

Tobacco prevalence among adults in the urban slums of Delhi: results from a cross-sectional survey

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Abstract

Slum areas exhibited a marked prevalence of elevated tobacco consumption rates, prompting the investigation to assess the extent and perspectives of tobacco usage among the residents in these regions. The present study aimed to evaluate the prevalence and attitudes toward tobacco use within five distinct slum localities in close proximity to the tobacco cessation center. During a house-to-house visit, a cross-sectional survey was conducted in five different slum areas, coded as Zone 1 to Zone 5. To ensure a representative sample, 20% of households were randomly selected from each slum. The survey utilized a pre-designed, pretested, and semi-structured questionnaire to collect relevant data. A total of 274 households provided consent to participate in the survey. The variations in tobacco prevalence were observed across all five slums, ranging from 16.3% to 36.7%. Tobacco use prevalence differed significantly by gender, with 86.1% males and 13.9% females. Smokeless tobacco was the most preferred method of tobacco use. Notably, 43.8% of adult tobacco users expressed their willingness to quit tobacco usage, out of which 22.3% were female. A large proportion (70.4%) of total adult women tobacco users showed their willingness to quit, while the corresponding percentage for men was only 39.5%. This study highlights the high prevalence of tobacco use and the limited awareness of cessation services among users in nearby slums despite the proximity to cessation centers and mandatory tobacco cessation helpline numbers on tobacco packets. However, during the awareness session, individuals exhibited interest in quitting tobacco consumption.

Key words: community, public health, smoking, tobacco control, willing to quit, cessation.

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Introduction

Tobacco prevalence, also known as tobacco use prevalence, refers to the proportion of a population that uses tobacco products at a specific point in time in a certain region. Tobacco use includes consumption of tobacco products through various methods, including smoking, chewing, inhaling, and applying to the teeth. Tobacco use has been linked to numerous health problems and is a significant risk factor for various diseases, including lung cancer, chronic obstructive pulmonary disease (COPD), heart disease, stroke, and many others [1,2]. Higher tobacco prevalence rates are alarming for a nation, as they result in a higher risk of health issues, augmenting the social and economic burdens [3]. In India, the prevalence of tobacco use is relatively high. According to data from the Global Adult Tobacco Survey (GATS) conducted in 2016-2017, the overall prevalence of tobacco use among adults (aged 15 years and above) was around 28.6% (male: 42.4%, female: 14.2%) [4]. In India, during the fiscal year 2017-2018, the comprehensive economic burden associated with tobacco use and resulting health expenses for 35 years and above population amounted to ₹1773.4 billion (US \$27.5 billion), approximately 1.04% of India's gross domestic product [5]. Among these, 22% represented direct costs, while 78% accounted for indirect costs [5].

The rising prevalence of tobacco use, along with the associated

chronic illnesses and economic burden, has driven the Government of India (GOI) to confront this escalating public health crisis. India initiated its efforts as early as 2002 through a collaboration with the World Health Organization to establish a network of 13 Tobacco Cessation Centers (TCCs) across leading tertiary care institutions nationwide [6]. By the end of 2018, this network had expanded to 455 TCCs operating under the National Tobacco Control Program of India across various states in India [7]. TCC is generally staffed by qualified professionals specializing in psychology, social work, and respiratory medicine, providing services on all working days within the hospital premises. Registration for tobacco cessation counseling is free, open to everyone, and requires no prior appointment. In 2016, India launched the National Tobacco Quitline, a toll-free telephonic helpline (1800-11-2356) providing nationwide support for tobacco cessation. To further strengthen these efforts, India made it mandatory to print the tobacco cessation helpline number on all tobacco product packaging.

