A Sociological Perspective on Tobacco Use, Smoking Behavior and Health Outcomes in Sindh Pakistan

Abdul Rasool Khoso[1, 2, *], Wang Suyuhan[1], Gu Jintu[1, 2], Shahnaz Bhutto[1], Kainat Vighio[3]

[1]Department of Sociology, School of Public Administration, Hohai University, Nanjing 211100, China
[2]Research Center for Environment and Society, Hohai University, Nanjing 211100, China
[3]Department of Rural Sociology, Sindh Agriculture University, Tandojam 70050, Pakistan

Abstract: This research explores the sociocultural factors influencing tobacco use and its health impacts in urban Sindh, Pakistan. The study employed both (Qualitative, Quantitative) technique including 500 respondents for structured survey using valid questionnaire as an instrument and 10 respondents purposefully for in-depth interview. Quantitative analysis, including logistic regression and correlation, was used to evaluate the relationships between smoking behaviors, social norms, economic status, and health awareness. The regression model demonstrated that both social norms (B = 0.65, p = 0.000) and economic conditions (B = 0.35, p = 0.003) play significant roles in increasing tobacco use, while greater health awareness (B = -0.40, p = 0.005) decreases the likelihood of smoking. Correlation results showed a positive association between age and smoking frequency (r = 0.46, p = 0.001) and a negative correlation between education and smoking frequency (r = -0.58, p = 0.00005). The qualitative data, obtained through in-depth interviews and was analyzed by NVIVO through thematic analysis. The qualitative results revealed that smoking is strongly influenced by cultural norms, particularly among men, where it serves as a symbol of masculinity and social engagement. Economic challenges were identified as a driving force behind smoking, especially among lower-income groups who view smoking as a way to manage stress. Additionally, health awareness was notably lower in economically disadvantaged groups, further perpetuating smoking habits. In conclusion, the study suggests that effective public health interventions should address the complex social and economic factors that sustain smoking behaviors. Culturally sensitive health campaigns that consider the economic and social realities of urban populations may better support efforts to reduce smoking, particularly in male-dominated social settings.

Keywords: Tobacco Use; Socio-cultural Factors; Health; Smoking Behavior; Sindh; Pakistan

DOI: 10.57237/j.ssrf.2025.01.001

1 Introduction

Tobacco use continues to be a leading cause of preventable mortality worldwide, accounting for over 8 million deaths each year due to its well-established link to chronic illnesses such as lung cancer, cardiovascular disease, chronic obstructive pulmonary disease (COPD), and various other respiratory diseases [1]. Although worldwide tobacco control efforts, such as the World Health Organization's Framework Convention on Tobacco Control (FCTC), have been critical in lowering smoking incidences in numerous developed nations, low- and middle-income countries (LMICs), including Pakistan, maintain a high burden of tobacco use [2, 3]. This contrast emphasizes the

*Corresponding author: Abdul Rasool Khoso, lx20220614007@hhu.edu.cn

Received: 26 December 2024; Accepted: 18 January 2025; Published Online: 8 February 2025 http://www.socscires.com

intricate connection of societal, cultural, and economic factors that perpetuate tobacco use, particularly in urban areas where rapid modernization coexists with persistent inequalities [4]. From a sociological perspective, cigarette smoking is well considered to be more than the health concern of a person; it is embedded in societal norms and frameworks, complicating traditional public health interventions [5]. Bourdieu's theory of practice states that cultural capital and habitus the internalized habits, skills, and values shaped by one's social environment influence lifestyle behaviors, including smoking [6]. In Pakistan, cigarette smoking is normally seen as a social norm and culturally accepted behavior, specifically in lower urban areas [7, 8]. This cultural endorsement may hinder public health campaigns to reduce smoking, as societal norms encompassing smoking endure, particularly among excluded populations [9]. In Pakistan, cigarette smoking is most probably favored within low income groups, as across LMICs [10]. Economic hardship, combined with limited availability of smoking cessation services, exacerbates dependency on tobacco in these communities [11]. Even though the increasing of taxes for smoking as well as governing the goods related to tobacco products, their availability still makes them accessible for the low income people [12]. Thus, public health strategies must focus not only on changing individual behaviors, but also on tackling the underlying disparities that allow tobacco use to persist at such high levels. Health education initiatives, which are critical for reducing smoking rates, frequently fail to reach Pakistan's marginalized populations [13]. While, some urban residents with lower education further expressed hindrances for obtaining information about cigarette smoking's long lasting health effects [14]. Furthermore, cultural norms that embrace or encourage tobacco use, especially within male-dominated environments, reduce the perceived urgency to quit smoking, despite referred to health risks. In these gender-based spaces, smoking is frequently found in male dominancy within societies [15, 16], aggravating efforts to change public perceptions [17]. Keeping in mind such scenario, there is the need of health campaigns to be considered at broader societal level for validating the impacts of smoking behavior in diverse cultural settings.

