Zakariya Journal of Social Sciences (ZJSS)

ISSN Print: 2957-4897
ISSN Online: 2957-4900
Volume 3, Number 2, 2024, Pages 15 – 25
Journal Home Page
https://journals.airsd.org/index.php/zjss

The Impact of Smoking on Public Health and Economic Stability in Sindh Province, Pakistan

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ARTICLE INFO

Article History:

Received:	July	8, 2024
Revised:	July	20, 2024
Accepted:	August	4, 2024
Available Online:	August	10, 2024

Keywords:

Smoking, Public Health, Economic stability, Sindh, Pakistan

ABSTRACT

Tobacco use continues to be a major public health challenge in the Province of Sindh, causing serious health problems and economic problems. This study explores the smoking habit, associated health risks and socio-economic impacts among Taluka Shahdadkot residents, including a group of 200 people using quantitative method with low income. The results indicates that (15%) of smokers are affected by lung cancer, which amounts to an estimated 30 cases in the sample. Chronic Obstructive Pulmonary Disease (COPD) affects (25%) of smokers, equaling 50 cases. Additionally, (20%) of smokers has cardiovascular disease, leading to an estimated 40 cases. These health issues pose a major economic burden, including health costs, reduced productivity, and spending on household stress. Besides that, Respondents with no formal education were utilizing the smoking at greater extent as compared to the higher education with the prevalence of (50%). Keeping in mind the results of the study, it is concluded that, lower education can boost smoking at greater extent. Therefore, the need of education campaign is considered to be the solution for the concern. Secondly, it is necessary to implement comprehensive tobacco regulation regimes, including strong enforcement of laws, innovative public health awareness programs, and providing specialist facilities to help quit smoking.

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Introduction

Smoking remains one of the most pressing public health issues globally, contributing to a wide range of preventable diseases and placing a substantial burden on healthcare systems (Khoso et al., 2024). Despite significant advances in public awareness, policy interventions, and smoking cessation programs, smoking continues to claim millions of lives annually and affects countless others through secondhand smoke exposure (Reza et al., 2024). This issue transcends individual health, impacting families, communities, and national economies

(Mann et al., 2024). The adverse effects of smoking are well-documented, with an extensive body of research highlighting its association with numerous chronic conditions, including respiratory diseases, cardiovascular diseases, and various cancers (WHO, 2017). Furthermore, smoking-related illnesses account for a significant portion of healthcare expenditure, stretching resources in both developed and developing countries (Barnes et al., 2024). The origins of smoking as a health concern trace back to the early 20th century when scientific evidence began to reveal its harmful effects (Proctor, 2012). Prior to this, smoking was widely accepted and even promoted as a social habit (Prust et al., 2024).

The introduction of mass-produced cigarettes led to a surge in smoking rates worldwide, subsequently increasing the incidence of tobacco-related illnesses (Doll et al., 2004). By the mid-20th century, landmark studies such as the British Doctors Study in 1954 and the U.S. Surgeon General's report in 1964 firmly established the link between smoking and severe health consequences (Leighton, 2015). These studies were pivotal in catalyzing public health campaigns and shaping policies aimed at reducing tobacco use. In recent decades, governments and health organizations have intensified efforts to combat the smoking epidemic (WHO, 2013). Measures such as higher tobacco taxes, advertising bans, warning labels, and smoke-free laws have shown success in reducing smoking prevalence (Spencer et al., 2024). However, challenges persist, particularly with the rise of new nicotine delivery systems like e-cigarettes and heated tobacco products (Small et al., 2024). The replacements here that are mostly advertised as safer replacements have created complications in tobacco control, particularly among young folks who perceive these produces as less harmful. As a result, while old-style smoking rates are decreasing in some areas, new methods of tobacco use pose new challenges for health care providers (Reid et al., 2024).

A multidisciplinary slant is needed to delicacy smoking as a public health issue. The endowment of educational agendas that make people attentive of the risks allied with smoking, and the operation of policies that are helpful in plummeting tobacco use, is essential (Yong et al., 2024). In accumulation, providing obtainable facilities for smokers is an significant component of tobacco control. Smoking termination programs, when realized effectively, not only advance individual health outcomes, but also lessen long-term health charges to delicacy tobacco-related diseases (Khushi et al., 2023). Another important finding is the role of social and economic factors in the spread of smoking. Studies advocate that smoking rates incline to be higher in low-income groups, partly due to restricted access to targeted publicizing and economizing resources (Wang et al., 2024). This disparity climaxes the need for public health commands to address the specific tasks of populations at risk. In addition, the global occurrence of tobacco production and trade complicates control efforts, as economic interest's conflict with health goals, especially in tobacco-producing areas (Bafano et al., 2020). Despite a clear understanding of the health and economic impacts of smoking, Sindh faces significant challenges in the implementation and implementation of an effective smoking control strategy. Poor implementation of existing anti-smoking laws, lack of public health barriers, and social acceptance of smoking have hindered progress. This article seeks to measure the effects of smoking in taluka Shahdadkot, by reviewing current

policies, and present strategies that can help regulate tobacco use and facilitate healthy population building.

