

# Economic and Social Impact Assessment of Chronic Diseases Among the Low-Income Population in Southern Punjab, Pakistan

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**Abstract:** *Introduction:* Chronic diseases are becoming more prevalent worldwide. The effects of chronic illnesses are disastrous not only for the diagnosed person but also for their entire family. This study explores chronic diseases' social and economic impact on low-income families. The study aims to determine the economic and social implications of various chronic diseases and the loss of income due to these conditions among low-income individuals in Southern Punjab, Pakistan. *Methodology:* A sample of 424 patients was selected from different areas of Southern Punjab. Data were collected using a questionnaire that included questions about economic status, self-reported health status, social status, management strategies, and health insurance, among other factors. *Results:* The mean monthly income of the respondents was found to be 57,097.6 Pakistani rupee (PKR), and the mean monthly expenses for treatment were 8,256.1 PKR. The loss of income was calculated at 15%. Additionally, 62% of patients spent more than 10% of their monthly income on managing their disease. Approximately 85% of the respondents reported that chronic diseases affected their social life. Furthermore, 80% of patients lacked health insurance. *Conclusion:* Chronic diseases impose significant economic and social burdens on patients and their families in Southern Punjab. To reduce the burden of chronic diseases, the government should enhance healthcare services in this region and provide health insurance to low-income families.

**Keywords:** Chronic diseases; Low-income families; Economic impact; Punjab; Pakistan

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## 1. Introduction

Conditions that require ongoing medical care and impair daily activities for a year or longer are generally referred to as chronic diseases <sup>[1]</sup>. It is commonly known that chronic illnesses now “matter” in terms of public health in developing nations, where they impose a sizeable and increasing disease burden, according to the World Health Organization (WHO) in 2001 <sup>[2]</sup>. Diabetes, cardiovascular disease, and cancer are the main chronic diseases, collectively accounting for roughly 79.0% of all chronic disease-related deaths worldwide in 2018 <sup>[3]</sup>. In 1990, there were an estimated 26.0 million deaths worldwide attributed to chronic diseases. This figure rose to 34.5

million in 2010 and approximately 40.5 million in 2016 <sup>[4]</sup>. The burden of chronic diseases is particularly high in low- and middle-income countries due to rapid lifestyle changes and increasing urbanization <sup>[5]</sup>. In these countries, the chronic disease rate was 78.05%. The limited facilities and resources available for managing these diseases contribute to their high burden <sup>[6]</sup>.

Nevertheless, the detrimental impact of chronic illnesses extends beyond early mortality. They also lead to other contentious consequences linked to the financial stability of individuals, families, and the community at large. The loss of independence, inability to carry out daily tasks and inability to socialize as freely as before are among the most devastating consequences faced by people with chronic illnesses. The burden of a chronic illness falls not only on the ill individual but also on their entire family. Thus, the whole household ultimately suffers as an indirect victim. This is because chronic conditions are extensive and long-lasting, requiring ongoing patient care and out-of-pocket medication costs. People who have multiple chronic illnesses and disabilities, which frequently call for additional medical care and attention to prevent the condition from worsening, bear a disproportionate share of this burden <sup>[1]</sup>.

According to WHO 2002, chronic illness and poverty are linked in a vicious cycle that has significant negative and underappreciated economic effects on families, communities, and nations. The poorest people are most at risk of developing chronic diseases and passing away prematurely from them in almost all countries. For various reasons, including higher risk exposure and restricted access to healthcare services, the impoverished are more susceptible to chronic illnesses. Of the 36 million people who died from chronic diseases in 2008, 9 million were under the age of 60, and 90% of these early deaths occurred in low- and middle-income countries. Chronic illnesses such as heart disease, stroke, cancer, chronic respiratory diseases, and diabetes are by far the leading causes of mortality worldwide, accounting for 63% of all deaths according to WHO 2005 <sup>[6]</sup>.