The urban population in India has been steadily increasing. This growth is primarily driven by factors such as rural-to-urban migration, industrialization, and population growth. Notably, the urban population proportion witnessed a rise from 27.81% in the 2001 Census to 31.16% in the 2011 Census [8]. The inadequacy of the urban management system results in the proliferation of slums. In the Indian context, slums are densely populated areas character-



ized by substandard housing and poor living conditions [9,10]. Typically, they lack basic services such as clean water, sanitation, waste management, and often have inadequate infrastructure. Slums also have overcrowded housing, limited access to health-care, and education [11]. Slums emerge due to rapid urbanization, economic disparities, and limited affordable housing options, drawing low-income individuals who seek employment in nearby urban centers [12]. As per data available from the National Buildings Organization, the slum population in India was 65.5 million in the 2011 census and projected to be 102.7 million for the year 2016 [13]. Tobacco use in the slums of India has emerged as a notable public health challenge. The residents of slum areas are particularly susceptible to diverse health risks, with tobacco consumption being one of the prominent concerns. In slums, distinctive social and economic challenges create a unique context for tobacco and other substance abuse, potentially intertwining with these issues. The vigilant observation and comprehension of tobacco prevalence play a pivotal role in formulating and assessing tobacco control policies and interventions. The results of this study provide significant revelations regarding the prevalence of tobacco use and disparities among distinct demographic groups in the five slums of Delhi.

Materials and Methods

This cross-sectional, community-based study forms a part of an ongoing Ph.D. research project aimed at assessing tobacco prevalence and the willingness to quit tobacco among slum dwellers in proximity to the TCC.

Five slums were initially identified using the Delhi Government Urban Shelter Improvement Board's (DUSIB) database. Following this, the locations were examined in greater detail through Google Maps, satellite imagery, and field visits to validate their selection. Two slums (Zone 5 and Zone 3) were adjacent to the city's main drainage system, while the remaining three were situated on land managed by the Delhi Development Authority and the Central Public Works Department.

Inclusion criteria were: i) adults aged 18 years and older; ii) residents who were living in the slum for a minimum of 1 year, ensuring settled residence in the chosen slums.

Exclusion criteria were: i) households that were locked during the survey period; ii) those who did not agree to consent for the research.

A total of 1338 households were found listed on the DUSIB website in these five zones. We conducted a survey of 20% household (a total of 274 households) by convenience sampling (Table 1). The survey was carried out for 6 months from July 2021 to December 2021 in the evening hours, from 4 pm to 7 pm, to maximize response rates, as many adults in these communities work during the day. A pre-structured questionnaire was used to collect data on socio-demographic factors, literacy profiles, tobacco use patterns, and willingness to quit tobacco. Data were gathered from family members, with consent obtained prior to participation. The research protocol was approved by the Department of Social Work, University of Delhi. No biological sample was taken from the respondent. The Hindi language was used during the face-to-face interview. Analyses and data presentation were performed using the statistical software package IBM SPSS Statistics 28.0.1 and Microsoft Excel 365. Descriptive statistics were used to summarize data on demographics, housing conditions, and tobacco use. Means, standard deviations, percentages, and frequencies were used for age, education, prevalence of tobacco use, product preference, and smoke pack years variables. Non-parametric test, namely chi-square is used to determine the associations between the variables.

Formulas used

$$\text{Adult Tobacco Prevalance} = \frac{\text{Number of current adult tobacco user}}{\text{Total adult population}} \times 100 \quad [\text{Eq. 1}]$$

Current adult tobacco user in this study is operationalized as an adult tobacco user consuming tobacco in any form (smoking or smokeless) on a daily basis for at least a month.

$$\text{Smoke pack year} = \frac{\beta}{20} \times \text{Number of years of smoking} \quad [\text{Eq. 2}]$$

Where β is the number of bidis + cigarette smoke per day.

$$\text{Household density per square metre} = \frac{\text{Number of households}}{\text{Total area in square metre}} \quad [\text{Eq. 3}]$$

Results

A total of 756 households were approached for the interview during the baseline survey in five slums of Delhi, out of which 274 households consented, generating a response rate of 36.2%. The

Table 1. Tobacco prevalence and household details.