Because of its diverse socioeconomic landscape, swift urbanization, and profound cultural norms, Pakistan makes an excellent case study for investigating social and cultural determinants of smoking. Social acceptance is a major factor in the continuation of smoking habits in Pakistan, in which social occasions frequently involve tobacco use [18]. Tobacco use has been correlated to lower socioeconomic status in Pakistan, with tobacco-related diseases disproportionately affecting poorer communities [19]. According to Iqbal et al., many people in lower-income groups are unaware of the serious health hazards linked to smoking [11]. Moreover, despite public health warnings, tobacco use is encouraged by societal acceptance of smoking, especially in male-dominated social settings. According to Gerra et al., tobacco use is influenced by peer pressure and socioeconomic status in urban areas where modern lifestyles collide with traditional values [20]. Despite government efforts to regulate tobacco, increase taxes, and enforce smoking in public bans, the incidence of smoking in urban Pakistan stands high, especially among those with low incomes who are most vulnerable to the ensuing health hazards [1].

The purpose of this study is to look into the ways that sociocultural elements, including economic circumstances, social norms, and health consciousness, contribute to the continued prevalence of tobacco use among urban residents Pakistan. Using a sociological structure, the study aims to uncover how smoking behaviors endure within social structures, as well as how public health efforts can be better tailored to tackle the social realities of tobacco use. Addressing these social and cultural factors dimensions is critical for developing more effective tactics to reduce rates of smoking and improve overall health, especially in towns and cities where tobacco-related ailments are greatest.

2 Research Methodology

2.1 Research Design

This study examined the sociocultural factors determining tobacco use among Pakistani urban populations using a combination of quantitative and qualitative methods. In addition to examining individual experiences through qualitative insights, the research design sought to offer a comprehensive understanding of the ways in which social, economic, and health-related factors influence smoking behavior. Consequently, including both techniques had helped the research to involve ground rooted information regarding the objectives as well as numerical valid data for determining the local resident's perception for comprehensive findings, context-specific perceptions regarding specific smoking behaviors.

2.2 Participants

The research targeted 500 tobacco users from different urban areas of Hyderabad, Sindh province of Pakistan with participants stratified by the demographics including age, education level and socio-economic status. Besides that, the respondents were obtained from different hotels, workshop centers, work places and social networks in district Hyderabad.

2.3 Data Collection

To obtain a comprehensive understanding of tobacco use, a mixed-method approach was employed, incorporating both quantitative and qualitative methods. This approach facilitated a detailed exploration of smoking behaviors, socio-economic backgrounds, and the underlying sociocultural influences. The design of the data collection process was structured to ensure a representative sample, capturing both broad trends and individual insights into the factors driving tobacco use.

2.3.1 Quantitative

For conducting the quantitative data, the researcher involved the 5 point Likert-scale (1= shows strongly disagree, and 5= strongly agree) to gather the perception of local residents of urban areas regarding the attitude toward smoking and health status. For the purpose, a structured survey on questionnaire (as an instrument) were directed for data collection regarding health status, socio-economic background and smoking behavior.

2.3.2 Regression Analysis

To investigate the relationship between smoking behavior (dependent variable) and the independent variables economic conditions, social norms, and health awareness, a logistic regression model was applied. The goodness-of-fit for the model was checked using the Hosmer-Lemeshow test, ensuring that the model adequately fit the observed data [21]. To assess how well the model explained the variation in smoking behavior, pseudo R-squared values, such as Cox & Snell and Nagelkerke, were calculated [22, 23].

The key assumptions of the logistic regression were also considered:

1. Log-linearity: The model assumes a linear relationship between the log odds of the dependent variable and the independent variables.
2. No multicollinearity: Variance inflation factors (VIF) were calculated to ensure that the independent variables were not highly correlated.
3. Independence of errors: The errors in the model were assumed to be independent of each other, as required by logistic regression.

2.3.3 Addressing Outliers and Biases:

Potential outliers, which could affect the model's performance, were identified using Cook's distance [24]. Any extreme values that disproportionately influenced the model were examined for validity and removed if necessary. To address possible selection biases, the sampling process was designed to ensure a diverse and representative sample of urban tobacco users in Pakistan, stratified by socio-economic status, age, and education level. This approach minimized the risk of bias and ensured the results could be generalized across different segments of the population. The logistic regression equation used is

$$\log(\frac{P}{1-\mathrm{P}}) = \beta 0 + \beta 1\ \mathrm{X1} + \beta 2\ \mathrm{X2} + \beta 3\ \mathrm{X3}$$

Where:

P is the probability of smoking,

B0 is the intercept (constant),

β1, β2, and β3 are the coefficients corresponding to economic circumstances (X1), social norms (X2), and health consciousness (X3), respectively.

2.3.4 Correlation Analysis

A correlation analysis was conducted to investigate the relationship between smoking frequency and various demographic and health factors. The Pearson's and Spearman's correlation coefficients were calculated to assess these relationships [25].

$$r = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2]\,[n\sum Y^2 - (\sum Y)^2]}}$$

Where:

r is the correlation coefficient,

X and Y are the variables being correlated,

n is the sample size.

2.3.5 Qualitative

For conducting the profound information, the study involved in-depth interviews from 10 participants using unstructured interviews to investigate in-depth socio-cultural concerns for tobacco use. The data collection

process involved the meetings, time management and placement. Where the researcher provided the refreshment as well during discussion. These interviews were analyzed using thematic analysis to identify recurring patterns related to social norms, peer influence, and economic pressures.

