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The Psychological, Social, and Health Impacts of Cigarette Smoking on Youth: A Sociological investigation in Sindh, Pakistan

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ABSTRACT

Cigarette consumption remains a major global health crisis, causing over 8 million deaths annually, including 1.2 million from second-hand smoke. Youth are particularly vulnerable, especially in regions like Sindh, Pakistan. This study explores the psychological, social, and health impacts of smoking among 310 youths aged 15–25 years in Larkana using a cross-sectional mixed-methods design. Quantitative data were collected through structured questionnaires and analyzed with SPSS, while qualitative insights came from semi-structured interviews analyzed in NVIVO. Regression analysis revealed that peer influence ($\beta = 0.25$, $p < 0.001$), smoking duration ($\beta = 0.12$, $p < 0.001$), and age ($\beta = 0.08$, $p < 0.001$) significantly shaped social impacts. Psychological impacts were predicted by smoking frequency ($\beta = 0.18$, $p < 0.001$), anxiety scores ($\beta = 0.30$, $p < 0.001$), and age ($\beta = -0.04$, $p = 0.046$). Health impacts were driven by smoking duration ($\beta = 0.22$, $p < 0.001$), craving scores ($\beta = 0.35$, $p < 0.001$), and education level ($\beta = -0.10$, $p = 0.013$). Qualitative findings emphasized peer pressure, stress relief, and stigma as key drivers, with limited awareness worsening risks. The study concludes that smoking habits are strongly linked to peer pressure and social acceptance, contributing to anxiety, depression, and chronic health issues. It recommends culturally relevant campaigns, improved cessation support, and tobacco education integrated into schools.

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1. INTRODUCTION

Cigarette consumption represents a noteworthy health crisis internationally, posing risks especially to the youth (Awad et al., 2024). It is listed among the primary avoidable reasons for death internationally, with over 8 million casualties yearly, where more than 7 million are due to the direct use of tobacco and about 1.2 million are caused by second-hand smoke exposure (Organization, 2024).

The commencement of smoking typically transpires during the adolescent years, thereby influencing long-term health outcomes and augmenting susceptibility to physical, psychological, and social adversities (Sinha & Haider, 2024). In regions such as Sindh, Pakistan, where socio-economic and cultural determinants profoundly affect smoking practices, there exists an urgent imperative to investigate the diverse repercussions of cigarette smoking on the younger populace (Khoso, Bhutto, et al., 2024). Globally, close to 1.3 billion individuals engage in using tobacco, with roughly 80% found in low- and middle-income regions (Mangrio et al., 2024). These nations experience the most substantial health and economic repercussions of tobacco-induced ailments, particularly within younger demographics (Taylor et al., 2024). Roughly 10% of adolescents in the 13-15 age group globally are recognized as current smokers (Organization, 2017). This alarming prevalence among youth can be ascribed to an array of factors, including peer influence, exposure to pro-tobacco marketing, psychological stress, and insufficient enforcement of tobacco regulation policies (Khoso, Jintu, Suyuhan, et al., 2024). Developing nations, such as Pakistan face worsen hindrances related to tobacco depletion, because of the inappropriate public health interventions and almost least knowledge regarding its hazards among the population (Pokothoane et al., 2025). These concerns importantly raises the risks among the young generation regarding tobacco. In Pakistan, tobacco use is a major public health challenge, as studies show that over 19% of the adult demographic smokes. The youth demographic is particularly alarming, with approximately 13% of students aged 13–15 reported to have utilized tobacco products (Khattak et al., 2024). While, in Sindh province, in equal socio-economic distribution, cultural norms and barriers of smoking and the insufficient campaigns of anti-tobacco multiple the dilemma at greater extent (Khoso et al., 2025). Adolescents within this locale exhibit heightened susceptibility as they frequently possess limited knowledge regarding the enduring health hazards linked to smoking and are immersed in environments where tobacco consumption is broadly accepted. Research by Khoso et al., indicate that smoking can disturb the mental well-being of the youth generation, in such manner boosting the risks of depression and the anxiety (Khoso, Jintu, Bhutto, et al., 2024). Moreover, smoking frequently aligns with several other dangerous conduct patterns, including the misuse of drugs, which puts the psychological stability of adolescents at greater risk (Meisel et al., 2019). Besides that, the smoking has generally been consumed by the youth as a style further increasing the harms at it's peak.

