Economic Sciences
https://economic-sciences.com
ES (2025) 21(1), 01-13 | ISSN:1505-4683

Understanding Chronic Health Conditions in India: Evidence from the India Human Development Survey

Naorem Pushparani Chanu[1], Rabichandra Singh Elangbam[2]
[1] Assistant Professor**,** School of Liberal Studies and Education, Navrachana University, Vadodara, India
ORCid: https://orcid.org/0000-0003-0600-4240
[2]Assistant Professor, School of Business and Law, Navrachana University, Vadodara, India
Email address: rabichandra@gmail.com. ORCid: https://orcid.org/0000-0003-1021-7580

Abstract

India has experienced significant demographic and social changes, leading to a rise in chronic diseases or long-term morbidity. The aging population poses challenges for public health experts and policymakers, with chronic conditions among older adults becoming a major concern. Using data from the India Human Development Survey (IHDS-I and IHDS-II), our study aims to understand the dynamics of chronic illness or the condition of long-term morbidity in both metropolitan and non-metropolitan areas of India through the application of multivariate regression and binary logit regression models. Our study unveils significant disparities in the prevalence of long-term morbidity across different demographic and socio-economic strata in India. Additionally, we find a high correlation between substance use and mental illness.

Keywords: *Long-term morbidity; Chronic diseases; Metropolitan areas; IHDS; India.*

1.1. Introduction

The health status of a nation's population is a crucial indicator of its development. Nobel laureate Angus Deaton emphasizes the concept of 'wellbeing', encompassing various aspects such as material, physical, and psychological wellbeing, education, and participation in civil society (Deaton 2013). According to the World Health Organization, morbidity has been defined as the years of life lost due to chronic disease or conditions. On the different side of the same coin, Basu et al., (2016) and Buttorff et al., (2017) defined a chronic condition as a health issue, whether physical or mental, that persists for a duration exceeding one year, resulting in limitations in functionality or necessitating continual monitoring or treatment. It has been argued that the rate of chronic conditions is higher in less economically developed countries compared to more economically advanced countries (Kanavos, 2006; Nugent, 2008; Higuchi 2010; Islam 2014). While the developed nations are confronted with the problem of lifestyle-related diseases and those associated with aging are primary contributors to morbidity, with higher survival rates (Steyn and Damasceno, 2006). On the other hand, in developing nations, the prevalence of prenatal conditions (Kuppusamy et al., 2023), cancer (Sathishkumar et al., 2022), heart diseases (Kumar et al., 2020), high blood pressure (Anchala et al., 2014), and tuberculosis (Prasad et al., 2017) contribute significantly to morbidity, with lower survival rates. Morbidity may be influenced by various risk factors such as malnutrition (Yohannes et al., 2017), infectious diseases (Colzani et al., 2019), poor hygiene (Azupogo et al., 2019; Brahmanandam et al., 2021), inadequate access to clean water (Palo et al., 2021), substandard living conditions (Krieger et al., 2002; Howden-Chapman et al., 2017), lack of physical activity (Xu et al., 2022; Booth et., 2012), and unhealthy lifestyle choices like smoking (US Department of Health and Human Services, 2014; Farcher wt al., 2023), alcohol consumption (Rao and Andrade, 2016; Zhao et al., 2023; Liu et al., 2022), and poor diet (Keys et al., 1986; Danaei et al., 2009; Afshin et al., 2019; Abdulah et al., 2020). Such factor, over a period becomes the conditions of long-term morbidity or condition of chronic diseases. In the context of India, in recent decades, it has undergone significant demographic and social transformation marked by an epidemiological shift towards a growing burden of non-communicable diseases (Jayathilaka et al., 2020). It is claimed that changing nature of lifestyle of people are primarily driving the rapid increase in non-communicable diseases in India (Mutharayappa and Bhat, 2008;

Raghuvanshi et al., 2013; Chakma and Gupta, 2014). With the aging population posing challenges for public health experts, policymakers, and research organizations, the escalating prevalence of chronic conditions among older adults, alongside the emergence of multimorbidity, is of paramount concern (Bera, 2017). The risk of developing at least one chronic disease such as hypertension, diabetes, arthritis, cancer, tuberculosis, or high blood pressure increases−not solely due to chronological age, but as a result of lifelong exposure to risk factors (Reddy et al., 2005; Ghosh and Arokiasamy, 2009; Patel et al., 2011; Jana and Chattopadhyay et al., 2022). As per World Health Organisation (2012), approximately one out of every four individuals are at risk of succumbing to a chronic illness in India. Chronic illnesses profoundly impact patients' lives, reshaping their bodily experiences and challenging their sense of self (Folkman and Moskowitz 2004; Röing and Sanner, 2015). These conditions become intertwined with patients' daily existence, affecting their physical health, autonomy, and even their identity (Kralik et al., 2004; Heijmans et al., 2004). Consequently, patients often find themselves compelled to adapt their lifestyles, leading to feelings of loss of control (Gullacksen and Lidbeck, 2004).