2.4 Data Analysis

Quantitative data were analyzed using SPSS for descriptive statistics and regression analysis to identify correlations between socio-economic factors and smoking behavior. Besides that, Excel and Python software was also used to analyze and generate the heat map and graph in this regard. Qualitative data from interviews were transcribed and analyzed with NVIVO software to identify themes related to social norms and cultural acceptance of smoking.

2.5 Reliability and Validity of the Data

The reliability and validity of the study's constructs were evaluated using Cronbach's Alpha and Confirmatory Factor Analysis (CFA) [26]. Economic Circumstances, consisting of 9 items, assess financial influences and have a final Cronbach's Alpha of 0.72, indicating moderate reliability, with an AVE of 0.48 showing reasonable validity. Social Norms, measured by 7 items, reflect societal pressures, with strong reliability (Cronbach's Alpha of 0.71) and excellent validity (AVE of 0.71). Health Impacts, comprising 10 items, examine the influence of health awareness on behavior, achieving a Cronbach's Alpha of 0.73 and an AVE of 0.58, and public perception with 6 items with 0.67 in pre-test and 0.70 in final test suggesting good reliability and validity as shown in Table 1. These variables form a reliable and valid foundation for the study.

Table 1 Reliability and validity of the data

Concept/Variable	No. of Items	Cronbach's Alpha (Pre-test=30)	Cronbach's Alpha (Final test=500)	CFA (AVE ≥.40)
Economic Circumstances	09	.66	.72	.48
Social Norms	07	.73	.71	.71
Health Impacts	10	.69	.73	.58
Public Perception	06	.67	.70	.51

3 Results and Discussions

3.1 Descriptive Statistics of the Respondents

The data presents the age statistics of a sample consisting of 500 individuals in Table 2. The age range spans from 27 to 46 years, with an average (mean) age of 38 years. A standard deviation of 5.48 indicates a moderate variation in age within the sample. The standard error of 0.258 reflects a high level of precision in the mean age estimate, indicating that the sample mean is a reliable approximation of the population mean. These statistical measures give an understanding of the distribution and variability in the ages of the sampled group.

Table 2 Age of the respondents

Age	N	Min	Max	Mean	Std. Deviation	Std. Error
Valid N (listwise)	500	27.00	46.00	38.00	5.48273	.25846

The Table 3 showcases the distribution of education, occupation, and smoking experience within a sample population. In terms of education, most individuals have a bachelor's or undergraduate degree (33%), followed by those with a master's degree or higher (24.4%). Smaller percentages are observed for intermediate (17.8%), primary (13.8%), and illiterate (11%) levels of education. For occupation, the majority are employed in government jobs (42.2%), with private job holders making up 33.4%. Self-employed individuals account for 12.8%, and laborers represent 11.6%. Regarding smoking experience, 53.4% of respondents have smoked for one year, 19.2% for six months, 16.8% for 2-3 years, and 10.6% have smoked for more than three years. This data provides insights into the correlation between education levels, employment sectors, and smoking habits across the population.

Table 3 Socio-demographic characteristics of the respondents

	EDUCATION	
	Frequency	**Percentage**
Illiterate	55	11.0
Primary	69	13.8
Intermediate	89	17.8
Bachelors/Undergraduate	165	33.0
Masters and above	122	24.4
	Occupation	
labor	58	11.6
Private job	167	33.4
Self-business	64	12.8
Government Job	211	42.2
	Smoking Experience	
6 months	96	19.2
1 year	267	53.4
2-3 years	84	16.8
More than 3 years	53	10.6
Total Numbers	500	100.0

3.2 Socio-cultural Predictors of Smoking Health Outcomes

This logistic regression analysis explores the relationship between smoking behavior (dependent variable) and three factors: economic circumstances, social norms, and health consciousness in Table 4. The coefficient for economic circumstances (B = 0.35) suggests that individuals facing financial hardship or tobacco affordability are 42% more likely to smoke, and this relationship is statistically significant (p = 0.003). Social norms have a strong impact (B = 0.65), showing that peer pressure or cultural acceptance increases the likelihood of smoking by 91% (p = 0.000). On the other hand, health consciousness (B = -0.40) reduces the odds of smoking by 33%, indicating that people with better health awareness are less likely to smoke, and this relationship is also significant (p = 0.005). Overall, social norms exert the strongest influence on smoking behavior, followed by economic factors and health awareness.

Table 4 Logistic Regression Analysis of Socio-cultural Predictors

Variable	**Coefficient (B)**	**Standard Error (SE)**	**Odds Ratio (Exp (B))**	**p-value**
Constant	-0.85	0.22	0.43	0.001
Economic Circumstances	0.35	0.12	1.42	0.003
Social Norms	0.65	0.18	1.91	0.000
Health Consciousness	-0.40	0.14	0.67	0.005