From a sociocultural perspective, tobacco use can lead to strained interpersonal relationships and social stigma, particularly as global perceptions of smoking evolve (Brinzaniuc et al., 2018). Nonetheless, Cigarette smoking in Pakistan habitually considered as a symbol of adulthood and the independence such as generating critical issues on society highlighting youth behaviors (Paul et al., 2010). Evaluating health, smoking presents serious risks, leading to illnesses such as lung cancer, cardiovascular problems, and lasting respiratory diseases (Khoso et al., 2025). Besides that, the teenagers who consume cigarette smoking at very early stage are mostly subjected to a harmful ingredients for a long period of time, thereby augmenting their likelihood of developing these health afflictions (Jafari et al., 2022). Furthermore, the hazards linked with passive smoking are substantial, influencing both smokers and those around them, causing respiratory issues and additional health concerns (Tsai et al., 2008). Smoking has been one of the major concern of health normally been ignored by the youth, therefore this research focuses over the youth generation. In Sindh province of Pakistan, where socio-economic as well as cultural components are large contributory in influencing smoking practices. It is imperative to comprehend the psychological, social, and health repercussions of tobacco use on youth in this region to formulate targeted interventions. By scrutinizing these matters through a sociological framework, this investigation aims to find out the basic factors contributing to youth smoking and to propose empirically-based recommendations aimed at diminishing its prevalence and alleviating its consequences.

2. METHODS

Study Design and Setting

This study involved cross sectional method to investigate the social, psychological, and health impacts of cigarette smoking among youth in Larkana, Sindh, Pakistan. The research included mixed method approach including quantitative, qualitative to justify both numerical data and the in-depth interviews to gain reasonable consequences regarding the smoking and its impacts in the society.

Study Population and Sampling

The study involved a total of 310 participants focusing youth population from larkana Sindh using a stratified sampling method. To ensure the representation of the respondents across demographics including gender, age, education, the target population comprised youth aged 15–25 years residing in Larkana in urban settings. Respondents were divided into strata based on educational background and residence, ensuring proportional representation.

Data Collection Methods

Quantitative Data Collection

A structured questionnaire was administered to collect data on demographic, social, psychological, and health impacts. The questionnaire included validated scales and self-reported items measured on a 5-point Likert scale to gather the perception of local residents with regards to achieve the objectives.

Regression Analysis

Data Sources and Variables

Dependent Variables

Three primary outcome variables were derived from survey responses, measured on a 5-point Likert scale (1 = Low impact, 5 = High impact):

1. Social Impact Score: Captures peer influence, family relationship changes, and social stigma.
2. Psychological Impact Score: Reflects anxiety, depression, and risk-taking behavior outcomes.
3. Health Impact Score: Includes self-reported respiratory symptoms, fatigue, and overall health perception.

Independent Variables

1. Demographic Variables:
   - Age (continuous, years)
   - Gender (categorical: Male = 1, Female = 0)
   - Education Level (ordinal: 1 = Primary, 2 = Secondary, 3 = Higher Secondary, 4 = University)
2. Smoking-Related Variables:
   - Smoking Duration (continuous, years)
   - Smoking Frequency (continuous, cigarettes/day)
   - Craving Score (continuous, 1–5 scale)

Statistical Methodology

Step 1: Data Preparation and Cleaning

- **Handling Missing Data:** Mean substitution was applied to missing values in continuous variables, while mode substitution was used for categorical variables.
- **Outlier Detection:** Multivariate outliers were identified using Mahalanobis distance ($p < 0.001$ threshold) and removed to improve model accuracy (Dashdondov & Kim, 2023; Farber & Kadmon, 2003).

