



Emerging Pattern of Diseases in Punjab: Its Challenges and Consequences

By
Karmjit Singh
Department of Economics,
Punjabi University,
Patiala-147002

Abstract

This paper deals with the emerging pattern of diseases in Punjab. Punjab's growth story has been largely around agriculture. After the advent of the green revolution in Punjab agriculture, there has emerged multifaceted undesirable results. One of these undesirable results is the state's environment and ecology degradation, which, in turn, influenced the pattern of diseases in the state. Rising urbanization, abating industrial pollution, growing slums, aging population, etc. also posed serious health hazards and challenges that adversely affected people's health. Therefore, now the state has been facing a major challenge from the new emerging pattern of diseases. This study examines the emerging pattern of diseases in the state. The Study is based on various National Sample Survey Organization (NSSO) reports (1973/74 to 2014/15). The perspective of the main finding of the study shows that Non-Communicable Diseases (NCDs) began to dominate such as diabetes, cancer, cardiovascular and accident/injuries compared to the earlier dominance of infectious diseases. It is necessary to understand and even predict the pattern of diseases and dynamics of health transition so that multi-state level actions can be taken to protect and promote the health of the population.

Key Words: Emerging, pattern of diseases, Punjab, Non-communicable diseases, Communicable diseases

1. Introduction

Agriculture led growth of the Punjab economy has produced many undesirable impacts on the state's environment and ecology, which, in turn, influenced the pattern of diseases in the state. The disease pattern of Punjab has changed overtimes in response to socio-economic, technology, environmental, and cultural changes. Such diseases pattern transition has been especially profound in the last three decades due to rising urbanization, abating

industrial pollution, growing slums, ageing population, and so on also posed many serious health hazards and challenges that are adversely affected the health of people. In fact, unrestricted use of agro-chemicals, increasing intake of dietary fats, physical inactivity, adverse lifestyles, and other behavior patterns (anxiety, stressful life, etc.) have not only raised the burden of new diseases in the state but also put a large proportion of the population in the risky zone of attracting many serious non-communicable diseases (NCDs) like diabetes, cancers, high blood pressure, strokes, cardiovascular diseases and injuries (Singh, 2010).

In the context of Punjab, globalization led growth since the 1990s has produced three kinds of changes in terms of (i) economic change (ii) socio-cultural changes, and (iii) environment changes. All these changes had a profound effect on human health. Hence, the people of Punjab are battling against health problems including a noticeable rise in cancer cases, reproductive health problems, mental retardation, and kidney ailments. Further, ecological problems that emerged out of the green revolution are the depletion of forests, reduction of pasture lands, Salinization, water logging, soil erosion, lowering of the underground water table, soil, water degradation and air pollution, decline in soil fertility, silting of rivers and the emergence of several new diseases (Kaur, 2011). There is a marked shift in the mortality pattern of the state from one dominated by communicable diseases to another one where NCDs and injuries/accidents increasingly became a leading cause of mortality. In addition, the incidence of NCDs in Punjab has even crossed the incidence of such diseases prevailing in Western countries (Singh, 2010). Many of the risk factors leading to the NCDs epidemic such as obesity, high blood pressure, and smoking are commonly found in Punjab and also increasing trend (Singh, 2014).

During the last few decades of the twentieth century, considerable changes were found in societal development, health and nutritional status, life expectancy, fertility, and mortality rates. Further, mortality and morbidity from communicable diseases have also declined, while that from the NCDs have risen (Mohan and Prabhakaran, 2013-14). It means that chronic as well as NCDs began to dominate compared to the earlier dominance of infectious diseases. All these forces seem to be working against the state, due to which a significant rise in the number of illness episodes has been witnessed as well as the pattern of diseases has been changed in the state. The paper is segregated into five parts: the first part deals with introductions. Moreover, in part two, methodology and data sources are discussed in part two. Further, the pattern of diseases is examined in Punjab gender-wise and location-wise in the third part. In the next section, the study explores the consequences and challenges which have been posed by the emerging disease pattern in Punjab. In the end, this paper highlights the conclusion part.

2. Data Sources and Methodology

For assessing the pattern of diseases NSSO data has been used which support to disclose the emerging diseases pattern of the state. From various NSSO reports (1973/74, 1995/96, 2004/05, and 2014/15), diseases pattern regarding information was collected. First of all, the study collected data based on the total number of ailing persons in the state and the growth rate of ailing persons tabulated by location (Rural and urban) according to various reports of NSSO (1973/74 to 2014/15) because the number of ailing persons has increased as well as influence the diseases pattern of the state. Further, the incidence of morbidity rates has been generated based on various NSSO reports data. Further,

the data has been analyzed gender-wise (Male and female) and location-wise (Rural and urban). To explore the diseases pattern of the state, we collected information on the distribution of outdoor and indoor treated illness episodes in the state by broad category of diseases during 2004/05. Further, particular cases of hospitalization on account of each broad ailment category reported the number of persons during the last 365 days in the state during 2014/15.