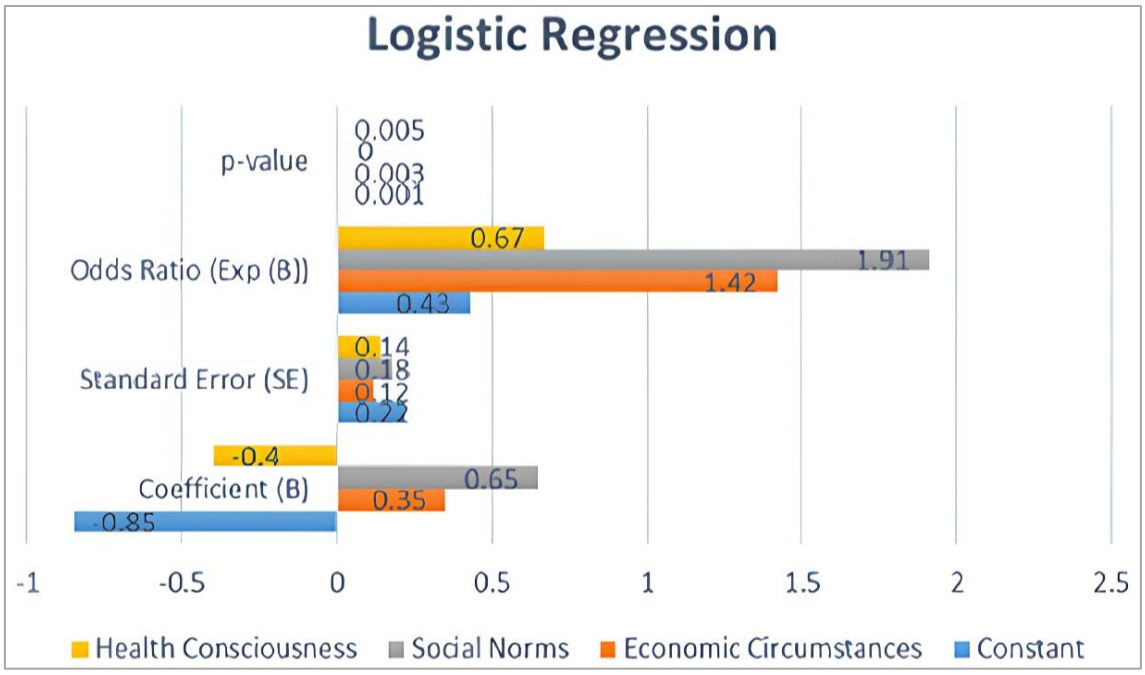

Figure 1 Logistic Regression Analysis of Factors Influencing Tobacco Use

The Figure 1 shows the relationship between smoking behavior and three independent variables: Economic Circumstances, Social Norms, and Health Consciousness, along with a constant. The Y-axis represents the coefficient values, indicating how much each variable influences smoking. Positive coefficients for Economic Circumstances and Social Norms suggest that financial stress and stronger societal pressures increase the likelihood of smoking. Conversely, the negative coefficient for Health Consciousness implies that greater awareness of health risks reduces smoking probability [27]. The error bars reflect the uncertainty around these estimates, and none cross the zero line, suggesting that all variables have a statistically significant effect on smoking behavior. The negative constant suggests that, in the absence of these factors, the baseline likelihood of smoking is lower.

Table 5 Correlation between Socio-demographic Factors, Smoking Behavior, and Health Outcomes

Variables	**Correlation Coefficient (r)**	**p-value**	**Interpretation**
Age and Smoking Frequency	0.46 (Pearson's)	0.001	Moderate positive correlation; older respondents tend to smoke more.
Education Level and Smoking Frequency	-0.58 (Spearman's)	0.00005	Strong negative correlation; higher education levels are linked to lower smoking frequency.
Occupation and Smoking Frequency	0.42 (Spearman's)	0.003	Moderate positive correlation; individuals in labor/service jobs tend to smoke more.
Socioeconomic Status and Smoking	-0.40 (Spearman's)	0.002	Moderate negative correlation; higher socioeconomic status is linked to lower smoking rates.
Years of Smoking and Respiratory Diseases	0.50 (Pearson's)	0.0001	Strong positive correlation; longer smoking is associated with increased respiratory diseases.
Years of Smoking and Cardiovascular Issues	0.38 (Pearson's)	0.004	Moderate positive correlation; longer smoking is associated with more cardiovascular problems.
Smoking Frequency and General Fatigue	0.47 (Pearson's)	0.0015	Moderate positive correlation; higher smoking frequency is linked to more general fatigue.

The Table 5 presents significant correlations between various sociodemographic factors, smoking behavior, and health outcomes. A moderate positive relationship is observed between age and smoking frequency ($r = 0.46$, $p = 0.001$), indicating that older individuals tend to smoke more. Conversely, education level shows a strong negative correlation with smoking frequency ($r = -0.58$, $p = 0.00005$), where higher education is associated with less frequent smoking. Occupation and socioeconomic status also play a role, with labor/service jobs being linked to higher smoking frequency ($r = 0.42$, $p = 0.003$), while higher socioeconomic status correlates with lower smoking rates ($r = -0.40$, $p = 0.002$). Health impacts are reflected in the positive correlation between years of smoking and respiratory diseases ($r = 0.50$, $p = 0.0001$), as well as cardiovascular issues ($r = 0.38$, $p = 0.004$). Additionally, a moderate positive relationship exists between smoking frequency and general fatigue ($r = 0.47$, $p = 0.0015$), suggesting that more frequent smoking is linked to increased fatigue. All these correlations are statistically significant, as indicated by their low p-values.