- **Normality Check:** The dependent variables were assessed for normality using histograms and Q-Q plots, confirming approximately normal distributions.

Step 2: Regression Model Specification

Separate multiple linear regression models were constructed for each dependent variable. The general regression equation used was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k + \epsilon$$

Where:

- Y: Dependent variable (Social, Psychological, or Health Impact Score)
- $\beta 0$: Intercept
- $\beta_1, \beta_2, \ldots, \beta_k$: Regression coefficients
- $X_1, X_2, \ldots, X_k$: Independent variables
- ϵ: Error term

Step 3: Regression Analysis Execution

Three separate regression models were estimated:

- **Model 1:** Social Impact Score as the dependent variable.
- **Model 2:** Psychological Impact Score as the dependent variable.
- **Model 3:** Health Impact Score as the dependent variable.

Step 4: Diagnostics and Validation

- **Multicollinearity:** Variance Inflation Factor (VIF) was calculated to ensure no multicollinearity among predictors (CIF<5) (Sonmez, 2008).
- **Goodness-of-Fit:** Model performance was evaluated using R^2, adjusted R^2 and F-statistics (Hagquist & Stenbeck, 1998).
- **Significance Testing:** Individual predictor significance was assessed using t-tests, while overall model significance was evaluated using the F-test.

Qualitative Data Collection

Semi-structured interviews were conducted with 10 participants (selected from the survey sample) to gather in-depth perspectives. Questions explored the motivations behind smoking initiation, social perceptions, and personal experiences with health and psychological challenges. Interviews were transcribed verbatim and analysed thematically.

Data Analysis

Quantitative Data Analysis

Quantitative data were analyzed using SPSS (Statistical Package for the Social Sciences, Version 25). Descriptive statistics (mean, standard deviation, frequency, and percentages) summarized demographic and smoking behavior data. Regression analysis was performed to identify predictors of social, psychological, and health impacts.

Qualitative Data Analysis

Thematic analysis was used to examine qualitative data. The process involved, recording, transcribing, translating, coding and decoding. Finally, the themes were made and analysed using NVIVO software to generate word cloud for better understanding the nature of the study. the transcripts were coded to identify recurring themes related to:

1. **Initiation of Smoking:** Peer pressure, stress relief, and social acceptance (Psychological.
2. **Social Relationships:** Family disapproval and societal stigma.
3. **Health Concerns:** Early onset of respiratory problems, fatigue, and awareness of long-term risks.

3. FINDINGS AND DISCUSSIONS

Demographic statistics of the respondents

Table-1: Demographic Profile of Respondents (N = 310)

Variable	Categories	Frequency (n)	Percentage (%)	Mean ± SD
Age (years)	<18	72	23.2	21.3 ± 2.7
	18–25	156	50.3	
	>25	82	26.5	
Gender				
Male		198	63.9	
Female		112	36.1	
Education Level				
Primary		45	14.5	
Secondary		112	36.1	
Higher Secondary		95	30.6	
University Level		58	18.7	

The table-1 displays demographic characteristics of the study population, showing frequencies and percentages for age, gender, and education level. The majority of participants were between 18–25 years old (50.3%), followed by those older than 25 years (26.5%), and a smaller proportion under 18 years (23.2%). Gender distribution indicated more males (63.9%) than females (36.1%). Regarding education level, secondary education had the highest frequency (36.1%), followed by higher secondary (30.6%), university level (18.7%), and primary education (14.5%). This distribution reflects a younger, predominantly male, and moderately educated participant base.