3. Pattern of Diseases: NSSO Data

One can observe from the NSSO survey data that the number of ailing persons has increased as well as pattern of diseases has also changed over the time period. An assessment of the data (Table 3.1) reveals that the number of ailing persons in Punjab grew at the rate of 4.95 percent per annum during 2004/05-2014/15 compared to 7.09 percent per annum during 1995/96-2004/05 and 3.85 percent per annum during 1973/74-1995/96. However, growth rates amongst the ailing persons in Punjab by location (rural and urban) differ considerably. Whereas per annum growth rate of ailing persons in the rural areas has been fluctuated along with time and location: rose from 3.01 percent during 1973/74-1995/96 to 8.13 percent during 1995/96-2004/05 and then per annum growth rate during 2004/05-2014/15 declined (3.04 percent), but the growth rate across urban ailing persons decelerated: from 6.16 percent during 1973/74-1995/96 to 4.76 percent during 1995/96-2004/05 and then urban area growth rate during 2004/05-2014/15 increased (8.83 percent) per annum.

Table 3.1: Growing Number of Ailing Persons in Punjab (1973/74-2014/15)

Region /area	Growing Number of Ailing Persons in Punjab						
	Number of Ailing Persons (in Thousands)				CGR Per annum		
	1973-74	1995-96	2004-05	2014-2015	1973/74-1995/96	1995/96-2004/05	2004/05-2014/15
Punjab							
Rural	545.6	1047.1	2116.8	2856.6	3.01	8.13	3.04
Urban	143.6	535	813	1894.1	6.16	4.76	8.83
Combined	689.2	1582.1	2929.8	4750.7	3.85	7.09	4.95
India							
Rural	20047.1	35407.4	63193.4	76795.4	2.62	1.97	5.00
Urban	518.4	11085.3	24267.7	48341.6	3.56	7.13	6.21
Combined	25185.5	46492.7	87461.1	125137	2.83	3.65	12.82

Note: Estimates of Ailing Persons were generated on the basis of prevalence rates from data given in NSSO (1980), NSSO (1998), NSSO (2006), and NSSO (2014).

Table 3.2 shows the incidence of morbidity in Punjab from 2004/05 to 2014/15. On average, 164 persons per thousand people were found to be suffering from one or other ailments in Punjab during 2014/15 compared to 2004/05 (127 persons per thousand). Further, along with locality tabulation (Rural and Urban), the table data shows that the incidence of morbidity occurred more in rural Punjab (136 per thousand people) than urban Punjab (107 persons per thousand people) during 2004/05. However, the incidence of morbidity was much more in urban areas (170 per thousand people) compared to rural areas (161 per thousand people) in 2014/15.

Further, gender-wise data reveals that the prevalence of morbidity was significantly large proportion among females both in the rural (160 per thousand females) and urban (115 per thousand females) areas of the state during 2004/05. In addition, similar results were found in 2014/15 in rural (203 per thousand females) and urban females (196 per thousand females). Besides, the table highlights that the incidence of ailing persons in Punjab (127 per thousand people) is higher than the national average (91 per thousand people) during 2004/05. The 2014/15 results are in the same line in Punjab (164 per thousand people) compared to India (98 per thousand people). The study shows results show that the number of ailing persons, as well as the incidence of morbidity, has increased in Punjab over the time period.

Table 3.2: Incidence of Morbidity in Punjab (2004/05-2014/15)

Region/area	Incidence of Morbidity 2004/05-2014/15 (Per Thousand Persons)					
	2004-05			2014-15		
	Male	Female	All	Male	Female	All
Punjab						
Rural	114	160	136	124	203	161
Urban	100	115	107	143	196	170
Combined	109	146	127	131	200	164
India						
Rural	83	93	88	80	99	89
Urban	91	108	99	101	135	118
Combined	85	97	91	87	100	98

Note: Estimates of Ailing Persons were generated on the basis of prevalence rates from data given in NSSO (2006) and NSSO (2014).