The Figure 2 shows the relationship between different smoking-related factors, with color intensity indicating the strength and direction of the correlation using Python. Warmer colors (reds) show positive correlations, where both variables tend to increase together, such as Age and Smoking Frequency (0.46) and Years of Smoking and Cardiovascular Issues (0.50). Cooler colors (blues) indicate negative correlations, where one variable increases as the other decreases, like Education Level and Smoking Frequency (-0.58), suggesting that individuals with higher education tend to smoke less. The chart also highlights strong connections, such as the moderate positive link between Smoking Frequency and General Fatigue (0.47), while negative correlations, like Socioeconomic Status and Smoking (-0.40), suggest that people with higher socioeconomic status tend to smoke less.

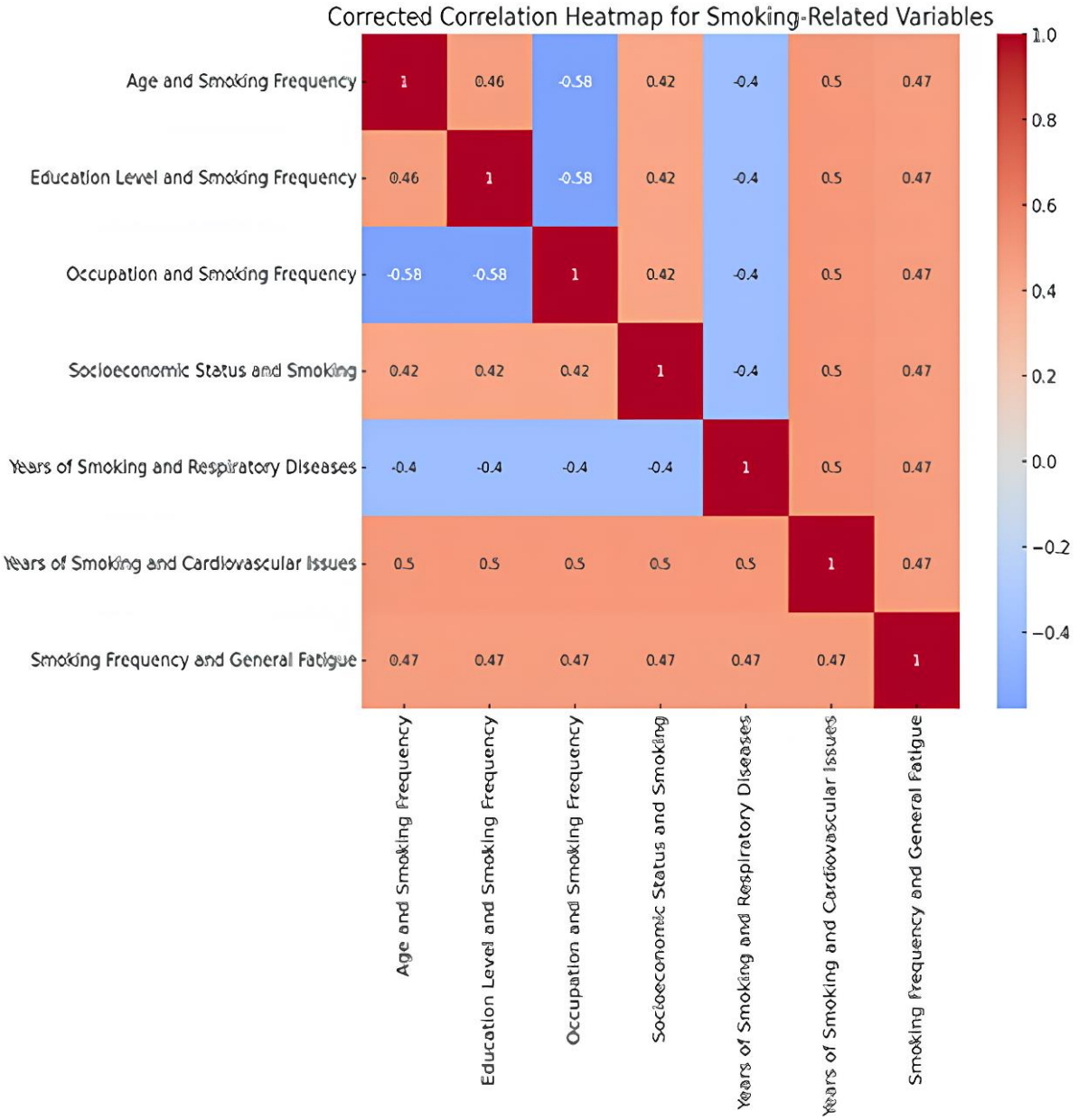

Figure 2 Correlation heat map for smoking-related variables using Python

3.3 Public Perception Towards Tobacco Use and Influencing Factors

Table 6 Perceptions on Tobacco Use and Influencing Factors in Urban Areas

Items	No.	Min	Max	Mean	Standard Deviation
Smoking is socially accepted in urban areas.	500	1.00	5.00	3.30	0.98
Economic conditions significantly influence tobacco use.	500	1.00	4.00	3.75	0.85
Social norms encourage smoking among men.	500	1.00	3.00	3.60	0.92
Health awareness reduces the likelihood of smoking.	500	1.00	5.00	3.30	1.10
Government efforts to control tobacco use are effective.	500	1.00	4.00	2.70	0.95
Smoking is being reflected by parents	500	1.00	4.00	2.65	0.58