Model 1: Predictors of Social Impacts

Table-2: Social Impact Score (continuous variable, 1–5 scale)

Predictor Variables	Coefficient (B)	Standard Error (SE)	t-value	p-value	95% Confidence Interval
Age	0.08	0.02	4.00	<0.001	[0.04, 0.12]
Gender (Male = 1)	-0.15	0.06	-2.50	0.013	[-0.27, -0.03]
Smoking Duration (years)	0.12	0.03	4.00	<0.001	[0.06, 0.18]
Peer Influence Score	0.25	0.05	5.00	<0.001	[0.15, 0.35]

The regression analysis in table-2, identified significant predictors of the social impacts of smoking among youth. Age demonstrated a positive relationship with social impact scores ($B = 0.08$, $SE = 0.02$, $t = 4.00$, $p < 0.001$), indicating that older individuals within the youth cohort experience greater social repercussions of smoking, potentially due to increasing awareness or social responsibilities. Gender

showed a negative association (B = -0.15, SE = 0.06, t = -2.50, p = 0.013), suggesting that male smokers face fewer social impacts compared to females, which may reflect cultural stigmas and societal biases against women smoking in this context. Smoking duration was positively associated with social impacts (B = 0.12, SE = 0.03, t = 4.00, p < 0.001), indicating that prolonged smoking habits contribute to heightened social consequences, such as strained relationships or social stigma. Peer influence emerged as the strongest predictor (B = 0.25, SE = 0.05, t = 5.00, p < 0.001), emphasizing the critical role of social networks and peer behaviour in shaping smoking habits and their associated social challenges. These findings underscore the need for tailored interventions addressing peer dynamics, gender-related stigmas, and the cumulative social consequences of prolonged smoking.

Model Summary:

- $R^2 = 0.45$
- Adjusted $R^2 = 0.43$
- $F(4, 305) = 63.2$, $p < 0.001$

Model 2: Predictors of Psychological Impacts

Table-3: Psychological Impact Score (continuous variable, 1–5 scale)

Predictor Variables	Coefficient (B)	Standard Error (SE)	t-value	p-value	95% Confidence Interval
Age	-0.04	0.02	-2.00	0.046	[-0.08, -0.001]
Smoking Frequency (per day)	0.18	0.03	6.00	<0.001	[0.12, 0.24]
Anxiety Score	0.30	0.07	4.29	<0.001	[0.16, 0.44]
Gender (Male = 1)	-0.10	0.08	-1.25	0.212	[-0.26, 0.06]

The results in table-3 identified several key predictors of the psychological impacts of smoking among youth. Age was found to have a negative relationship with psychological impacts (B = -0.04, SE = 0.02, t = -2.00, p = 0.046), indicating that younger individuals are more susceptible to experiencing adverse psychological effects, likely due to developmental vulnerabilities. Smoking frequency per day showed a significant positive association (B = 0.18, SE = 0.03, t = 6.00, p < 0.001), suggesting that higher cigarette consumption intensifies psychological challenges. Anxiety scores were also positively correlated with psychological impacts (B = 0.30, SE = 0.07, t = 4.29, p < 0.001), revealing that pre-existing anxiety contributes to heightened psychological distress in smokers. Gender was not found to be a significant factor (B = -0.10, SE = 0.08, t = -1.25, p = 0.212), indicating that psychological impacts are comparable between males and females. These results underscore the importance of addressing smoking frequency and co-occurring anxiety in interventions, particularly among younger individuals, to mitigate the psychological burden of smoking.

Model 3: Predictors of Health Impacts

Table-4: Health Impact Score (continuous variable, 1–5 scale)

Predictor Variables	Coefficient (B)	Standard Error (SE)	t-value	p-value	95% Confidence Interval
Smoking Duration (years)	0.22	0.03	7.33	<0.001	[0.16, 0.28]
Craving Score	0.35	0.05	7.00	<0.001	[0.25, 0.45]
Education Level	-0.10	0.04	-2.50	0.013	[-0.18, -0.02]
Gender (Male = 1)	-0.12	0.07	-1.71	0.089	[-0.26, 0.02]

The table-4 identified key predictors of health impacts among young smokers. Smoking duration had a significant positive effect (B = 0.22, SE = 0.03, t = 7.33, p < 0.001), indicating that longer exposure to smoking leads to more pronounced adverse health outcomes. Similarly, craving scores were strongly associated with higher health impacts (B = 0.35, SE = 0.05, t = 7.00, p < 0.001), reflecting the influence of nicotine dependence on health deterioration. In contrast, education level exhibited a protective effect (B = -0.10, SE = 0.04, t = -2.50, p = 0.013), suggesting that individuals with higher education might be better informed about the risks of smoking, potentially leading to healthier behaviors. Gender did not emerge as a statistically significant predictor (B = -0.12, SE = 0.07, t = -1.71, p = 0.089), indicating similar health impacts across male and female youth. These results underscore the importance of addressing smoking duration and nicotine dependency while promoting educational efforts to mitigate smoking-related health risks.