Pakistan ranks fifth in the world in terms of population, with 207.7 million people. Pakistan is facing almost double the burden of chronic diseases <sup>[7]</sup>. Changes in diet and the adoption of a sedentary lifestyle have led to an increase in chronic diseases <sup>[7]</sup>. A comprehensive survey carried out in Punjab in 2013–2014 to ascertain the prevalence of chronic diseases using the WHO STEPS tool found that the percentage of hypertension was 53%, which is higher than in other South Asian nations <sup>[8]</sup>. The prevalence of hypertension is 29.8% in India and 28% in Bangladesh <sup>[9]</sup>. The main causes of hypertension were inadequate patient safety measures, lack of appropriate healthcare guidelines, and limited facilities <sup>[10]</sup>. Even though the developing world is most likely to experience an epidemic of chronic diseases <sup>[11]</sup>. Research on chronic diseases and their impacts on people in developing countries like Pakistan has been limited.

## 2. Methodology

A total of 424 patients from different districts of Southern Punjab were sampled. Patients were enrolled in the study and included when:

- (1) They had a diagnosis of at least one or more chronic diseases,
- (2) They had been in treatment for their disease for at least four months,
- (3) They were 18 years or older.

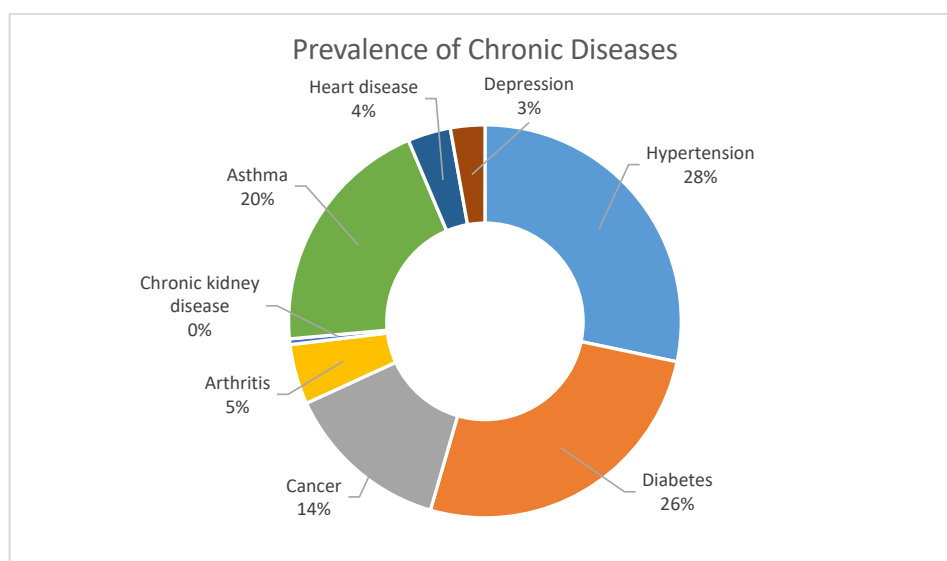
The duration for which they had to bear the substantial expenses of managing their illness was specified. Patients who were unable to respond were not included in the study. Data were collected from the patients with the help of a questionnaire. The questionnaire asked the respondents about sociodemographic data, self-reported health status, economic status, affordability of healthcare, managing strategies, social status, etc. Patients were also asked about their monthly income and the cost of the treatment of their condition per month. Additionally, patients were asked about health insurance. After the information was collected, the entire dataset was analyzed.

### 3. Results

Among the individuals surveyed, 85.38% ( $n = 362$ ) were aged 18–60, while 14.62% ( $n = 62$ ) were aged 61 and older, as shown in **Table 1**. The sample included more females (54.72%;  $n = 232$ ) than males (45.28%;  $n = 192$ ). Regarding employment, 66.04% ( $n = 280$ ) of respondents were employed, and 33.96% ( $n = 144$ ) were unemployed. Most participants had hypertension (28.30%;  $n = 120$ ), followed by diabetes (26.18%;  $n = 111$ ). The percentage of respondents with asthma was 18%, as depicted in **Figure 1**.