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Total
Total area in square metre	36413	1687.5	12100	5450	1472	57122.5
Total HH	859	62	239	94	84	1338
HH Density per square metre	0.024	0.037	0.020	0.017	0.057	0.023
Surveyed HH (20% of total household, $\pm 1\%$)	174	13	48	19	20	274 (20.5%)
Total members in the surveyed HH	851 (M=55.6%, F=44.4%)	84 (M=52.4%, F=47.6%)	234 (M=53.4%, F=46.6%)	83 (M=49.4%, F=49.6%)	92 (M=55.4%, F=44.6%)	1344 (M=54.6%, F=45.4%)
Tobacco using HHs	96 (55.7%)	12 (92.3%)	23 (47.9%)	5 (26.3%)	11 (55%)	147 (53.6%)
Number of adult members in the surveyed HH	582 (68.4%)	49 (58.3%)	161 (68.8%)	49 (59%)	54 (58.7%)	841 (62.6%)
Adult tobacco prevalence	120 (20.6%)	18 (36.7%)	31 (19.2%)	8 (16.3%)	17 (31.5%)	194 (23.1%)

HH, households. Zone 1 = Sanjay Basti Timarpur; Zone 2 = Shyam Basti Timarpur; Zone 3 = Indira Basti near Thana Timarpur; Zone 4 = Dairy No.3 Lucknow Road Timarpur; Zone 5 = Dr. Ambedkar Nagar Near Wazirabad Timarpur.



houses in the slums were made of brick and cement, with a high number of substandard housing structures raised up to two floors. Mostly, the uppermost roofs were made with plastic, polythene, thatch, bamboo, galvanized iron, asbestos, and fiber sheet. A few of them were made with cement and concrete. The households were overcrowded, with five or more persons sharing a one-room measuring 90 to 135 square feet used for all purposes, including cooking, bathing, sleeping, and living. The total population in these surveyed households was 1344, including children and infants. 58.4% of the surveyed families were migrants from other states, mostly from Uttar Pradesh (29%) and Bihar (14.3%), whereas 2% of the community were migrants from Nepal. Tobacco-using households ranged from 26.3% to 92.3% in different zones (Table 1). Adult tobacco prevalence was lowest (16.3%) in Zone 4 and highest (36.7%) in Zone 2. The overall adult tobacco prevalence was found 23.1% in aggregate in all five slums.

Tobacco user characteristics

The mean age (standard deviation) of the tobacco users in Zone 1 to Zone 5 was 44.87 (± 13.7), 47.4 (± 11.9), 38.2 (± 12.3),

43.7 (± 6.9), and 41.8 (± 11.5) years, respectively. Prevalence of tobacco use was varied by gender (male: 86.1%, female: 13.9%). The mean age of initiating tobacco was 25.7 years. Smokeless tobacco (SLT) was the most preferred choice by the tobacco users, followed by smoking tobacco (Table 2 and Figure 1). The average smoke pack year of smokers in these slums was 11.9 (male: 12.3, female: 9.9). Among all types of tobacco products, bidis (27.4%) emerged as the most consumed product, followed by gutkha (23.3%), khaini (19.2%), and cigarettes (12.3%). Use of modern tobacco products, such as e-cigarettes and e-hookah, was found to be low in these slums (2.6%) (Figure 1). A total of 11.6% of tobacco users were applying tobacco powder on their teeth and gums as toothpaste, a practice highly prevalent among females in these slums. The occupational attributes of tobacco users and non-tobacco users exhibited congruency, with most tobacco users being daily wage earners (32.4%), followed by self-employed individuals (14.4%), such as street hawkers and e-rickshaw drivers. Merely 1% employed in the government sector. The majority of tobacco users showed a low level of school education. Among them, 37.1% were illiterate, 24.2% had completed primary education, and only

Table 2. Tobacco users' characteristics.