On the one hand, certain study like Jayathilaka (2020) and Paul (2023) found that higher individual income is associated with a reduced likelihood of both short-term and long-term morbidity. Conversely, greater income inequality is linked to poorer health outcomes for individuals (Subramanian et al., 2007; Joe et al., 2008). Even after accounting for individual income levels, inequality remains a significant factor influencing morbidity levels (Arokiasammy and Pradhan, 2011; Paul, 2021). But study like, Bera (2017) claimed that chronic conditions are prevalent across socio-economic strata, affecting both impoverished rural communities and wealthier urban populations, often occurring concurrently. Despite the availability of cost-effective preventive measures, their adoption remains limited, particularly among marginalized rural populations. Much of the healthcare for chronic conditions is managed within the private sector, often at considerable expense. As such, chronic diseases and injuries become an emerging challenge in the national healthcare front (Patel et al. 2011). Given the multitude of challenges and complexities surrounding long-term morbidity in India, our study aims to understand the dynamics of chronic illness or the condition of long-term morbidity in the light of metropolitan and non-metropolitan areas of India. This has been done at two levels. In the first level, we employed a multivariate binary logit regression model to investigate whether outcome variables such as place of residence (metropolitan or non-metropolitan areas), economic status (poor or non-poor), substance use (no substance or use of at least one substance), and health security status (no insurance policy or at least one insurance policy covered) influence the incidence of long-term morbidity in India. The analysis considered eleven long-term morbidities, including the conditions of cataract, tuberculosis, high blood pressure, heart disease, leprosy, diabetes, cancer, asthma, paralysis, mental illness, and other types of long-term morbidity. In the second level, a binary logit model has been applied to examine the determining factors of long-term morbidity using certain geographic and socio-economic characteristics of the people in India.

2. Methods and tools

2.1. Analytical Model

The study employs both descriptive and econometric tools to explain the factors affecting long-term morbidities based on the data provided in IHDS-I and IHDS-II. Econometric tools have been applied at two levels. In the first level, a multivariate binary logit regression model has been used to examine whether outcome variables such as place of residence, economic status, substance use, and health security status influence the incidence of long-term morbidity in India. In the second level, another binary logit model has been applied to determine the outcome of long-term morbidity. The technique of binary logistic regression model is applied to predict a relationship between the independent variables and a dependent variable where the latter should be ‘binary’ response in nature. It is applied when the outcome variable is categorical. Logistic regression works almost

Economic Sciences
https://economic-sciences.com
ES (2025) 21(1), 01-13 | ISSN:1505-4683

similarly with the simple linear regression model. The difference is that the value of variable Y is predicted from a predictor variable X_1 or several X_n in case of simple linear regression model. However, the probability of Y occurring given known values of X_1 or several X_n is predicted in case of logistic regression model. When there is only one predictor variableX_1, the probability of Y is predicated empirically as follows:

$$P(Y) = \frac{1}{1 + e^{-(b_0 + b_1 X_{1i})}}$$

Where P(Y) is the probability of Y occurring, 'e' is the base of natural logarithms, b_0 is a constant, X_1 is a predictor variable .

Similarly, when there are more than one predictor variables, the equation becomes:

$$(Y) = \frac{1}{1 + e^{-(b_0 + b_1 X_{1i} + b_2 X_{2i} + \cdots + b_n X_{ni})}}$$

The resulting values from the logistic regression equation vary between 0 and 1. A value close to 0 indicates that Y is unlikely to have occurred, and a value close to 1 indicates that Y is likely to have occurred.

Furthermore, for descriptive analysis, weighted percentages were used to understand the prevalence of chronic diseases based on the characteristics of the population to ensure accuracy in the representation.

2.2. Outcomes and Predictors

The outcome variable considered for the multivariate binary logit regression model includes the place of residence, economic status, substance use, and health security status of people in India. To facilitate multivariate analysis, the outcome variables were grouped into binary categories. For instance, the place of residence of individuals has been grouped into two categories: '1' for those who reside in metropolitan areas and '0' for those who reside in non-metropolitan areas. Economic status also has a binary outcome, with '1' assigned to poor people and '0' for the non-poor category. Regarding substance use, data related to four types of substance use have been provided, including smoking cigarettes, smoking bidis, chewing tobacco, and alcohol consumption. Based on this data, four new dummy variables have been created. If a person has never consumed any of these substances in their lifetime, it has been assigned as '0'. Individuals who have consumed any of these substances, irrespective of their frequency (rarely, sometimes, and daily), have been assigned as '1'. Adding these four dummies gives a sum ranging from '0' to '4', where '0' represents no substance use at all, and '4' represents the use of all four substances. Furthermore, a new variable has been created where '1' has been assigned to any value greater than '0', indicating individuals with at least one substance use. Again, four types of health security status are covered in the IHDS data: life insurance with government organizations, life insurance with private organizations, health insurance with government organizations, and health insurance with private organizations. Following a similar practice, '0' signifies the absence of any of these insurance policies undertaken by an individual, while '1' indicates the presence of at least one insurance policy being undertaken. The predictor variables employed for the analysis include different types of long-term morbidities in India, including cataract, tuberculosis, high blood pressure, heart disease, diabetes, leprosy, cancer, asthma, paralysis, mental illness, and other types of long-term morbidities. In the second level of our analysis, we apply a binary logistic regression model where the dependent variable has a binary outcome: '1' for the presence of at least one type of long-term morbidity and '0' for the complete absence of any type of long-term morbidity. The predictors include sex (male, female), age (continuous), place of residence (metropolitan areas and non-metropolitan areas), economic status (poor and non-poor), religion (Hindu, Muslim, Christian, other), caste (General, OBC, SC, ST, and other), health security status (no insurance policy, one type of insurance policy, two types of insurance policy, three types of insurance policy, and all four types of insurance policy), and major income source (agricultural activities, agricultural wage labor, non-agricultural wage labor, artisan/petty shop owners, salaried/organized workers, retired, and others).