**Table 1.** Prevalence of chronic diseases in different age groups

	Frequency ( $n = 424$ )	Percentage (%)
Age		
18–60 years	362	85.38
61 years and older	62	14.62
Gender		
Male	192	45.28
Female	232	54.72
Employment status		
Employed	280	66.04
Not employed	144	33.96
Hypertension	120	28.30
Diabetes	111	26.18
Cancer (all types)	58	13.68
Bone or joint problems / Arthritis	21	4.95
Chronic kidney disease	2	0.47
Asthma	85	20.05
Heart disease	15	3.54
Mental illness / Depression	12	2.83



**Figure 1.** Prevalence of chronic diseases.

### 3.1. Monthly income and costs of chronic illness among respondents

**Table 2** outlines the monthly income and costs associated with chronic illness treatment. Out of 424 respondents, most respondents had an income between 31,000 to 70,000 PKR, with 40% ( $n = 171$ ) earning 31,000 and 50,000 PKR, while 30.6% ( $n = 130$ ) earning 51,000 and 70,000 PKR every month. However, most respondents had chronic illness treatment costs ranged between 2,100 and 7,000 PKR, with 14.1% ( $n = 60$ ) having treatment costs between 2,100 and 3,000 PKR, 25.47% ( $n = 108$ ) between 3,100 and 5,000 PKR, and 13% ( $n = 58$ ) between 5,100 and 7,000 PKR.

**Table 2.** Monthly income and treatment costs of the respondents

	Frequency ( $n = 424$ )	Percentage (%)
Monthly income (PKR)		
15,000–30,000	41	9.60
31,000–50,000	171	40.00
51,000–70,000	130	30.60
71,000–80,000	42	9.90
81,000–100,000	34	8.01
100,000 and more	6	1.41
Chronic illness cost (PKR)		
1,000–2,000	43	10.41
2,100–3,000	60	14.10
3,100–5,000	108	25.47
5,100–7,000	58	13.00
7,100–9,000	34	8.00
9,100–10,000	48	11.00
12,000–15,000	35	8.00
16,000–20,000	21	4.95
21,000–30,000	8	1.80

**Table 3.** Loss of monthly income due to treatment

Loss of income due to treatment	Frequency	Percentage (%)
1%–5%	51	12.00
6%–10%	119	28.00
11%–12 %	42	9.00
13%–15 %	36	2.12
16%–20 %	72	16.98
21%–30%	35	8.25
35% and above	13	3.06

**Table 3** illustrates the loss of monthly income due to chronic disease treatment. 28% ( $n = 119$ ) of the respondents experienced an income loss between 6% and 10%, while 16.28% ( $n = 72$ ) experienced a loss between 16% and 20%, and 12.00% ( $n = 51$ ) experienced a loss between 1% and 6%.

**Table 4.** Monthly average income of patients

Monthly income	Mean
Household monthly income	57,097.61 PKR
Loss in income percentage	15%

In Southern Punjab, the patients' average monthly income was 57,097.61 rupees, while the mean cost of chronic illness treatment was 8,256.10 rupees, representing 15% of their average monthly income. Thus, the income loss due to chronic disease amounted to nearly 15% of their total income, as detailed in **Table 4**.

