

Comparative Study of Tobacco Hazards on General and Oral Health in Urban and Rural Field Practice Area of SKMCH

Manish Kumar Jha¹, Rachna Rani², Puja Kumari³, Ravindra Prasad⁴, Kumar Pushpansu⁵

¹Tutor Department of Community Medicine, Sri Krishna Medical College Muzaffarpur, Bihar, India

²Tutor Department of Community Medicine, Sri Krishna Medical College Muzaffarpur, Bihar, India

³Senior resident, Department of Dentistry, Sri Krishna Medical College and hospital, Muzaffarpur, Bihar, India

⁴Professor Department of Community Medicine, Sri Krishna Medical College, Muzaffarpur, Bihar, India

⁵Associate Professor, Department of Dentistry, Sri Krishna Medical College & Hospital, Muzaffarpur, Bihar, India

Received: 01-05-2026 / Revised: 15-06-2026 / Accepted: 21-07-2026

Corresponding author: Dr. Puja Kumari

Conflict of interest: Nil

Abstract

Background: Tobacco consumption is a significant global health issue, which causes significant oral and systemic illnesses. The burden is especially high in India where there is high usage of smoked and smokeless forms, particularly in various rural and urban masses.

Methods: This was a cross-sectional comparative study that involved urban and rural population. The number of participants was 110, half of whom were urban (n = 55) and the other half rural (n = 55). The research was done during March 2025 to December 2025.

Results: The researchers established that smokeless tobacco use was higher in rural (63.6%) than in urban (41.8%) areas, whereas smoking was greater in urban (58.2%) than in rural (36.4%) areas. Oral health issues like dental stains were found to be significantly higher in rural participants (76.4% vs 54.5%), dental gingivitis (50.9% vs 32.7%) and oral lesions (25.5% vs 10.9%). There were also more respiratory problems (60.0% vs 36.4%) and less awareness (32.7% high awareness vs 63.6% in urban) among rural participants.

Conclusion: The research shows that rural population is at a greater risk of having oral and systemic health issues related to tobacco use than that of urban population, primarily because of variations in the level of awareness and use of tobacco.

Keywords: Oral health, Tobacco use, Rural-urban comparison, public health, SKMCH, Smokeless tobacco, Cross-sectional study.

DOI: 10.25258/ijcpr.18.8.325

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Tobacco use remains one of the leading preventable causes of morbidity and mortality worldwide [1]. Global health reports have documented that tobacco use is a leading cause of millions of deaths every year, mainly because of its close relation with cardiovascular diseases, respiratory diseases and other types of cancer [2].

The use of tobacco in India particularly concerning due to its widespread prevalence both in smoked and smokeless [3]. Cigarettes, bidis, gutkha, and chewing tobacco are some of the products that are commonly used in various age groups and socioeconomic classes [4]. India is among the greatest tobacco consumers in the world, despite ongoing public health campaigns, and the general

and oral health is heavily impaired by tobacco-related diseases. The cost of tobacco related diseases is extensive and multifaceted. At a systemic level, chronic obstructive pulmonary disease (COPD), ischemic heart disease, stroke, and lung cancer have a strong association with tobacco use [5]. It also compromises the immune system, and predisposes one to infections. Tobacco on the oral health front is the biggest risk factor in disorders like oral leukoplakia, oral submucous fibrosis, periodontal disease, tooth staining, halitosis and oral cancer [6].

Tobacco is a serious issue of concern in terms of its dual effect on the systemic and oral health, which needs to be thoroughly assessed [7,8]. Tobacco

consumption patterns are different among rural and urban populations [9]. Cultural acceptance, cheap price, and easy access tend to make smokeless tobacco products more prevalent in rural areas, and cigarette smoking is more prevalent among urban populations and depends on lifestyle factors, stress, and peer influence [10,11]. Also, the awareness of the harmful consequences of tobacco is usually lower in rural areas than in urban populations, which also leads to delayed health-seeking behavior and higher disease burden [12].

The practicum site of SKMCH (Sri Krishna Medical College and Hospital) is especially important to study the health effects of tobacco in the field practice areas since these areas represent a heterogeneous population with different socioeconomic and cultural backgrounds. This provides an ideal setting for compare the urban and rural disparities in tobacco consumption and its health consequences, hence producing locally specific evidence to inform specific intervention measures.