The Table 6 provides descriptive statistics for five key statements concerning the perceptions of tobacco use and related sociocultural factors among 500 participants in urban Sindh, Pakistan. The highest average score (mean =

3.75) relates to the influence of economic conditions on tobacco use, with a low standard deviation (0.85), suggesting widespread agreement. Similarly, social norms that encourage smoking among men received a high average score (mean = 3.60), reflecting the significant social pressures influencing male smoking behavior. There was more variation in opinions regarding whether health awareness reduces smoking (mean = 3.30, standard deviation = 1.10), showing differing perspectives. The belief that smoking is socially accepted in urban areas also had a mean score of 3.30, with a standard deviation of (0.98). Finally, government efforts to control tobacco use were rated lower, with a mean score of 2.70 and a standard deviation of 0.95, indicating some skepticism about the effectiveness of public health interventions in reducing smoking, while, smoking has been considered to be self-addiction rather parents highlighting (mean=2.65). These results highlight the strong impact of economic and social factors on tobacco use and suggest areas for improvement in health awareness and policy implementation.

3.4 Sociocultural, Economic and Health Influence on Tobacco Use

Figure 3 Word Cloud Representation of Key Themes in Tobacco Use and Health Outcomes

The word cloud visually represents in Figure 3, the key themes from the study on tobacco use and health outcomes in urban Sindh, Pakistan. The most prominent terms, such as "smoking," "social," "class," and "stress," highlight the central role of social influences and class disparities in shaping smoking behaviors. Economic factors, including "financial" and "income," emphasize the impact of socio-economic status on tobacco use. Additionally, words like "health" and "access" point to concerns about health risks and unequal access to healthcare, particularly for lower-income groups. Overall, the word cloud underscores the complex interplay between social, economic, and health-related factors influencing smoking habits.

3.4.1 Sociocultural Factors Influencing Tobacco Use

The analysis of sociocultural influences on tobacco use in urban Sindh, Pakistan, reveals several key factors that shape smoking behaviors. Respondents indicated that social norms, gender expectations, economic pressures, and stress play significant roles in tobacco use. For many men, smoking is socially accepted and linked to masculinity and social bonding, with younger respondents mentioning that it helps them feel part of a group, while older participants connected it to workplace or social stress. Besides that, smoking was considered to be accepted as a fashion and culturally adopted by the elder ones. As Khoso et al [28] indicated that the smoking were fashionably used with friends in groups. Economic hardships also emerged as a common theme, particularly among working-class respondents, who view smoking as a way to manage stress. While, the usage of low quality cigarette were normally involved just to tackle out themselves from the stress including family burden, educational hardship and the work load. Gender differences were clear, as women expressed the stigma they face for smoking, which is often done in private to avoid judgment [29, 30]. However, some younger women reported that smoking is becoming more common as a form of defiance against traditional norms, especially among the educated middle class. Overall, the perception highlights that smoking is generally been considered to be the cultural influence and social dynamics, utilized as a stress relief object as we as symbol of prestige and belonging specifically in male dominant settings, reflecting as a broader sociocultural landscape that influences tobacco use in this region.

3.4.2 Economic and Class Influence

Economic and class influences significantly affect tobacco use behaviors in urban Sindh, Pakistan. Respondents from lower-income and working-class backgrounds, such as rickshaw drivers and auto mechanics, frequently mentioned that smoking helps them cope with stress, particularly due to financial difficulties and tough working conditions. For them, smoking is an affordable and easily accessible way to deal with the pressures of urban life. On the other hand, respondents from higher-income groups associated smoking with social status and professional circles. Smoking, especially cigars, is often viewed as a symbol of success and is common in business meetings or social gatherings, reinforcing its link to wealth and social prestige. While, some of the respondents used electronic cigarette (vapes) who believed that vape is any way better than the traditional cigarette, which doesn't harm the health. Further emphasizing that, it is a class and is easy to carry rather flaming cigarette every time. This contrast between economic classes shows how financial status shapes both the reasons for smoking and how it is perceived within different social groups [31, 32]. Most of the lower class utilize cigarette smoking as a method to sustain financial challenges, whereas, the middle and upper class utilizes tobacco as a part of prestige, revealing the complex role of economic factors in tobacco use across different class levels.

3.4.3 Health Awareness and Disparities

Health awareness and disparities significantly influence tobacco use in urban Sindh, Pakistan, with notable differences between social classes. Majority of the respondents were well aware about the health concerns as responded that the cigarette smoking is slow but sure cause of death. Higher-income respondents generally had a better understanding of the health risks linked to smoking [33]. However, despite this awareness, many continued smoking, citing reasons such as stress or social expectations. Their participation in healthcare campaigns and information marks them well aware about the hazardous of cigarette smoking, but such information and concern is still not enough to quit the smoking. On the other hand, respondents from lower-income groups showed limited awareness of smoking's long-term health consequences. For them, immediate concerns like financial struggles and stress took precedence over health, with smoking seen as a lesser problem. These differences highlight the broader gap in health education and access to resources, where wealthier individuals are more informed but still engage in smoking, while those with lower incomes lack both awareness and preventive healthcare options. This underscores the need for health campaigns tailored to address both the knowledge deficit and behavioral factors in different economic groups.

