Journal of Pioneering Medical Sciences
Received: July 21, 2025 | Accepted: September 01, 2025 | Published: September 05, 2025
Volume 14, Issue S02, Pages 181-183

DOI https://doi.org/10.47310/jpms202514S0228

Tobacco Use and Behavioural Changes During the COVID-19 Pandemic: A Cross-sectional Study Among Adults in Chennai

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Abstract **Background:** The COVID-19 pandemic significantly influenced tobacco use, presenting both challenges and opportunities for behavioural change. Understanding these shifts is crucial for targeted public health strategies. **Objectives:** This study aimed to evaluate changes in tobacco use among adults in Chennai during the COVID-19 pandemic, identify high-risk subgroups, and assess associations between smoking behaviour and self-perceived physical and psychological health. **Methods:** A cross-sectional survey was conducted among 500 adults (18–65 years) using structured questionnaires. Data included demographics, tobacco consumption before and after the pandemic, COVID-19 infection severity, and self-rated health. Statistical tests and logistic regression were applied. **Results:** Of the 500 participants, 54% reduced smoking, 32% quit, and 12% increased use. Average daily cigarettes decreased from 15.2 to 9.1 ($p<0.001$). Rural residents reported greater reduction than urban ($p<0.05$). Quitting/reducing smoking was associated with improved self-rated health and lower odds of hospitalisation (OR=0.42, 95% CI 0.25–0.72) and ICU admission (OR=0.35, 95% CI 0.19–0.65). **Conclusion:** The pandemic served as a catalyst for smoking reduction and cessation, with disparities observed among men, long-term smokers, and urban residents. Integrating cessation support into digital platforms and mental health services could consolidate public health gains.

Key Words COVID-19 Pandemic, Tobacco Use, Smoking Cessation, Self-Rated Health, Public Health Strategies

INTRODUCTION

Tobacco smoking is a leading preventable cause of morbidity and mortality globally (1,2). The COVID-19 pandemic, caused by SARS-CoV-2, raised concerns about its interaction with tobacco use, as smoking impairs immunity and respiratory function (3–5). India, with over 267 million tobacco users, faces particular challenges due to widespread use of cigarettes, bidis, and smokeless tobacco (6–8). Chennai, a metropolitan hub, exemplifies this dual burden of high tobacco prevalence and COVID-19 incidence (9).

Evidence on smoking and COVID-19 outcomes remains mixed. Some studies report smokers as more likely to suffer severe complications (10,11), while others found unexpectedly low smoking prevalence among hospitalised patients (12,13). Pandemic stressors and lockdowns altered tobacco availability and behaviours, leading some to quit while others increased use (14,15). Behaviour changes theories, including the Health Belief Model, suggest perceived susceptibility and severity of disease motivate quitting (16).

Few Indian studies have assessed pandemic-driven changes in smoking. Understanding subgroup vulnerabilities by gender, residence, and smoking history is key for targeted interventions (17,18). Moreover, linking behavioural changes to physical and psychological health can inform integrated strategies (19,20).

METHODS

Design

This was a descriptive cross-sectional survey of 500 adults aged 18–65 years in urban and rural Chennai.

Sampling

Participants were recruited from a community health database. Inclusion criteria were self-reported tobacco use before the pandemic and willingness to provide consent. Non-users and incomplete responses were excluded.

Data Collection

Structured questionnaires administered via telephone/online captured demographics, tobacco use patterns, COVID-19

history, hospitalisation/ICU admission, and self-rated health on a Likert scale. Smokeless tobacco was also recorded.

Analysis

Data were analysed using SPSS v26. Paired t-tests assessed cigarette consumption changes; chi-square tests compared categorical outcomes. Logistic regression, adjusted for age, gender, residence, and smoking history, examined associations with hospitalisation, ICU admission, and health outcomes. $p<0.05$ was considered significant.

RESULTS

Demographics

Of 500 participants, 310 (62%) were male, mean age 42±10 years. Urban residents comprised 55%. Long-term smokers (>10 years) represented 36%, see Table 1.

Behaviour Changes

After the pandemic, 32% quit, 54% reduced, and 12% increased smoking. Cigarette use declined from 15.2±5.4 to 9.1±4.2 per day ($p<0.001$). Rural residents reduced more than urban counterparts ($p<0.05$), see Table 2.

Health Outcomes

About 18% reported COVID-19 infection, with 65% hospitalised and 25% admitted to ICU. Reduced/quit smoking was associated with lower hospitalisation (OR=0.42, 95% CI 0.25–0.72) and ICU admission (OR=0.35, 95% CI 0.19–0.65). Improved physical and psychological health was reported among quitters, Table 3 for reference.

DISCUSSION

Our findings suggest the COVID-19 pandemic catalysed smoking reduction and cessation in Chennai, aligning with studies from China, the UK, and Spain (21–23). However, male, urban, and long-term smokers were less likely to quit, consistent with literature linking gender norms, nicotine dependence, and access to resistance in behaviour change (24–26). Participants who quit reported better psychological well-being, consistent with meta-analyses equating cessation with improved mental health (27,28). These insights highlight opportunities for integrated interventions combining tobacco cessation with mental health support and digital counselling (29,30).

Table 1: Demographic Characteristics of Participants

Characteristic	n	%
Male	310	62
Female	190	38
Urban Residents	275	55

Table 2: Changes in Smoking Behaviour and Health Outcomes

Variable	Pre-pandemic	Post-pandemic	p-value
Cigarettes/day (mean ± SD)	15.2 ± 5.4	9.1 ± 4.2	<0.001
Quit Smoking	0	160 (32%)	<0.001
Reduced Smoking	270 (54%)	50 (10%)	<0.001

Table 3: Multivariate Logistic Regression Analysis (Adjusted for Age, Gender, Smoking History)

Outcome	Predictor	Adjusted OR (95% CI)	p-value
Hospitalisation	Reduced/Quit Smoking	0.42 (0.25–0.72)	<0.01
ICU Admission	Reduced/Quit Smoking	0.35 (0.19–0.65)	<0.01
Psychological Well-being	Quitting Smoking	1.89 (1.11–3.24)	<0.05

CONCLUSIONS

The COVID-19 pandemic acted as a behavioural turning point, prompting many smokers in Chennai to quit or reduce tobacco use. Disparities among men, urban residents, and long-term smokers emphasise the need for tailored cessation support. Integrating cessation with digital and mental health services may help sustain behavioural changes and strengthen public health resilience.

Limitations

The study relied on self-report, raising recall and desirability bias. No non-smoker control group was included, limiting causal inference. COVID-19 infection and severity were self-reported and unverified. Despite these limitations, findings align with international studies and offer policy insights for targeted interventions (31–33).

Future studies should adopt prospective designs, bio-verify smoking status, and integrate qualitative research to explore motivations (34–36). Policy should leverage crises as opportunities for cessation, embed tobacco control within pandemic preparedness, and use digital health tools for outreach (37–44).

Ethical Statement

Institutional Review Board approval was obtained (SIMATS Ref: PHD/2025/04).

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