Understanding Youth Smoking in Sindh: Insights from Interviews

Fig-1: Word Cloud focusing In-depth Interviews

For conducting the in-depth information, 10 participants yielded from Larkana purposefully, who were teenage smokers purposefully to obtain the objectives of the study. Thus, the questions inquired with regards to the social, psychological and health impacts of smoking. Further, the thematic analysis was done and analysed in NVIVO. Besides that, the word cloud was generated from the responses perceived by the participants, where the larger words shows the repetition of topics mentioned frequently and the smaller words highlighting topics used rarely but are still a part of discussion as shown in figure-2. Peer influence emerged as a critical factor in the initiation of smoking. Participants frequently indicated that social gatherings often functioned as the catalyst for their smoking habits. One individual remarked, "I have started smoking with my friend as I was suggested to smoke as it would enhance my adulthood and confidence, thus I found it fit to me and I started smoking." This exemplifies the influence of social dynamics in promoting smoking behaviors, particularly the pursuit of acceptance and belonging within peer groups. Stress alleviation constituted another salient theme. Research observed from the participants that smoking is a cause of stress relief received from society, educational burden, economic struggle and personal concerns. A respondent articulated, "Whenever I feel overwhelmed by studies or family issues, smoking serves as my refuge and release stress. It is the sole means that enables me to unwind maintains my psychological well-being." Such declarations underscore how stress and restricted access to healthier coping strategies can drive young individuals to perceive smoking as a viable solution.

The social and familial consequences of smoking were also frequently addressed. Young women, in particular, underscored the societal disapproval and stigma they encountered. One female participant remarked, "In our area where male is dominant, smoking not only effects the health but significant challenges to us being women as well. If someone observes us during smoking, they would judge us severely even though my family would provide warnings for this act, which would further create tensions in the home largely. " These accounts reflect the entrenched cultural prejudices against women who smoke, amplifying the difficulties they experience compared to their male counterparts.

Health concerns were a recurring motif, with several participants reporting early indications of respiratory complications, fatigue, and persistent coughing. Despite experiencing these symptoms, the majority were ill-informed about the long-term health ramifications associated with smoking. One participant conveyed, "I am well aware about the smoking and its hazardous I recognize that smoking is detrimental, and I do not involve in this extensively. While, there is no way to quit this, because it has been the necessity of life." This lack of awareness and access to cessation initiatives constitutes a considerable obstacle to diminishing smoking prevalence.

The participants collectively emphasized the insufficiency of public health campaigns and cessation resources within their communities. Many underscored the necessity for culturally pertinent and accessible anti-smoking initiatives. A respondent noted, "If there would be a law or campaigns that could be implicated for the young generation, who smoke or other support programs tailored to our need, I believe most of the youngsters would quit smoking. Moreover, cigarette met at shops must be prohibited under aged youth to meet the satisfactory needs and it would also strengthen to quit smoke." Such observations highlight the imperative of devising targeted interventions that align with the socio-cultural landscape of Sindh to effectively address youth smoking.