Methodology

Research Design

This study will adopt a descriptive research design, using quantitative method to collect and analyze data on the various aspects to assess smoking prevalence, related health conditions, and the socio-economic factors influencing smoking behavior in Taluka Shahdadkot province of Sindh.

Sampling

A stratified random sampling technique was employed to ensure that the sample included individuals from various demographic categories, including gender, age, education level, income, occupation, and household size. Each demographic group was proportionally represented in the sample.

Sample size

The study employed 200 respondents using structure/ close ended questionnaire to gain the perception of local people regarding the smoking prevalence in the taluka Shahdadkot.

Data Collection

Smoking Prevalence: Respondents were asked directly about their smoking habits (whether they smoked or not). The prevalence of smoking in different demographic groups (gender, age, etc.) was calculated by dividing the number of smokers in each group by the total sample size for that group.

Health Conditions: The survey included questions about whether participants had been diagnosed with smoking-related diseases such as lung cancer, chronic obstructive pulmonary disease (COPD), and cardiovascular disease. The prevalence of these conditions among smokers was estimated by determining the percentage of smokers affected by each condition.

Economic Costs: To evaluate the economic burden of smoking, respondents were asked about their healthcare expenditures, lost work productivity, and monthly spending on tobacco products. This information was used to calculate the annual economic impact in terms of healthcare costs, lost productivity, and household expenditure on tobacco.

Data Analysis

Smoking prevalence was calculated by applying the smoking rate to the total number of individuals in each demographic group, yielding the estimated number of smokers in each category. The number of cases for each health condition (lung cancer, COPD, and cardiovascular disease) was calculated by multiplying the percentage of smokers affected by each condition with the total number of smokers. The economic costs were estimated by multiplying the average cost in each category (healthcare, productivity loss, and tobacco

spending) by the number of individuals or households affected. Overall, the data was analyzed by using SPSS software and the results were interpreted accordingly.

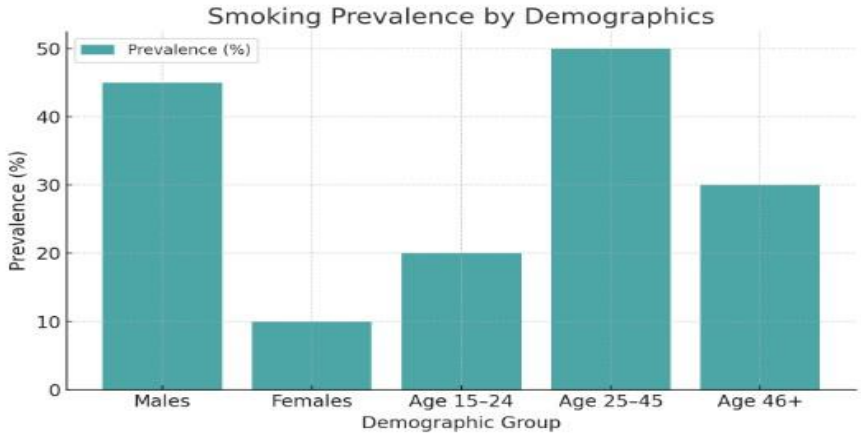
Results

Table 1: Smoking Prevalence and Demographics in Sindh

Demographic Group	Smoking Prevalence (%)	Sample Size (Out of 200)
Males	45%	90
Females	10%	20
Age 15–24	20%	40
Age 25–45	50%	100
Age 46 and above	30%	60

The table-1 presents smoking prevalence data across different demographic groups in a sample of 200 individuals, categorized by gender and age. Among males, 45% smoke, which corresponds to 40.5 of the 90 males in the sample. For females, the smoking rate is 10%, with 2 out of 20 females smoking. In terms of age groups, 20% of those aged 15–24 smoke, translating to 8 out of 40 individuals in that age range. The highest smoking prevalence is seen in the 25–45 age group, where 50% of the 100 people sampled smoke, amounting to 50 individuals. Lastly, 30% of the 60 individuals aged 46 and above smoke, which is 18 people.