Many research studies highlighted that general economic growth in the state yielded considerable improvements in the living conditions of the populace, which, in turn, induced positive improvements in life expectancy, mortality, and fertility rates (Kumar, 2011). Due to these positive improvements in life expectancy, mortality, and fertility rates in Punjab, the aging of the population became a predominant decline (Kaur, 2011). Consequently, the load of morbidity has been shifted from the younger to the older populations. It is also true that advancement in medical therapeutics often postpones death even amongst older people, but, it does not cure the disease at all (Bobadilla et al., 1993). Along with the environmental hazards, demographic changes, and epidemiologic transition led to the emergence of new health problems/diseases such as the dominance of chronic, non-communicable, aging, and man-made diseases (Mosley et al., 1993).

Table 3.3 has been constructed on the basis of NSSO survey data of 2004-05. An analysis of the NSSO survey data on different categories of diseases during 2004-05 pointed out that leaving aside the mixed group of diagnosed ailments, respiratory/ENT diseases, unknown fevers, cardiovascular diseases, gastrointestinal infections, the disorder of joints, bones, and bronchial asthma, accidents/injuries/burns, undiagnosed ailments, and diabetes mellitus, emerged as the ten top ranking ailments in the descending order of importance in Punjab.

Table 3.3: Distribution of Outdoor and Indoor Treated Illness Episodes in Punjab by Broad Disease Group, 2004-05

Ailment Group	Number of Treated Ailment Episodes								
	Outdoor			Indoor			Both		
	Number	Share %	Rank	Number	Share %	Rank	Number	Share %	Rank
Gastro-intestinal	181488	9.05	5	55540	10.55	3	237028	9.36	5
Cardiovascular	215970	10.77	4	31168	5.92	7	247138	9.76	4
Respiratory/ENT	290662	14.5	2	19165	3.64	10	309827	12.24	2
Tuberculosis	9461	0.47	20	13263	2.52	13	22724	0.9	19
Bronchial Asthma	91825	4.58	7	29247	5.55	8	121072	4.78	7
Disorder of Joints and Bones	144414	7.2	6	18892	3.59	11	163306	6.45	6
Kidney/Urinary Tract Infections	19896	0.99	18	35576	6.75	5	55472	2.19	12
Gynaecological Disorders	30510	1.52	13	32407	6.15	6	62917	2.49	11
Neuro/Psychiatric Disorders	21413	1.07	16	20463	3.89	9	41876	1.65	16
Eye Ailments	42782	2.13	11	5531	1.05	18	48313	1.91	14
Diabetes Mellitus	71758	3.58	9	10843	2.06	15	82601	3.26	10
Anaemia Malnutrition	10696	0.53	19	9502	1.8	16	20198	0.8	20
STD Infections	5962	0.3	21	1943	0.37	21	7905	0.31	21
Febrile Illnesses	45085	2.25	10	4169	0.79	20	49254	1.95	13
Unknown Fevers	251573	12.55	3	43657	8.29	4	295230	11.66	3
Disabilities	28258	1.41	14	13824	2.62	12	42082	1.66	15
Dental problems	27035	1.35	15	4320	0.82	19	31355	1.24	18
Accidents/Injuries/Buns	34602	1.73	12	74872	14.22	2	109474	4.32	8
Cancer and Other Tumors	21314	1.06	17	11434	2.17	14	32748	1.29	17
Undiagnosed Ailments	83584	4.17	8	8469	1.61	17	92053	3.64	9
Other Diagnosed Ailments	376257	18.77	1	82409	15.65	1	458666	18.12	1
Total	2004545	100		526694	100		2531239	100	

*Includes all other diagnosed ailments.

Source: Derived from the data given in Singh, 2009.

Jointly, these diseases constituted 83.59 percent share of total ailments. These ten top ranking diseases were followed by gynecological disorders, kidney/urinary tract infections, febrile illnesses, eye ailments, disabilities, neuro/psychiatric disorders, cancer/other tumors, dental problems, tuberculosis, anemia/malnutrition, and STD infections in terms of prevalence rate in Punjab. It is quite attractive that amongst the indoor patients (all those who needed hospitalizations), others diagnosed, followed by the accident/injury/burn victims, gastrointestinal diseases, unknown fevers, kidney/urinary tract infections, gynecological disorders, cardiovascular diseases, bronchial asthma, neuro/psychiatric disorders, respiratory/ENT diseases and disorder of joints & bones were the leading diseases. Jointly, these top ten diseases constituted 80.61 percent share of total indoor ailments. Further, gastrointestinal diseases, cardiovascular diseases, respiratory/ENT diseases, bronchial asthma, the disorder of joints & bones,

unknown fevers, other diagnosed ailments, undiagnosed ailments, diabetes mellitus and accidents/injuries/burns were ten important diseases that figured both in the top seventeen causes of outdoor patients and indoor patient case. On the other hand, it also showed that the old sub-set of communicable/infectious diseases (smallpox, whooping cough, tetanus, polio, mumps, malaria, etc.) had declined rapidly, but a new set of chronic non-communicable (cancers, cardiovascular diseases, diabetes, kidney disorders, pains in joints & bones) and man-made diseases (accident/injury/burns, psychiatric disorders, respiratory diseases, etc.) were went emerging at an astonishing speed in the state. It means that the diseases pattern of Punjab has changed hugely and the people of Punjab were found to be suffering from a new pattern of diseases such as the people of developed countries of the world were suffered (GOI, 2005).