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Total
Tobacco users, n (%)						
Male	103 (85.8)	15 (83.3)	27 (87.1)	6 (75)	16 (94.1)	167 (86.1)
Female	17 (14.2)	3 (16.7)	4 (12.9)	2 (25)	1 (5.9)	27 (13.9)
Type of tobacco use, n (%)						
Smokeless	55 (45.8)	5 (27.8)	18 (58.1)	5 (62.5)	6 (35.3)	89 (45.9)
Smoking	39 (32.5)	9 (50)	3 (9.7)	3 (37.5)	5 (29.4)	59 (30.4)
Dual	26 (21.7)	4 (22.2)	10 (32.2)	0	6 (35.3)	46 (23.7)
Age of tobacco user, n (%)						
18-40 year	48 (40)	5 (27.8)	21 (67.7)	2 (25)	7 (41.2)	82 (42.3)
40-60 year	49 (40.8)	10 (55.5)	8 (25.8)	6 (75)	8 (47)	82 (42.3)
60+ years	23 (19.2)	3 (16.7)	2 (6.5)	0	2 (11.8)	30 (15.4)
Occupation of tobacco users, n (%)						
Daily wage	38 (31.7)	5 (27.8%)	9 (29)	4 (50)	7 (41.1)	63 (32.4)
Government service	1 (0.8)	0	1 (3.2)	0	0	2 (1.0)
Salaried employment (private sector)	17 (14.1)	5 (27.8%)	6 (19.3)	2 (25)	5 (29.4)	35 (18.0)
Self employed	20 (16.7)	3 (16.7%)	2 (6.4)	0	3 (17.6)	28 (14.4)
Housewife	8 (6.7)	3 (16.7%)	4 (12.9)	2 (25)	0	17 (8.8)
Student	1 (0.8)	0	1 (3.2)	0	0	2 (1.0)
Retired	14 (11.7)	2 (11.1%)	0	0	0	16 (8.2)
Unemployed	21 (17.5)	0	8 (25.8)	0	2 (11.8)	31 (16.0)
Education of tobacco users, n (%)						
Post-graduation	1 (0.8)	0	0	0	0	1 (0.5)
Graduation	2 (1.7)	0	0	0	0	2 (1.0)
Sr. Secondary	9 (7.5)	0	2 (6.4)	1 (12.5)	0	12 (6.2)
Secondary	43 (35.8)	3 (16.7)	8 (25.8)	1 (12.5)	5 (29.4)	60 (30.9)
Primary	24 (20)	8 (44.4)	6 (19.3)	2 (25)	7 (41.1)	47 (24.2)
Illiterate	41 (34.2)	7 (38.9)	15 (48.4)	4 (50)	5 (29.4)	72 (37.1)
Duration of tobacco use, n (%)						
<1 year	7 (5.8)	0	2 (6.4)	0	0	9 (4.6)
1-10 year	33 (27.5)	4 (22.2)	13 (42)	4 (50)	3 (17.6)	57 (29.4)
10-20 year	43 (35.8)	3 (16.7)	10 (32.2)	1 (12.5)	6 (35.3)	63 (32.5)
20-30 year	10 (8.3)	4 (22.2)	3 (9.7)	1 (12.5)	5 (29.4)	23 (11.9)
30+ year	27 (22.5)	7 (38.9)	3 (9.7)	2 (25)	3 (17.6)	42 (21.6)
Tobacco users willing to quit tobacco, n (%)						
Yes	55 (45.8); F=11	7 (38.9); F=3	16 (51.7); F=3	2 (25); F=1	5 (29.4); F=1	85 (43.8); F=19

Zone 1 = Sanjay Basti Timarpur; Zone 2 = Shyam Basti Timarpur; Zone 3 = Indira Basti near Thana Timarpur; Zone 4 = Dairy No.3 Lucknow Road Timarpur; Zone 5 = Dr. Ambedkar Nagar Near Wazirabad Timarpur.



1.5% were graduates. (Table 2). There was a significant difference in terms of education between tobacco users and non-tobacco users (Figure 2).

Willingness to quit tobacco

A total of 85 (43.8%) tobacco users, out of all adult tobacco users, showed their willingness to quit tobacco. Among them, 52.9% were SLT users, 29.4% were smokers, and 17.6% were those who had a habit of consuming tobacco in both modes,

smokeless as well as smoking. The mean age of tobacco users who had shown willingness to quit was 44.2 (± 13.2) years. The average duration of tobacco use was 17.2 (± 12.5) years. One third (30.6%) of the tobacco users willing to quit were illiterate, 27% did their primary schooling, 32.9% had studied till upper primary and secondary, 9.4% attended senior secondary and above education. Among all adult women tobacco users, 70.4% (mean age 53.6 years) demonstrated a readiness to quit, 68.4% SLT users, and 31.6% were smokers. The majority of these women (73.7%) had zero literacy, and the primary occupation for the majority (52.63%)

