in Bangladesh [14].

In contrast, another study found in their study that, fewer people were lighting up with bidi or smokeless tobacco alongside their smokes, but more people were lighting up alone. While the bidi and smokeless tobacco industries in Bangladesh are slowly contracting, this discovery suggests that the cigarette sector could expand in the future. [4] Thus, the general decrease in tobacco use prevalence can be seen as a structural change in the Bangladeshi tobacco market, away from low-value products like bidi and smokeless tobacco and toward high-value cigarettes. This change is anticipated to occur as a result of the general population's increased income and purchasing power.

As cigarette prices rose, more and more people were able to afford to transition to smoking exclusively. The International Tobacco Control (ITC) Project (2012) found that between 2009 and 2010, cigarettes became 7.63% more economical, according to the percentage of daily income spent on an average dose for smokers [15]. This occurred despite the fact that per capita income growth of 4-5% per annum had a favorable influence on cigarette demand, and that tax and government-mandated price hikes had the opposite impact [16]. Which was quite similar to our findings where 30% reported smoking bidi, cigarettes, or self-rolled tobacco products. Meanwhile, 50% identified as non-smokers, opting for alternatives such as jarda, gudka, chewing tobacco, or white tobacco powder. Additionally, 20% of respondents indicated using both smoking and non-smoking forms of tobacco.

During the time period that was observed, there was no change in the price or tax of bidi. Consequently, bidi's actual price dropped, which ought to have increased demand for the product. Contrarily, the number of people who smoke only bidi did not change, but the number of people who smoke bidi and cigarettes or a combination of the two decreased. It suggests that for dual users, bidi and cigarettes work well together, and for mixed users, smoked and smokeless tobacco work well together. The decision to smoke cigarettes, as well as the choice of bidi and smokeless tobacco products for users of multiple products, were both negatively affected by the increase in cigarette price and tax. Similarly, this demographic was less likely to smoke cigarettes and/or bidi as a result of the tax hike and, by extension, the price of smokeless tobacco.

To begin with, a higher rate of tobacco use was observed among the poor, who are already at a higher risk of disease. So, tobacco smoking mediates the relationship between economic inequality and health inequality. The increased cost of health care expenditures and lost productivity due to tobacco-induced illnesses, as well as larger tobacco expenditures relative to income, mean that poorer people bear a disproportionate share of this economic burden [17].

Second, whereas men were historically the primary victims of the rise in cigarette usage, the tobacco industry can now desperately try to increase cigarette sales by targeting women. Additionally, there was an increase in the use of smokeless tobacco among indigenous women from 2009 to 2012, suggesting that there may be room for growth in the indigenous smokeless tobacco industry.

Third, rural areas have a higher illness burden due to tobacco use, likely because health care services are not as widely available there as in urban areas. This is supported by the relatively high incidence of tobacco use in rural areas. Rural smokers are more prone to suffer in silence and avoid medical attention when they're sick because of this stereotype [17].

Lastly, the slum and tribal samples had a higher smoking prevalence than the national average, which is indicative of a greater illness burden among these economically challenged and behind-the-curve communities.

CONCLUSION

The analysis of demographic characteristics and tobacco usage patterns among rural populations in Bangladesh reveals significant challenges in tobacco control efforts. With a majority falling within the 18-39 age bracket and diverse educational backgrounds, tobacco use, including smoking bidi, cigarettes, and smokeless forms, remains prevalent. Despite limited attempts to quit and low consultation rates with healthcare professionals, the study underscores the pressing need for targeted interventions and public health policies to address tobacco use and associated health conditions. Initiatives should focus on raising awareness, promoting cessation programs, improving healthcare access, and addressing socioeconomic disparities to mitigate the adverse effects of tobacco and foster healthier rural communities in Bangladesh.

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