Figure 1: Smoking prevalence by Demographics



The Figure-1 illustrates the percentage of smokers across different demographic categories. The data reveals a stark gender disparity, with smoking rates much higher among males compared to females. In terms of age, the prevalence is highest among individuals aged 25–45 and those over 46, indicating that smoking rates increase with age up to a certain point. The age group 15–24 shows the lowest smoking prevalence, suggesting that younger individuals are less likely to smoke compared to middle-aged and older adults. This chart highlights targeted age and gender groups for potential public health interventions to reduce smoking rates.

Table 2: Health Impacts of Smoking in Sindh

Health Condition	Prevalence Among Smokers (%)	Estimated Cases (Out of 200)
Lung Cancer	15%	30
Chronic Obstructive Pulmonary Disease (COPD)	25%	50
Cardiovascular Disease	20%	40

The table-2 shows the prevalence of various health conditions among smokers in a sample of 200 people. It indicates that 15% of smokers are affected by lung cancer, which amounts to an estimated 30 cases in the sample. Chronic Obstructive Pulmonary Disease (COPD) affects 25% of smokers, equaling 50 cases. Additionally, 20% of smokers have cardiovascular disease, leading to an estimated 40 cases.

Figure 2: Health Impacts of Smoking

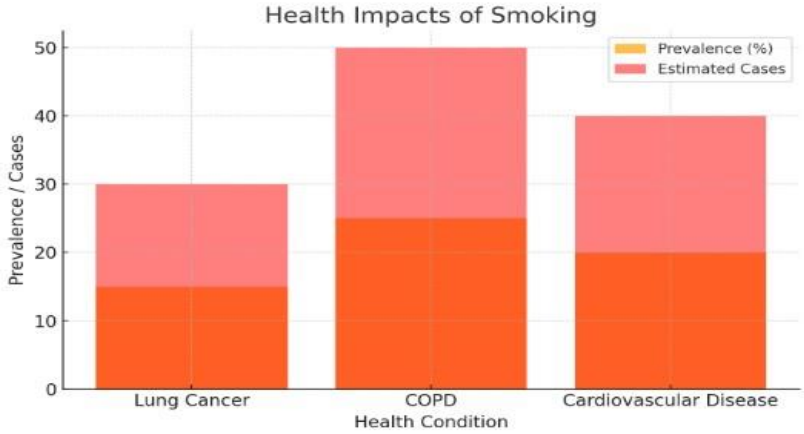


Figure-2 focuses on the adverse health outcomes linked to smoking. It categorizes the impacts into three main health conditions: lung cancer, COPD (Chronic Obstructive Pulmonary Disease), and cardiovascular disease. Each bar indicates both the prevalence (percentage of the population affected) and the estimated number of cases for these conditions. COPD stands out with the highest prevalence and estimated cases, showing how significantly smoking contributes to respiratory issues. Lung cancer has a moderate level of prevalence and estimated cases, while cardiovascular disease also shows a high level but less than COPD. The chart emphasizes the strong correlation between smoking and serious health conditions.

Table 3: Economic Costs of Smoking-Related Illnesses

Category	Average Cost (PKR)	Estimated Annual Economic Burden (Out of 200 respondents, PKR)
Direct Healthcare Costs	5,000 per case	250,000

Lost Productivity	10,000 per affected individual	400,000
Household Expenditure on Tobacco	3,000 per month	7.2 million

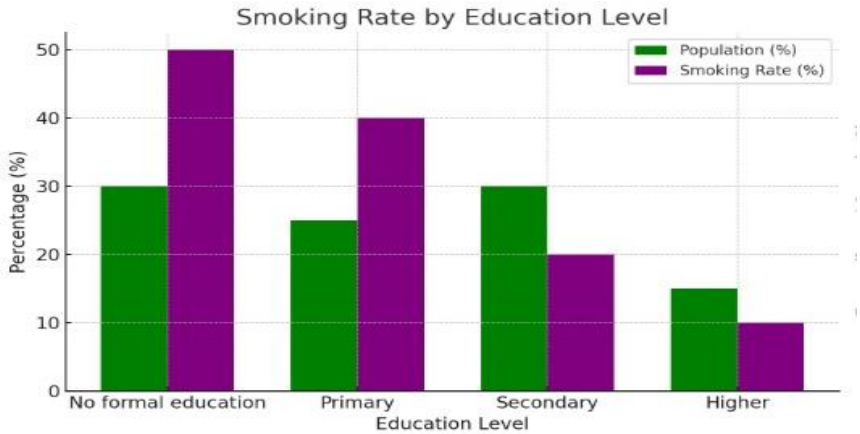
The table-3 outlines the average costs and estimated annual economic burden related to smoking in a sample of 200 respondents. For direct healthcare costs, the average cost per case is 5,000 PKR, leading to a total of 250,000 PKR in annual healthcare expenses. Lost productivity due to smoking-related issues costs 10,000 PKR per affected individual, which results in an annual economic burden of 400,000 PKR. Additionally, household expenditure on tobacco amounts to 3,000 PKR per month per household, totaling 7.2 million PKR annually for the sample. These figures demonstrate the significant financial impact smoking has on both individuals and the broader economy.