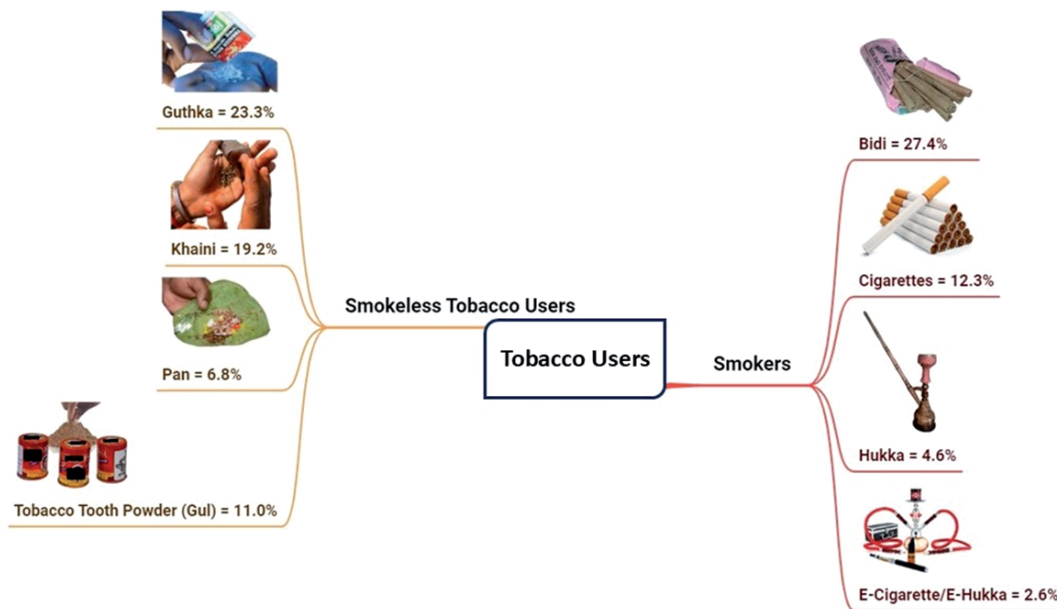


Figure 1. Type of tobacco product consumed by tobacco users.