### 3.2. Affordability of treatment

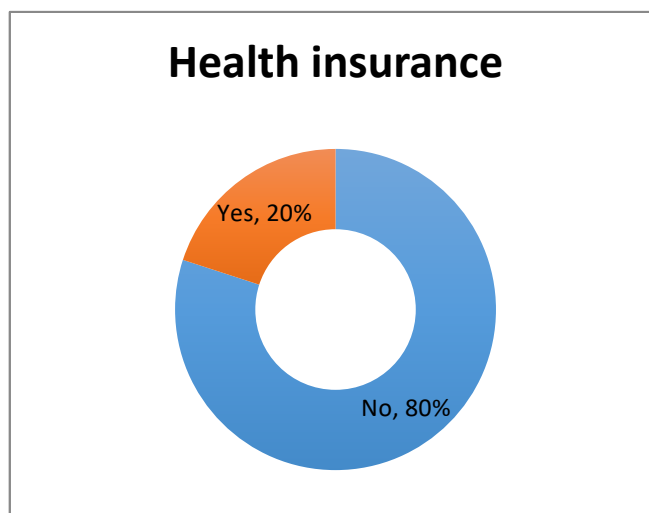
A large number of the participants were not able to afford treatment for their condition. About 34% of the respondents said that they could not afford the treatment (**Table 5**). These people stated that they had to sacrifice several things to manage these chronic diseases.

**Table 5.** Affordability of treatment

Criteria	Frequency	Percentage
Ability to finance all medications	278	66%
Unable to afford the treatment	141	34%

### 3.3. Health insurance

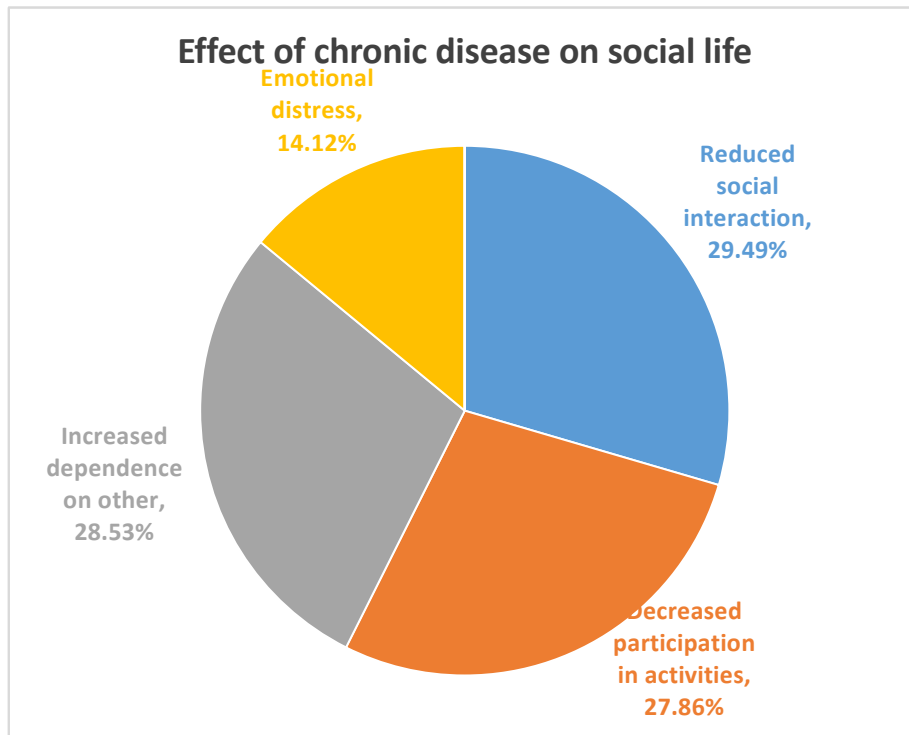
80% of people in Southern Punjab lack health insurance. Only 20% of the respondents stated that they have health insurance (**Figure 2**).



**Figure 2.** Percentage of health insurance among participants.

### 3.4. Effects on social life

85% of respondents stated that chronic diseases affect their social life badly (**Figure 3**). Out of 424 respondents, 29.49% said that chronic diseases reduce their social interactions 27.86 responded that these conditions had decreased their participation in activities. 28.53% of the total participants responded that these conditions have increased their dependence on others. 14.12% stated that they are emotionally distressed because of chronic diseases.