Table 4: Socio-Economic Background of Local People (Education Level)

Education Level	Percentage of Population (%)	Smoking Rate (%)	Sample Size (Out of 200)
No formal education	30%	50%	60
Primary education	25%	40%	50
Secondary education	30%	20%	60
Higher education	15%	10%	30

The table-4 presents smoking rates across different education levels in a sample of 200 individuals. Among those with no formal education, 50% smoke, which corresponds to 30 smokers out of the 60 people in this group. For those with primary education, the smoking rate is 40%, equating to 20 smokers out of 50 individuals. In the secondary education group, 20% smoke, leading to 12 smokers from a sample of 60. Finally, among individuals with higher education, the smoking rate is 10%, resulting in 3 smokers out of 30. This data suggests that smoking prevalence tends to decrease as the level of education increases.

Figure 3: Smoking rate by Education Level



The bar chart illustrates an inverse relationship between education level and smoking rate. As education level increases, the smoking rate declines, with the highest smoking rate (about 50%) observed in individuals with no formal education and the lowest rate (just below 10%) among those with higher education. The population distribution also varies by education level, with "No formal education" representing around 30% of the population, gradually decreasing to about 15% for "Higher" education. This trend suggests that individuals with higher education levels are less likely to smoke, indicating a possible link between education and health awareness or behaviors.

Table 5: Income Level and Smoking Rates

Income Group (Monthly PKR)	Percentage of Smokers (%)	Percentage of Population (%)	Sample Size (Out of 200)
< 15,000	55%	40%	80
15,000 – 30,000	35%	35%	70
30,000 – 50,000	20%	15%	30
> 50,000	10%	10%	20

The table-5 illustrates smoking rates across different income groups in a sample of 200 individuals. Among people earning less than 15,000 PKR per month, 55% are smokers, which corresponds to 44 smokers out of the 80 individuals in this income group. For those with a monthly income between 15,000 and 30,000 PKR, 35% smoke, resulting in 24 smokers from a sample of 70. In the income range of 30,000 to 50,000 PKR, 20% of individuals smoke, which equals 6 smokers out of 30 people. Lastly, among those earning more than 50,000 PKR per month, only 10% smoke, equating to 2 smokers out of 20 individuals. This data suggests that smoking prevalence tends to decrease as income levels rise.

Table 6: Occupation and Smoking Prevalence

Occupation	Smoking Prevalence (%)	Sample Size (Out of 200)
Manual labor	60%	80
Office work	30%	40
Unemployed	50%	60
Students	15%	20

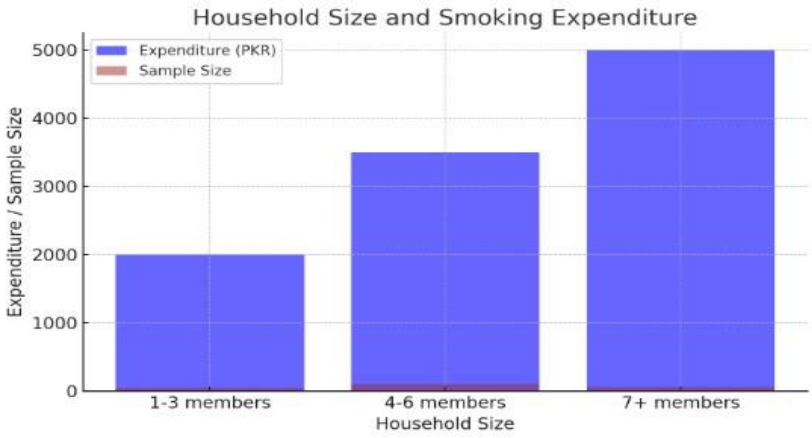
The table-6 presents smoking prevalence across different occupations in a sample of 200 individuals. Among manual laborers, 60% are smokers, which corresponds to 48 smokers out of the 80 people in this group. For office workers, the smoking rate is 30%, equating to 12 smokers from a sample of 40. Among the unemployed, 50% smoke, resulting in 30 smokers out of 60 individuals. Finally, among students, the smoking rate is 15%, leading to 3 smokers out of 20 people. This data suggests that smoking prevalence is higher in manual labor and unemployed groups, while it is lower among students.