Although extensive research has been conducted on tobacco use, there is a gap in comparative studies that consider both general and oral health outcomes of both urban and rural populations within the same geographic and institutional field practice areas. The available research is most often either based on oral health or general health but not a comparative study. Hence, this research is conducted to fill this gap, and to know the disparate effect of tobacco use in urban and rural communities. The study rationale is to create evidence that can be used to facilitate creation of region-specific awareness initiatives, reinforce tobacco cessation efforts and eventually decrease the incidence of tobacco-related illnesses in the population.

Objectives

- To compare the effects of tobacco, use on general and oral health in city and rural field practice environments of SKMCH.
- To determine the prevalence of tobacco, use in the two places.
- To assess the oral health outcomes related to tobacco.
- To determine overall health outcomes of tobacco use.

Materials and Methods

Study Design: The research was structured as a cross-sectional comparative study to assess and compare the impact of tobacco use on general and oral health on the population of urban and rural field practice areas of SKMCH. It was decided to use a cross-sectional method as it enables evaluation of exposure (tobacco use) and outcomes (health effects) at one point in time, which will be useful in comparing the two population groups.

Study Area: The research was undertaken in the urban and rural field practice of SKMCH. These regions have been chosen to reflect a wide variety of population with varying socioeconomic status, education levels, access to healthcare facilities, and tobacco use. The two settings were incorporated in the study, which enabled the significant comparison of health outcomes related to tobacco use.

Study Period: This research was conducted in a 10 months' time span from March 2025 to December 2025 which was enough time to conduct the study in terms of selecting the participants, data gathering and data analysis.

Sample Size: The current study had a total of 110 participants, who were sampled in the urban and countryside field practice areas of SKMCH. The subjects of the two study groups were categorized equally into two subjects in order to provide fair and balanced comparison between the two. The urban group had 55 participants and the rural group had 55 participants as well. This homogenous sample size aided in the comparability of the two populations and minimized selection bias. It also enabled one to adequately evaluate the differences in tobacco use patterns and their related implications on oral and general health in urban and rural environments.

Inclusion Criteria

- Individuals who are 18 years old and older.
- Persons who regularly use tobacco in any form (smoking or smokeless).
- Permanent residents of the chosen urban or rural field practice areas of SKMCH practice there.
- Participants who could offer informed consent to participate.

Exclusion Criteria

- Severely ill people who were not able to attend the interview or examination.
- Individuals who had not given an informed consent.
- Non-tobacco users (when the study is targeted at tobacco users only)
- Respondents who did not finish or have unreliable responses in the data collection process.

Data Collection Method: A structured and pre-tested questionnaire was used in gathering data in which information about demographic characteristics, tobacco use trends and awareness levels towards tobacco hazards were collected. Moreover, oral tests were conducted to determine the visible oral diseases like dental stains, periodontal disease, leukoplakia and other mucosal lesions. Medical history was also taken to

determine the general health consequences of tobacco use such as respiratory and cardiovascular symptoms.

Variables Studied: The research concentrated on some major variables related to tobacco use and its health consequences. The choice of these variables was aimed at assessing both oral and overall health outcomes in participants in a comprehensive manner. The nature of tobacco consumption was noted, which was either smoking, smokeless, or mixed patterns. Besides, the period and frequency of tobacco use were also evaluated in order to determine the level of exposure of people. Another significant variable of interest was oral health conditions that included dental staining, gingivitis, and precancerous lesions, including leukoplakia and oral submucous fibrosis. These measures were used in assessing the immediate effects of tobacco on the status of oral health. In addition, overall health outcomes were also discussed that were related to tobacco use, such as respiratory issues, high blood pressure, chronic cough, and other systemic diseases. These parameters gave a clue on the overall health effects of consuming tobacco. The awareness about the negative impact of tobacco was also evaluated among the participants. This involved awareness about risk of oral cancer, systemic diseases, and benefits of tobacco cessation, aiding to compare the differences in awareness between urban and rural population.

Statistical Analysis: The data gathered was compiled and analyzed systematically with the help

of suitable statistical techniques. The data was summarized using descriptive statistics like percentage, mean and standard deviation.

The Chi-square test was used to compare urban and rural groups. The p-value of below 0.05 was regarded as significant, which means that there are significant differences between the two groups. The results of the analysis assisted in determining trends and relationships between tobacco consumption and its health effects in various groups.