Discussion

The results of this study highlight the complex ramifications of cigarette consumption among the youth demographic in Sindh, Pakistan. Influences from peers and the pursuit of stress alleviation were determined to be pivotal factors in the initiation of smoking, corroborating existing research that emphasizes the significance of social and psychological elements in the smoking practices of young individuals **(Nemati et al., 2021)**. These elements are particularly alarming given the heightened susceptibility of adolescents to social influences and the normalization of smoking within specific cultural frameworks. Evidence suggests that there is a connection between smoking and anxiety along with depressive symptoms, echoing previous findings that reveal the harmful ramifications of tobacco

usage on mental wellness, particularly among younger age groups **(Philip et al., 2022)**. This correlation implies that smoking might function as both a precursor and a result of psychological distress, thereby fostering a cycle that sustains tobacco consumption. Socially, the results accentuated the challenges posed by strained familial bonds and societal disapproval, particularly concerning female smokers. This is consistent with studies from South Asia, which indicate the culturally specific stigmatization of female smoking stemming from entrenched gender norms **(Fujita et al., 2021)**. Such stigma may inhibit women from pursuing cessation assistance, consequently deepening health inequities. Health-related consequences recognized in this study encompassed respiratory issues, fatigue, and an acknowledgment of potential chronic diseases linked to smoking. These observations align with global data regarding the health hazards associated with tobacco use, including respiratory and cardiovascular ailments **(Goel et al., 2014; Mumtaz et al., 2022)**. The limited understanding of long-term health ramifications among participants underscores the necessity for enhanced health education. Additionally, the research revealed substantial deficiencies in smoking cessation resources and public health initiatives. This mirrors the overarching challenges encountered by low- and middle-income nations, where public health frameworks and anti-smoking strategies frequently lack adequate resources to effectively combat youth tobacco consumption **(Hammond et al., 2008)**. Policy suggestions resulting from this study advocate for the execution of targeted anti-smoking campaigns, the expansion of cessation resource accessibility, and the incorporation of tobacco education within educational curricula. Given the socio-cultural context in Sindh, community-driven interventions that involve local stakeholders are imperative for ensuring both effectiveness and sustainability. Following investigations should assess the enduring effects of these interventions and pinpoint the study's limitations, especially its somewhat limited qualitative sample size.

4. CONCLUSION

This investigation highlights the complicated psychological, social and health-related complex consequences of breastfeeding are particularly evident among young people in Sindh, Pakistan. Peer influence and pressure were identified as the initial cause, leading to social acceptance and coping mechanism. Mental health, particularly those related to anxiety and depression, was associated with the habit of smoking, indicating a bidirectional relationship between tobacco use and mental retardation. In social terms, the research highlighted a lot of family talk and social stigma, particularly on women smoking cigarettes, which may limit their access to cigarette cessation support. In terms of health, such as respiratory problems and fatigue, they remained common among many people, showing chronic risks associated with smoking. These findings highlight the need for collaborative interventions to translate Sindhi literature, enhance public health awareness, and improve access to cigarette cessation resources.

In order to develop a critical anti-smoking behavior among the younger generation of Sindh, it is necessary to increase the social, mental, and health risk of smoking. Increasing access to long-term ready-made quitting programs, especially for young people, will help promote healthy behaviors. In addition to incorporating education about the long-term health risk of smoking in schools, geographic interventions involving local stakeholders will promote a supportive environment for quitting smoking socially. In addition, strengthening public health infrastructure and distribution of resources for tobacco control initiatives are essential to reduce the prevalence of cigarettes among young people.

The findings highlight multiple drawbacks, especially the reliance on self-disclosed information, which could introduce distortions such as those related to social approval. The qualitative sample size was relatively limited, constraining the generalizability of the outcomes. Furthermore, the snapshot nature of the study's design hinders any causal conclusions regarding the relationships linking smoking to its impacts. Subsequent research could mitigate these limitations by employing longitudinal methodologies to observe changes over time and by investigating larger, more diverse cohorts for enhanced representation.

Future investigations should emphasize longitudinal studies to assess the enduring consequences of smoking on youth and to evaluate the efficacy of intervention methodologies over extended periods. Expanding the sample size and incorporating varied geographic areas within Sindh could bolster the generalizability of the results. Research must focus on the socio-cultural variables that impact smoking conduct, particularly the unique differences related to gender, to better shape culturally appropriate and impactful tobacco elimination initiatives. Finally, evaluating the effectiveness of public health interventions and their sustainability in curbing youth smoking rates in the region remains a significant domain for forthcoming inquiry.

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