4 Conclusions and Policy Recommendation

This analysis reveals that sociocultural variables, encompassing social norms, economic status, and health consciousness, have a substantial effect on tobacco consumption in urban Sindh, Pakistan. The results indicate that social norms, particularly within male-dominated environments, strongly endorse smoking as a manifestation of masculinity and social affiliation. Economic adversity also constitutes a critical factor, as individuals belonging to lower-income demographics often resort to smoking as a mechanism for alleviating stress. In contrast, heightened health awareness diminishes the probability of engaging in smoking behaviors, thereby underscoring the pivotal role of education in fostering healthier lifestyle choices. The data provided corresponds with earlier studies that have established a higher incidence of tobacco usage in low- and middle-income areas as a result of cultural and economic circumstances. To address these issues, targeted health education campaigns are needed, focusing on reshaping social norms, particularly among men. Additionally, economic support programs and mental health resources should be provided to lower-income communities to offer alternatives to smoking for stress relief. Culturally relevant smoking cessation programs and improved health literacy initiatives can further reduce smoking rates, particularly in marginalized groups. Strengthening tobacco control policies, such as increasing taxes and enforcing stricter regulations on tobacco advertising, will also help to limit access to tobacco products. Implementing these strategies could significantly reduce smoking prevalence in Pakistan's urban areas.

Institutional Review Board Statement

Ethical review and approval were waived for this study,

titled "The Sociocultural Determinants of Tobacco Use and Health Outcomes: A Sociological Perspective on Smoking Behavior in Urban Sindh province of Pakistan", because it primarily focused on adult participants in public settings. The study did not involve any vulnerable populations such as minors, pregnant women, or individuals with disabilities, and no invasive methods were used. The re-search procedures adhered to the institutional ethical standards, the 1964 Helsinki Declaration, and its later amendments or comparable ethical standards. The study was deemed low-risk as participants were not subjected to harm or discomfort beyond that experienced in everyday life. Consequently, the study was exempted from a full ethical review after evaluation by the ethical review committee.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study prior to their participation. Participants were provided with detailed information regarding the purpose of the research, the procedures to be followed, potential risks, and the benefits of the study. They were also informed of their right to withdraw from the study at any time without penalty. The confidentiality and anonymity of all participants were ensured throughout the study, and any identifying information was securely protected. Written consent was obtained to document their voluntary participation, and no personal data were disclosed or used for purposes other than this research.

Data Availability Statement

The raw data supporting the conclusions of this article will be made available by the authors on request.

Acknowledgments

I express my sincere gratitude to Professor for his utmost support, guidance and encouragement throughout this research. I also thank my colleagues at the Department of Sociology Hohai University Nanjing. I acknowledge the financial support from my supervisor. Lastly, I deeply appreciate the support of the respondents for helping me in data collection pro-cess and provided valuable time and considerations.

Conflicts of Interest

The authors declare no conflicts of interest.

References

[1] Organization, W. H. Assessing national capacity for the prevention and control of noncommunicable diseases: report of the 2021 global survey; World Health Organization: 2023.

[2] Organization, W. H. The WHO STEPwise approach to surveillance; World Health Organization. Regional Office for Europe: 2021.

[3] Reitsma, M. B.; Fullman, N.; Ng, M.; Salama, J. S.; Abajobir, A.; Abate, K. H.; Abbafati, C.; Abera, S. F.; Abraham, B.; Abyu, G. Y. Smoking prevalence and attributable disease burden in 195 countries and territories, 1990–2015: a systematic analysis from the Global Burden of Disease Study 2015. The Lancet 2017, 389, 1885-1906.

[4] Roy, A. Tobacco consumption and the poor: An ethnographic analysis of hand-rolled cigarette (Bidi) use in Bangladesh. Ethnography 2012, 13, 162-188.

[5] Keshavarz Mohammadi, N.; Rezaei, Z.; Burggraf, L.; Pype, P. Exploring settings as social complex adaptive systems in setting-based health research: a scoping review. Health Promotion International 2024, 39, daae001.

[6] Bourdieu, P. Distinction a social critique of the judgement of taste. In Inequality; Routledge: 2018; pp. 287-318.

[7] Masud, H.; Oyebode, O. Inequalities in smoking prevalence: a missed opportunity for tobacco control in Pakistan. Journal of Public Health 2018, 40, 271-278.

[8] Nadeem, M.; Malik, M. I.; Ullah, A.; Junaid, N. Smoking Dynamics: Factors Supplementing Tobacco Smoking in Pakistan. IEEE Transactions on Computational Social Systems 2024.

[9] Meem, T. M.; Khurram, F. B.; Islam, K. N.; Khan, M. S. Prevalence and Associated Factors of Tobacco Smoking Exposure Among Youths In Southeast Asia: Evidence Based on Global Youth Tobacco Survey. Khulna University Studies 2022, 144-157.