Results

There were 110 participants in the present study, and they were equally divided into urban (n = 55) and rural (n = 55) field practice areas of SKMCH. The demographic sample indicated that most of the respondents in the two categories were in their 18-45 years age, with slight large numbers of males than females. The majority of the rural participants were in the low socioeconomic and education groups, and the urban participants were relatively well-educated and better occupational status. It was found that tobacco use was prevalent in both settings, but there were variations in the type and pattern of use. The tobacco use was more prevalent in the rural regions and smoking (cigarettes and bidis) was more widespread in the urban regions. On the whole, the rural participants showed a relatively higher prevalence of daily tobacco use as compared to the urban participants.

Table 1: Prevalence and Pattern of Tobacco Use

Variable	Urban (n=55)	Rural (n=55)
Smokers	32 (58.2%)	20 (36.4%)
Smokeless tobacco users	23 (41.8%)	35 (63.6%)
Daily users	38 (69.1%)	45 (81.8%)

Oral health outcomes showed that the tobacco-related burden in rural participants was higher. The prevalence was higher in rural regions than urban ones in the following conditions, dental staining, gingivitis, halitosis and oral mucosal lesions. This disparity could be accounted by less awareness, low oral hygiene practices and late healthcare seeking behavior among the rural populations.

Table 2: Oral Health Outcomes

Condition	Urban (n=55)	Rural (n=55)
Dental stains	30 (54.5%)	42 (76.4%)
Gingivitis	18 (32.7%)	28 (50.9%)
Oral lesions (leukoplakia, etc.)	6 (10.9%)	14 (25.5%)

There was also an increased burden of tobacco-related systemic conditions among rural participants in general health outcomes. Rural users were more likely to report respiratory symptoms like chronic cough and breathlessness, whereas urban participants reported higher rates of hypertension and symptoms related to stress.

Table 3: General Health Outcomes

Condition	Urban (n=55)	Rural (n=55)
Chronic cough/respiratory issues	20 (36.4%)	33 (60.0%)
Hypertension	15 (27.3%)	18 (32.7%)
General weakness/fatigue	22 (40.0%)	30 (54.5%)

There was a great difference in awareness of the negative impacts of tobacco among urban participants and rural participants. The respondents in the urban showed higher awareness of the risk of oral cancer, cardiovascular complications, and cessation benefits. Conversely, the rural respondents were poorly aware and misconceptions regarding the risks of tobacco use.

Table 4: Awareness Levels

Awareness Level	Urban (n=55)	Rural (n=55)
High awareness	35 (63.6%)	18 (32.7%)
Moderate awareness	15 (27.3%)	20 (36.4%)
Low awareness	5 (9.1%)	17 (30.9%)

The findings indicates that there is a visible gap between urban and rural populations in terms of tobacco use patterns, health and level of awareness. The rural population exhibited oral and systemic health complications with a greater burden, thus the necessity to use intervention strategies that are specific to a population.

Discussion

The current research indicates that there is a substantial disparity between urban and rural population on the field practice regions of SKMCH in terms of tobacco-related health outcomes. The prevalence of smokeless tobacco was found to be higher among rural participants and the propensity towards smoking was higher among urban participants. Oral health complications like dental staining, gingivitis, and oral mucosal lesion were worse in rural populations. Other systemic effects such as respiratory symptoms and general weakness were also more common among rural users. This is an indication that the morbidity linked to tobacco is not only dependent on the usage patterns but also awareness, lifestyle, and access to healthcare.

Comparison to Past Research: This study is consistent with previous studies that have been carried out in different regions of India and have also indicated that smokeless consumption is more in rural regions and higher rates of smoking in urban regions. The national health surveys conducted have also reported on a rise in oral cancer risk and periodontal diseases among the rural tobacco users [13]. The differences in the levels of awareness between the urban and rural population also complement the past studies that have shown that the urban populations would tend to be more informed on the hazards of tobacco [14].

Urban-Rural Differences Reasons: The discrepancies that are evident among the urban and rural communities can be ascribed to various causes. Rural folks tend to follow the old ways in which the use of smokeless tobacco is a cultural norm and readily available [15]. However, urban populations which are more affected by lifestyle stress and peer behavior resulting in an increase in smoking rates.

Public Health Implications: The results underline the serious necessity of specific public health measures aimed at prevention and elimination of tobacco consumption. Awareness campaigns need to be reinforced, particularly in rural regions, in order to decrease the oral and systemic diseases. Tobacco cessation programs should be incorporated into primary healthcare services, which can have a great impact.

Study limitations: The research also has some weaknesses, such as a rather small sample (110 people), which can be a limitation to generalization. Cross-sectional design does not allow the establishment of causal relationships. Also, self-reported data can be biased. The study is insightful in terms of the differences in urban and rural settings in terms of tobacco-related health outcomes.