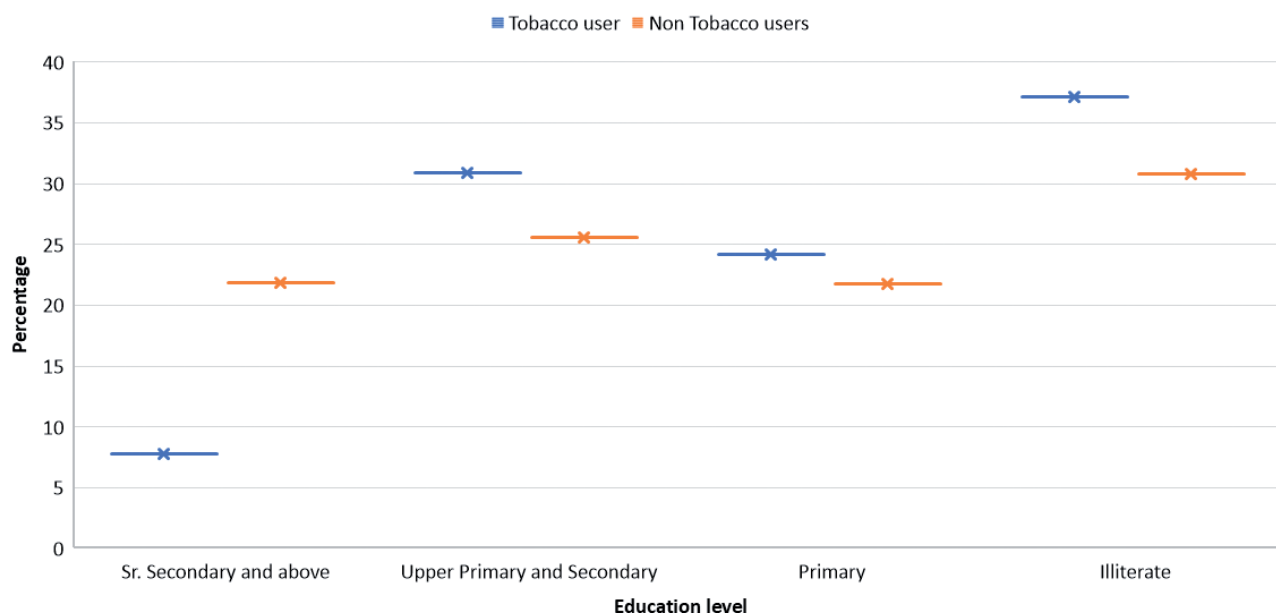


Figure 2. Education comparison between non-tobacco users and tobacco users.

was homemaking, while 30.5% were involved in daily wage labor. Approximately 39.5% of the male tobacco users showed their interest in tobacco cessation (Table 2). Individuals were motivated to quit tobacco due to health concerns, family encouragement, and the recognition of tobacco use as a harmful habit.

Knowledge about the tobacco cessation program

Even though the GOI runs free TCC in hospital settings at a radius of 4 km, there was very little awareness about it in these slums. Overall, 15% of the adult tobacco users from Zone 1, 5.6% from Zone 2, 19.3% from Zone 3 had the knowledge about TCC. Whereas there was zero awareness in Zones 4 and 5. The same scenario was found regarding the toll-free tobacco cessation telephone helpline. The awareness rate was 12.5%, 5.6%, 6.4%, 0%, 0% among the adult tobacco users in Zones 1, 2, 3, 4, and 5, respectively.

Household density and tobacco use

This study revealed a significant association between tobacco prevalence and households located in Zones 2 and 5, characterized by a high population density within a confined area (Table 1). This indicates that population density plays a crucial role in determining tobacco prevalence within slum communities. Moreover, the finding suggests that influencing the beliefs and behaviors of individuals in smaller social groups may be more feasible and effective.

Discussion

The baseline survey conducted across five slums in Delhi offers critical insights into the demographic characteristics, tobacco use patterns, and awareness of tobacco cessation programs among the residents. The response rate of 36.2% from the 756 households approached indicates a moderate level of engagement. This low response rate was primarily attributed to a lack of time, social distrust, and safety concerns among the slum dwellers. Recent cyber fraud in the community has further eroded trust and heightened fears regarding financial safety. Previous studies suggested that achieving high response rates can be challenging in community-based surveys conducted within urban slum settings [14-16]. The surveyed population predominantly comprised migrants (58.4%), mainly from Uttar Pradesh and Bihar, with a small percentage from the neighboring country Nepal. This high rate of migration highlights the transient and diverse nature of the slum populations, which could influence the socioeconomic dynamics and health behaviors, including tobacco use. The migration pattern aligns with other studies showing that urban slums in major Indian cities are often inhabited by individuals from neighboring states seeking better economic opportunities [16,17].

According to the GATS-2 India report, the prevalence of tobacco use in urban areas of India was recorded at 21.2%, while in Delhi, the prevalence was 17.8% [4]. The National Family Health Survey (NFHS-5) reported tobacco use prevalence in Delhi at 26.2% for men and 2.2% for women [18]. Both the GATS-2 and NFHS-5 studies focused on individuals aged 15 years and older. In contrast, our study examined tobacco use among men and women aged 18 years and older. We noticed the prevalence of tobacco use in our study considerably elevated across zones, with rates ranging from a low of 16.3% to a high of 36.7%. The overall prevalence of 23.1% in the studied urban slum zones is higher than the national average [4] for urban areas, indicating a significant public health issue within these communities. Furthermore, data from GATS-2, NFHS-5, and our survey, show an increasing trend in tobacco consumption over time [4,18]. The increasing prevalence of tobacco is an alarming situation that highlights the growing public health