[10] Alam, A. Y.; Iqbal, A.; Mohamud, K. B.; Laporte, R. E.; Ahmed, A.; Nishtar, S. Investigating socio-economic-demographic determinants of tobacco use in Rawalpindi, Pakistan. BMC Public Health 2008, 8, 1-9.

[11] Iqbal, S.; Barolia, R.; Petrucka, P.; Ladak, L.; Rehmani, R.; Kabir, A. Smoking cessation interventions in South Asian Region: a systematic scoping review. BMC Public Health 2022, 22, 1096.

[12] Vedøy, T. F.; Lund, K. E. Beliefs about harms of cigarette smoking among Norwegian adults born from 1899 to 1969. Do variations across education, smoking status and sex mirror the decline in smoking? Plos one 2022, 17, e0271647.

[13] Sharif, H.; Sheikh, S. S.; Seemi, T.; Naeem, H.; Khan, U.; Jan, S. S. Metabolic syndrome and obesity among marginalised school-going adolescents in Karachi, Pakistan: a cross-sectional study. The Lancet Regional Health-Southeast Asia 2024, 21.

[14] Trigg, J.; Skelton, E.; Lum, A.; Guillaumier, A.; McCarter, K.; Handley, T.; Judd, L.; Lye, A.; Bonevski, B. Smoking cessation interventions and abstinence outcomes for people living in rural, regional, and remote areas of three high-income countries: A systematic review. Nicotine and Tobacco Research 2023, 25, 1709-1718.

[15] Le, M.; Pereira Pedrosa, R.; Murdock, E. Social Smoking–an Observational Study. Human Arenas 2024, 1-22.

[16] Organization, W. H. Gender-responsive approaches to the acceptability, availability and affordability of alcohol. Brief 11; World Health Organization: 2024.

[17] Bautista-Puig, N.; Barreiro-Gen, M.; Statulevičiūtė, G.; Stančiauskas, V.; Dikmener, G.; Akylbekova, D.; Lozano, R. Unraveling public perceptions of the Sustainable Development Goals for better policy implementation. Science of the Total Environment 2024, 912, 169114.

[18] Mangrio, F. A.; Uthis, P.; Rojnawee, S. Factors Influencing the Use of Tobacco Among Youth in Low-Income, Lower-Middle-Income, and Upper-Middle-Income Countries: A Systematic Review. Journal of Research in Health Sciences 2024, 224.

[19] Khan, M. A.; Vichayanrat, T.; Ngoenwiwatkul, Y. The association between smoking and smokeless tobacco use with dental caries among Pakistani patients. BMC Oral Health 2024, 24, 723.

[20] Gerra, G.; Benedetti, E.; Resce, G.; Potente, R.; Cutilli, A.; Molinaro, S. Socioeconomic status, parental education, school connectedness and individual socio-cultural resources in vulnerability for drug use among students. International journal of environmental research and public health 2020, 17, 1306.

[21] Hosmer, D.; Lemeshow, S. Applied logistic regression. 2nd edWiley. New York, NY, US 2000.

[22] Cox, D. R. Analysis of binary data; Routledge: 2018.

[23] Nagelkerke, N. J. A note on a general definition of the coefficient of determination. biometrika 1991, 78, 691-692.

[24] Cook, R. D. Detection of influential observation in linear regression. Technometrics 1977, 19, 15-18.

[25] Spearman, C. The proof and measurement of association between two things. The American journal of psychology 1987, 100, 441-471.

[26] Barbaranelli, C.; Lee, C. S.; Vellone, E.; Riegel, B. Dimensionality and reliability of the self-care of heart failure index scales: Further evidence from confirmatory factor analysis. Research in nursing & health 2014, 37, 524-537.

[27] Khoso, A. R.; Bhutto, S.; Jintu, G.; Suyuhan, W. The Impact of Smoking on Public Health and Economic Stability in Sindh Province, Pakistan. Zakariya Journal of Social Science 2024, 3, 15-25.

[28] Khoso, A. R.; Jintu, G.; Suyuhan, W.; Bhutto, S.; Akhtar, F. Exploring the Role of Smoking as a Coping Mechanism for Stress Relief among Residents of Larkana, Sindh, Pakistan. Zakariya Journal of Social Science 2024, 3, 35-47.

[29] Greaves, L. J.; Hemsing, N. J. Sex, gender, and secondhand smoke policies: implications for disadvantaged women. American journal of preventive medicine 2009, 37, S131-S137.

[30] Wigginton, B.; Lafrance, M. N. How do women manage the spoiled identity of a 'pregnant smoker'? An analysis of discursive silencing in women's accounts. Feminism & Psychology 2016, 26, 30-51.

[31] Hong, Y.; Zeng, D.; Shen, J. Self-selection or situational stratification? A quasiexperimental study on social class differences in health behaviors in China. The Journal of Chinese Sociology 2024, 11, 16.

[32] Singer, J. How Do Socioeconomic Differences Among Low-Income and Racially Minoritized Students Shape Their Engagement and Access in School Choice Systems? American Educational Research Journal 2024, 61, 991-1029.

[33] Khoso, A. R.; Jintu, G.; Bhutto, S.; Li, L.; Ujuagu, F. L. China's tobacco smoking epidemic: prevalence, illness load, obstacles, and future plans. Pakistan Journal of Chest Medicine 2024, 30, 155-161.