Table: 3.4 Cases of hospitalization on account of ailments of each broad ailment category reported the number of persons during the last 365 days in Punjab (2014-15).

Diseases Pattern	Rural			Urban			All		
	Number	%	Rank	Number	%	Rank	Number	%	Rank
Infections	108375.2	17.29	1	129364.4	34.11	1	235659.6	23.41	1
Cancer	16140.99	2.58	12	2117.074	0.56	16	18483.1	1.84	13
Blood diseases	5853.326	0.93	14	8022.598	2.12	13	13573.53	1.35	14
Endocrine, Metabolic & Neurologic	24832.29	3.96	8	10473.95	2.76	11	35522.21	3.53	9
Psychiatric & Neurolog	23235.93	3.71	9	25516.32	6.73	5	48518.15	4.82	7
Eye	46649.24	7.44	6	13371	3.53	8	60358.88	6.00	6
Ear	354.747	0.06	16	3231.324	0.85	14	3465.582	0.34	16
Cardiovascular	69530.42	11.10	4	48135.59	12.69	2	117541	11.68	3
Respiratory	32104.61	5.12	7	15822.35	4.17	7	47940.55	4.76	8
Gastro-Intestinal	93475.85	14.92	2	38553.04	10.16	3	132847.3	13.20	2
Skin	1951.109	0.31	15	2228.499	0.59	15	4043.179	0.40	15
Musculo & Skelet	20575.33	3.28	10	9471.122	2.50	12	30323.84	3.01	10
Genito Urinary	68111.43	10.87	5	22173.57	5.85	6	90971.52	9.04	5
Obstetric & Neonatal	14544.63	2.32	13	11699.62	3.08	10	26280.66	2.61	12
Injurie	83365.56	13.30	3	26964.84	7.11	4	111187.4	11.05	4
Others	17559.98	2.80	11	12145.32	3.20	9	29746.24	2.96	11
All	626660.7	100.0		379290.6	100.0		1006463	100.0	

Note: estimation of hospitalization cases generated on the basis of prevalence rates from the given NSSO (2014) data

Table 3.4 has been generated basis on the NSSO survey data of 2014-15. The data examine those patients who were getting indoor treatment in the hospital by broad category of diseases during the last 365 days. The data pointed out that infectious diseases, gastrointestinal, cardiovascular, injury, Genito urinary, eye diseases, psychiatric & neurology, and respiratory, were the top eight diseases in descending order which have a small above fourth-fifth (83.96) share of total indoor treatment patients (All those needed hospitalizations) by different category of diseases in last 365 days. These six top diseases were followed by endocrine, metabolic & neurology, musculo & skelet, others, obstetric & neonatal, cancer, blood diseases, skin, and ear. However, these top six diseases show similar trend in both rural and urban areas such as the state (nearly about three-fourths of the total indoor treatment patient by different

diseases category during last 365 days). But, regarding the different category of diseases, have some variation between rural and urban areas such as large proportion of infection diseases have urban areas (34.11 percent) compared to rural areas (17.29 percent) which show that the double burden of indoor treatment patients in urban areas compared to the rural areas. In the case of cancer, injuries, gastro intestinal, genitor urinary and injuries were more prevalent in rural areas compared to urban areas. On the other hand, in the case of blood diseases, psychiatric & neurology and ear diseases were more prevalent in urban areas compared to rural areas. On the other hand, data show that non-communicable diseases have dominated compared to communicable diseases.