**Figure 3.** Social impact of chronic diseases in participants.

#### 4. Discussion

Approximately 66% of the 424 respondents were employed, and the remaining were unemployed. Chronic diseases caused smaller changes in income for employed individuals compared to unemployed people. This is because employed individuals generally have higher monthly incomes and can better manage the burden of chronic diseases. Therefore, in developing countries like Pakistan, particularly in regions such as South Punjab, where the unemployment rate is high, managing chronic diseases becomes very difficult.

The effect of illness also varies with the type of disease. In the survey, hypertension was the most common disease among respondents, affecting 28% of them. In South Punjab, hypertension has a significant economic and social impact on a large scale. Diabetes was the second most prevalent disease among respondents at 26%, implying a substantial burden socially and economically. Cancer was also present among respondents, affecting 13%. Cancer is a particularly dangerous chronic disease due to its expensive treatment costs. Asthma and depression also had an impact, although they were present in a smaller percentage of respondents. Many respondents had more than one disease, such as hypertension and diabetes or diabetes and cancer, which further increased the overall burden of disease.

In this study, the average monthly income was found to be 57,097.61 PKR, and the average medical expenses were 8,256.10 PKR, representing 15% of the average monthly income. Using the resulting loss in monthly income as one of the economic effects of chronic illness is significant. It has been shown that an illness cost burden exceeding 10% can be disastrous. In the survey, 38% of respondents spent less than 10% of their monthly income on treatment, while 62% spent more than 10% of their income on disease management. Therefore, the treatment costs of chronic diseases lead to income loss for people in the Southern Punjab region. The burden of treating the disease affects not only the individual but also the entire family, as the loss of income that could be used for improving the lifestyle of other family members is diverted to disease management. Consequently, family members also experience emotional stress and anxiety.

This study explored the social impact of chronic diseases on respondents. Over 85% of participants reported that chronic diseases negatively affected their social life. In women, this impact may be exacerbated by hormonal imbalances and other conditions such as PCOS and anovulation. In contrast, 15% of respondents reported no social impact from their chronic diseases. Among those who were affected, 85% experienced changes in their ability to maintain relationships, leading to feelings of loneliness, guilt, anger, and frustration. Chronic illness also hindered their participation in volunteer activities. Additionally, family members of individuals with chronic diseases often suffer emotionally due to feelings of powerlessness and a lack of control<sup>[12,13]</sup>.

Respondents were also asked about their self-reported health status, with approximately 66% reporting fair health, 17% reporting good health, and 13% reporting poor health. Chronic diseases have a disastrous effect on their quality of life.

In addition, respondents were asked about their ability to afford treatments, with about 66% stating that they could afford them and 34% reporting that they could not afford the burden of diseases. Chronic diseases in low-income families lead to poverty<sup>[6]</sup>. In the survey, about 20% of people stated that they sought health insurance like a Health Card for managing their diseases. Many developed nations provide their citizens with premium health insurance to cope with diseases.

Based on the data obtained and presented here, it is clear that chronic diseases can have disastrous social and financial effects on patients. Deaths from heart diseases and cancer are most common in low-income countries where resources for treatment are scarce. Unfortunately, a large number of people in Southern Punjab lack health insurance, forcing them to bear all treatment costs themselves. According to the study, 80% of people in Southern Punjab lack health insurance. Like some European countries, Pakistan should provide health insurance to low-income people nationwide. By providing health insurance, the burden of diseases can be efficiently reduced. The government should also improve healthcare facilities essential for managing diseases

## 5. Conclusion

From the information above, it is clear that the health and quality of life of patients are negatively impacted by one or more types of chronic diseases. In addition to their physical and emotional suffering, patients with chronic illnesses may also face significant medical costs. It is imperative to acknowledge the severe economic impact that chronic diseases have on the families of those who suffer from them in Southern Punjab. Moreover, most families manage these devastating financial burdens on their own. The Government of Pakistan should improve healthcare services and provide health insurance to low-income families in Southern Punjab.

## Disclosure statement

The authors declare no conflict of interest.

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