Table 7: Household Size and Smoking Impact

Household Size	Average Monthly Tobacco Expenditure (PKR)	Percentage of Households (%)	Sample Size (Out of 200)
1–3 members	2,000	20%	40
4–6 members	3,500	50%	100
7 or more members	5,000	30%	60

The table-7 provides information on tobacco expenditure across different household sizes in a sample of 200 households. For households with 1–3 members, the average monthly tobacco expenditure is 2,000 PKR, and these households make up 20% of the sample, which corresponds to 40 households. In households with 4–6 members, the average monthly tobacco expenditure rises to 3,500 PKR, and these households represent 50% of the sample, amounting to 100 households. For households with 7 or more members, the average monthly expenditure on tobacco is 5,000 PKR, making up 30% of the sample, which equals 60 households. This data suggests that as household size increases, so does the average monthly expenditure on tobacco.

Figure 4: Household size and Smoking Expenditure



The third chart sheds light on the connection between household size and the average expenditure on smoking, measured in Pakistani Rupees (PKR). Households with 7 or more members have the highest expenditure, indicating that larger households spend significantly more on smoking. This could imply either a higher number of smokers in bigger households or greater consumption per individual. Households with 4–6 members also have a notable expenditure, while smaller households with 1–3 members show the lowest spending. This trend could suggest that larger families may be more financially impacted by smoking-related expenses.

Discussion

It is clear from the results that smoking is widespread among different ethnic and social groups in taluka Shahdadkot, Sindh province of Pakistan. The prevalence of smoking in men is much higher than in women, indicating a clear difference in terms of gender in smoking. The highest prevalence of smoking is seen in people between the ages of 25 and 45, which may reflect social and psychological pressures in this age group, such as career goals and domestic responsibilities. In addition, research has also shown that people who have low educational qualifications and who have low incomes have a higher tendency to smoke, suggesting that social and economic conditions have a significant influence on smoking habits. For these population groups, smoking can be an ineffective mechanism to cope with psychological stress and limited opportunities (Chapman, 2007). In terms of health, smoking has been linked to serious diseases such as lung cancer, COPD, and heart diseases. These diseases not only affect the quality of life of smokers, but also put additional pressure on the health system, which is already under pressure to meet people's health needs (Khoso et al., 2022). The economic impacts are particularly worrying, including health costs, reduced ability to work, and the amount spent on smoking.

Research also shows that older households devote a lot of money on cigarettes, which locates economic burden on these households. Professions that involve physical labor or joblessness have higher rates of smoking, which may be allied with reduced occupational pressure or erection engagement (Nguyenha et al., 2024). These points highlight that superior policies are necessary to reduce smoking rates for these high-risk groups in Sindh province of Pakistan.

For a more effective smoking control strategy, public health precautions should encourage these vulnerable groups to make them aware of the harmful effects of smoking, and at the same time make cigarette cessation programs available (Wilder et al., 2024). Measures that focus on imposing higher taxes on cigarette items, strengthening anti-smoking laws, and promoting smoke-free environment can be helpful in reducing smoking rates. In addition, an increase in health infrastructure, especially in rural areas, can provide better support for people suffering from health problems related to smoking.

Conclusion and Recommendations

This study describes the increasing rate of smoking in Sindh and its significant health and economic implications. The results showed that men, people living in socially difficult conditions, and those who are less educationally affected more, while smoking is a cause that is associated with serious health conditions such as lung cancer, COPD and heart disease. The economic impact of smoking, including a decline in health costs and productivity, puts significant pressure on individuals and the overall economy. To address these challenges, it is necessary to implement comprehensive tobacco regulation regimes, including strong enforcement of laws, innovative public health awareness programs, and providing specialist facilities to help quit smoking. A targeted strategy, which focuses specifically on people from low socio-economic backgrounds and manual workers, will be necessary to reduce the rate of smoking. By taking these steps, Sindh can reduce the health and economic pressures

associated with smoking, thereby adding a healthier and socially strong population. In the future it will be necessary to evaluate the effectiveness of such strategies and to investigate additional ways to reduce tobacco use in the region.

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