Conclusion

The current study highlights that both oral and general health of the urban and rural population is affected adversely by tobacco use. Nevertheless, the burden of tobacco-associated health issues is relatively bigger in the rural region, especially when it comes to oral ulcers and respiratory disorders. Although being more conscious of tobacco risks, the urban population still represents a high prevalence rate of smoking-related health problems. This study has clearly shown that there is a significant variation in tobacco use, awareness and health outcomes amongst urban and rural groups. These results demonstrate the necessity of specially designed interventions targeting the high-risk groups in rural areas. Enhancing awareness campaigns, increasing access to healthcare, and advocating tobacco cessation programs are important moves towards curbing the overall burden of the tobacco related diseases. Extensive community health measures are needed to address with prevention and early diagnosis to guarantee enhanced health results in the long term.

Reference

1. Rajput et al., "Comparative analysis of mouth self-examination awareness amongst tobacco users in urban and rural populations," Asian Pacific Journal of Cancer Prevention (APJCP), vol. 25, no. 8, p. 2805, 2024.

2. N. Alam and W. Mariam, "Impact of tobacco habits on poor oral health status among bone-factory workers in a low literacy city in India: A cross-sectional study," *PLOS ONE*, vol. 19, no. 4, p. e0299594, 2024.
3. Roy, K. H. Arnab, M. R. Morshed, M. R. Mahmud, and J. Islam, "Exploring the impact of tobacco use on oral hygiene practices, health-seeking behavior, and awareness of oral cancer among adolescents in rural Bangladesh: A cross-sectional study," *Khulna City Medical College Journal*, vol. 3, no. 1, p. 36, 2025.
4. Ahsan et al., "Comparison of oral health status among adult tobacco users and non-tobacco users of Ghaziabad District, Uttar Pradesh: A cross-sectional study," *Journal of Family Medicine and Primary Care*, vol. 9, no. 2, pp. 1143–1148, 2020.
5. R. A. Sagtani, S. Thapa, and A. Sagtani, "Smoking, general and oral health related quality of life: A comparative study from Nepal," *Health and Quality of Life Outcomes*, vol. 18, no. 1, p. 257, 2020.
6. Tadin and M. Badrov, "Oral health knowledge, self-assessed oral health behavior, and oral hygiene practices among the adult general population in Croatia," *Healthcare*, vol. 12, no. 1, p. 88, 2023.
7. D. Das et al., "Oral health literacy: A practical strategy towards better oral health status among adult population of Ghaziabad district," *Journal of Family Medicine and Primary Care*, vol. 9, no. 2, pp. 764–770, 2020.
8. S. MK, R. Umadevi, and A. E. VM, "Knowledge, attitude and practice on oral hygiene among primary school children in an urban area of Kancheepuram district, Tamil Nadu," *International Journal of Community Medicine and Public Health*, vol. 7, no. 1, p. 311, 2020.
9. R. Saxena et al., "Assessing the effect of smokeless tobacco consumption on oral microbiome in healthy and oral cancer patients," *Frontiers in Cellular and Infection Microbiology*, vol. 12, p. 841465, 2022.
10. K. Swe, A. K. Soe, S. H. Aung, and H. Z. Soe, "Effectiveness of oral health education on 8- to 10-year-old school children in rural areas of the Magway Region, Myanmar," *BMC Oral Health*, vol. 21, no. 1, p. 2, 2021.
11. P. S. Jadhav et al., "Assessment of tobacco cessation awareness among dental patients in rural versus urban areas," *Journal of Pharmacy and Bioallied Sciences*, vol. 17, suppl. 4, pp. S3051–S3053, 2025.
12. P. H. Carneiro et al., "The impact of oral health disparities on smoking prevalence," *Frontiers in Public Health*, vol. 13, p. 1667261, 2025.
13. L. Silveira et al., "Tobacco use and incidence of adverse oral health outcomes among US adults in the population assessment of tobacco and health study," *JAMA Network Open*, vol. 5, no. 12, p. e2245909, 2022.
14. B. More, A. Rodrigues, and B. J. Sadhu, "Effects of smoking on oral health: Awareness among dental patients and their attitude towards its cessation," *Indian Journal of Dental Research*, vol. 32, no. 1, pp. 23–26, 2021.
15. S. Gajendra, S. McIntosh, and S. Ghosh, "Effects of tobacco product use on oral health and the role of oral healthcare providers in cessation: A narrative review," *Tobacco Induced Diseases*, vol. 21, p. 12, 2023.