threat posed by tobacco consumption. The stark differences in prevalence between zones, with Zone 2 exhibiting the highest prevalence (36.7%), may be attributed to varying social, economic, and environmental factors, including increased tobacco exposure in densely populated areas. Our study identified tobacco retail outlets situated at the primary entrances of slum settlements and within the interior of these communities. Studies have reported that the presence of tobacco shops in neighborhoods is strongly linked to higher tobacco use in slums area [19-21]. Additional environmental factors identified in our study included impoverished living conditions, the absence of workplace policies regulating tobacco use, and increased free time due to unemployment or retirement. Work environments where daily-wage laborers frequently use tobacco as a form of leisure or time pass, influenced by peer pressure and the demands of heavy physical work, were also identified as contributing environmental factors to tobacco use.

The demographic profile of tobacco users showed that the mean age varied slightly between zones, with most users being in their early to mid-40s (Table 2). Whereas the mean age of initiating tobacco use was found to be 25.7 years. Notably, the mean age of tobacco initiation has increased progressively from GATS-1 to GATS-2 and now in our study [22]. Specifically, in GATS-2, the mean age of initiating smoking tobacco and consuming SLT was 20.9 and 22.3 years, respectively, compared to 18.5 and 19.7 years in GATS-1 [22]. Anti-tobacco awareness programs implemented at the workplace could reduce the likelihood of initiating tobacco use and encourage cessation before chronic health issues manifest. The average age of current users suggests that midlife interventions could be crucial in addressing the health risks of long-term use, as many individuals at this stage may have developed stronger nicotine dependence and face more challenges in quitting. Additionally, public health campaigns and educational programs at the school level are essential in preventing the initiation of tobacco use, particularly in slum areas. Furthermore, identifying and addressing the underlying factors contributing to tobacco initiation at later ages could provide valuable insights for developing targeted prevention strategies within specific socio-cultural contexts.

In our present study, the gender disparity in tobacco use was notable, with a majority being male (86.1%). This gender gap is consistent with national data indicating higher tobacco use among men compared to women [4,18]. This study found no statistically significant association between gender and zone among tobacco users ($p=0.757$). In other words, the distribution of tobacco users between males and females does not significantly differ across the zones. Overall, 45.9% of tobacco users were using SLT, while 23.7% were consuming both smoking and SLT. This indicates that a substantial portion of tobacco users were engaged in SLT use. This aligns with existing literature that reports a higher prevalence of SLT use in India [4,18,23,24].

In these slums, people were consuming SLT in various forms, including gutkha (a mixture of crushed areca nut, slaked lime, and flavored tobacco, mixed with savory seasonings and fragrances), khaini (sun-dried tobacco leaves mixed with slaked lime, placed between the cheek and gum for nicotine absorption), paan (a combination of tobacco, areca nut, slaked lime, spices, and fragrances wrapped in a betel leaf), and gul/tobacco paste (a powder applied directly to the teeth and gums as a tooth powder or toothpaste). Evidence suggests that SLT is the leading cause of oral cancer in India [25]. Apart from bidi and cigarettes, people in these slums were also using electronic nicotine delivery systems (ENDS), in the form of E-Cigarettes and E-Hukka. ENDS contain toxic chemicals, including nicotine and substances that can cause cancer. ENDS are found responsible for cardiovascular diseases and lung disorders, such as COPD [26,27]. COPD is a group of progressive lung diseases that lead to airflow obstruction and breathing diffi-



culties. Tobacco smoke exposure is also attributable to COPD, and its impact can be significantly reduced through effective smoking cessation interventions [1]. Previous studies suggest that 5A's framework is highly recognized tool for smoking cessation which involves five components namely (i) asking about smoking status, (ii) advising individuals to quit with personalized health messages, (iii) assessing their readiness to quit, (iv) assisting with practical support and resources, and (v) arranging follow-up appointments to monitor progress and provide ongoing support [28,29].