4. Consequences and Challenges

It has been observed that emerging new pattern of diseases is affecting the state in several ways. Non-communicable diseases have been causing a dreadful burden on patient's household and their health system as well as responsible for a growing burden on the state economy. Moreover, Non-Communicable Diseases frequently occur in a long period of time relative to communicable diseases and progress slowly. Therefore, Non-Communicable Diseases expenditure is greater than other types of diseases. So, Non-Communicable Disease related patients' household incurs a large burden from NCDs expenditure, because a large proportion of the NCDs patient expenditure is coming from the out of pocket. While household income remains constant, total household expenditure rises due to NCDs expenditure thereby, income expenditure mismatch leads to drastic cuts in spending on food, education, and other consumption expenditure. Consequently, these households are pushed into miserable conditions. Besides, if the main earner of the family is gripped in NCDs, these household bear double cost of non-communicable diseases, thereby the household being pushed into more financial distress which leads to an effect on children's education and care especially in the case of poor people. States health sector faces problems because strong infrastructure and new technology type equipment are most needed that can deal with NCDs easily. On the other hand, loss of productivity is a major issue due to NCDs related to disability and premature death which in turn, affect the state economy as well as the household.

5. Conclusion

Although, over the years, agriculture led growth has been observed in Punjab. However, along with growth, the emerging pattern of diseases which is led by non-communicable diseases from communicable diseases is a major concern. The paper has examined the emerging pattern of diseases in Punjab through ailing persons and the growth rate of ailing persons in Punjab, incidence of morbidity rates in Punjab and country, indoor and outdoor illness treated episodes by broad group category of diseases, and Cases of hospitalization on account of ailments of each broad ailment category reported the number of persons during the last 365 days in Punjab (2014-15). Three round data of NSSO has resulted that the growth rate of ailing persons and incidence of morbidity in Punjab has risen over the period of time. On the other hand, an analysis of the NSSO survey data on different categories of diseases during 2004-05 pointed out that leaving aside the mixed group of diagnosed ailments, respiratory/ENT diseases, unknown fevers, cardiovascular diseases, gastrointestinal infections, the disorder of joints, bones, and bronchial asthma,

accidents/injuries/burns, undiagnosed ailments, and diabetes mellitus, emerged as the ten top ranking ailments in the descending order of importance in Punjab. In addition, the study examined those patients who were getting indoor treatment in the hospital by broad category of diseases during the last 365 days. The showed that out that infectious diseases, gastrointestinal, cardiovascular, injury, Genito urinary, eye diseases, psychiatric & neurology, and respiratory, were the top eight diseases in descending order which have a small above fourth-fifth (83.96) share of total indoor treatment patients (All those needed hospitalizations) by different category of diseases in last 365 days. The abovementioned results established that the disease's pattern has shifted from non-communicable diseases to communicable diseases, thereby households who have ailing persons are pushed into indebtedness and their family's condition becomes worse. Therefore, there is a need for intervention of the state government from many sides to reduce the burden of these expenditures on households such as public investment in health institutions, financial help to ailing persons, increase awareness in people about NCDs, and so on.

References

- Bobadilla, J.L., Frenk, J., Lozano, R., Frejka, T. and Stern, C. (1993), The Epidemiologic Transition and Health Priorities, in Jamison, D.T., Mosley, W. H., Measham, A. R. and Bobadilla, J. L. (Eds.), *Disease Control Priorities in Developing Counties*, Oxford University Press, New York, pp. 51-63.
- GOI (2005), *Report of the National Commission on Macroeconomics and Health*, Ministry of Health & Family Welfare, Government of India, New Delhi.
- Kaur R. and Sinha K. (2011), "GLOBALIZATION AND HEALTH: A CASE STUDY OF PUNJAB" *HUMAN GEOGRAPHIES – Journal of Studies and Research in Human Geography*, PP. 35-42, Department of Anthropology, Panjab University, Chandigarh, India.
- Kumar, K. (2011), "State, Market and Utilization Pattern of Health Services: A Study of Punjab", *Unpublished Ph. D. Thesis*, Department of Economics, Punjabi University, Patiala.
- Mosley, W. H., Bobadilla, J. L. and Jamison, D. T. (1993), "The Health Transition: Implications for Health Policy in Developing Countries", in Jamison, D.T., Mosley, W.H., Masham, A.R. and Bobadilla, J.L. (Eds.), *Disease Control Priorities in Developing Countries*, Oxford University Press, New York, pp. 673-699.
- NSSO, (1998), Report No. 441, 52nd Round 1995-96, *National Sample Survey Organization: Government of India*, New Delhi
- NSSO, (2005), Report No. 504, 60nd Round 2004-05, *National Sample Survey organization*, New Delhi.
- NSSO, (2014), Report No. 574, 71nd Round 2014-15, *National Sample Survey organization*, New Delhi.
- Singh, S. (2014), "Economics Development and Emerging Scenario in Punjab: In the Shadow of Global Forces and State Neglect, *Discussion Paper*, Centre for Development Economics and Innovation Studies (CDEIS), Punjabi University, Patiala.