In our study, an interesting finding was that 43.8% of the tobacco users showed a willingness to quit (Table 2), particularly among SLT users. A study conducted at a tertiary care hospital in Delhi reported that 70% of tobacco users expressed their willingness to quit when advised by a doctor [30]. At the national level, the willingness to quit was 49.6% among SLT users and 55.4% among smokers [4]. In the present study, there was no statistically significant ($p=0.445$) association between the zones and the willingness to quit tobacco use. In our study, the high willingness to quit among women (70.4%) suggests a potential for targeted cessation programs. However, awareness of existing government-run TCC and toll-free helplines was dismally low, with some zones reporting zero awareness. This highlights a critical gap in the dissemination of information and accessibility of cessation resources in these communities. Additionally, patients undergoing psycho-behavioral interventions often expect structured guidance, personalized support, and strategies for coping with addiction-related challenges, which need to be taken into consideration in future interventions focusing on tobacco cessation [31].

Education played a significant role in tobacco use patterns, with a higher proportion of users being illiterate or having only a primary education. There is a statistically significant relationship between education level and tobacco use ($p=0.00016$) in our study. This suggests that education level may influence tobacco use behavior. Other studies have also demonstrated a significant association between education levels and tobacco use [4,32,33]. This correlation suggests that educational interventions could be pivotal in reducing tobacco use. The occupational profile, predominantly of daily wage earners, further underscores the need for workplace-based cessation programs that can cater to this demographic. Zones 2 and 5 exhibit a significant association between tobacco prevalence and high population density, suggesting that overcrowded living conditions may exacerbate tobacco use. This finding aligns with the Social Determinants of Health (SDOH) theory, which posits that health outcomes are shaped by social, economic, and environmental factors rather than solely biological determinants [34-36]. These factors, including education, occupation, housing conditions, and access to resources, play a crucial role in shaping health behaviors. According to the SDOH framework, individuals with lower levels of education, such as those who are illiterate or have only primary education, are more likely to engage in tobacco use due to limited health literacy and reduced access to cessation resources [37,38]. Smoking cessation rates may vary significantly between slum and industrialized areas, primarily due to socioeconomic factors and access to cessation resources. Research indicates that individuals in disadvantaged neighborhoods exhibit lower cessation rates compared to those in more affluent areas [39,40]. This may result in a high prevalence of tobacco use and poor tobacco cessation outcomes in slums area, suggesting more rigorous and focused approaches to tobacco cessation in slums.

Conclusions

Despite the proximity to TCCs and the continuous display of warnings and helpline numbers on tobacco packaging, tobacco

users in slums demonstrated low awareness of cessation services. However, a significant interest in quitting tobacco was observed. Zones with higher household densities and tobacco prevalence should be prioritized for tobacco control programs. The study found that living in areas with more tobacco retailers is linked to higher prevalence of tobacco use and lower cessation success rates. These results highlight the necessity for comprehensive tobacco control strategies that include increasing awareness about cessation programs, integrating cessation services into primary health care, and educational campaigns targeting these vulnerable populations.

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Received: 10 October 2024; Accepted: 6 December 2024; Early view: 5 February 2025.

Contributions: all the authors played a significant role in the conception, design, analysis, and interpretation of data, drafting the article or revising it critically for important intellectual content. All the authors have read and approved the final version of the manuscript.

Conflict of interest: the authors have no conflict of interest to declare.

Ethics approval and consent to participate: this research adhered to the ethical principles outlined by University of Delhi. Ethical approval was obtained from the Board of Research Committee, Department of Social Work, University of Delhi (BRS/Soc. Sc./2019/1240), dated 19/10/14.

Informed consent: participants provided informed consent after receiving detailed information about the study's purpose and procedures. The study has no potential risks or benefits to the participants. Consent was obtained voluntarily and without coercion.

Patient consent for publication: not applicable, as the study does not include any identifiable personal data, images, or individual case details.

Availability of data and materials: all the relevant data is provided within the manuscript.

Funding: this study is part of the Delhi University Ph.D. program funded by the Ministry of Social Justice & Empowerment, Government of India (to first author only).

Acknowledgments: the authors would like to thank research volunteers Mr. Anit, Mr. Hariom and Mr. Gulshan for their important contributions during data collection. The authors are grateful to the participants who were recruited in the present study.

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