Economic Sciences
https://economic-sciences.com
ES (2025) 21(1), 01-13 | ISSN:1505-4683

3. Results

3.1. Background characteristics of sample

Appendix 1 represents the background characteristics of the sample considered in the analysis of the study. The total sample size (n=201,727) includes the number of individuals suffering from chronic diseases in both metropolitan and non-metropolitan areas of India. The weighted percentage of individuals residing in non-metropolitan areas is 90.25 per cent, while in metropolitan areas, it is 9.75 per cent. The sample comprises 49.72 per cent males and 50.28 per cent females under the condition of chronic diseases in India, as per IHDS-II. In terms of religion, Hindus comprise the largest proportion, followed by Muslims, Christians, and others. Regarding caste, the largest proportion is from the Other Backward Class (OBC), followed by the General Category, Scheduled Caste (SC), and Scheduled Tribe (ST).

3.2. Descriptive Analysis

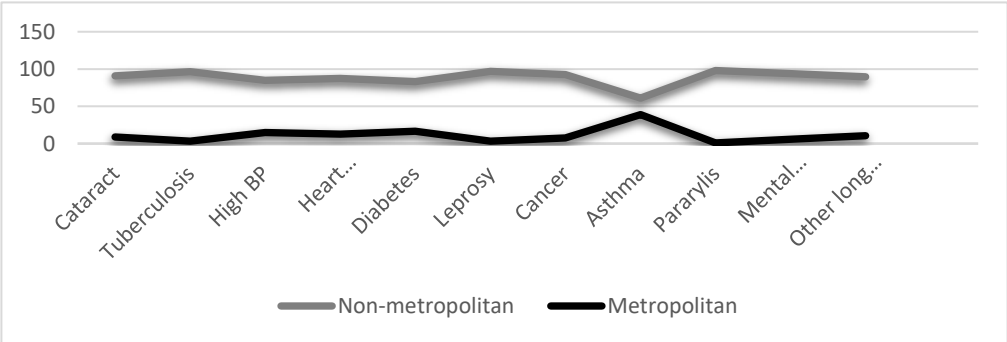
3.2.1. Long-term morbidity in India

According to the IHDS data, 45.4 per cent of males and 54.5 per cent of females reported being under chronic conditions or in a state of long-term morbidity in 2004-05. However, by 2011-12, while there was a decline in the incidence of long-term morbidity among males to 42 per cent, it increased among females to 57.9 per cent. This indicates that the prevalence of long-term morbidity is more common among women than men. Interestingly, the mean age of individuals suffering from long-term morbidity was 47 years in 2004-05, which further extended to 50.7 years in 2011-12. In terms of religion, the prevalence of long-term morbidity is observed to be higher among Hindus (81.8 per cent), followed by Muslims (11.3 per cent), Christians (3.7 per cent), and others (3.1 per cent) in 2004-05. These figures remained almost the same in 2011-12, except for a marginal rise observed among Muslims at 14 per cent. On the other hand, in terms of caste, people belonging to the OBC category suffer the most from chronic conditions, at 43.1 per cent, followed by the General category (33.3 per cent), SC (20 per cent), and ST (3.5 per cent) in 2004-05. However, by 2011-12, there was a marginal decline among the General, SC, and ST categories, while there was a marginal increase among OBCs to 44 per cent.

3.2.2. Long-term morbidity in metropolitan areas of India

IHDS-II provides data on the long-term morbidity status of metropolitan and non-metropolitan areas of India. However, IHDS-I only provided data related to metropolitan areas, and no separate data related to non-metropolitan areas were provided. Since it was not possible to create a new variable for the non-metropolitan areas using the state and district data given in IHDS-I, the current section has been done using IHDS-II alone. Figure 1 depicts the percentage distribution of the prevalence of long-term morbidity in metropolitan and non-metropolitan areas. It shows that in metropolitan areas, the prevalence of high blood pressure, heart disease, diabetes, cancer, and asthma problems could be observed.

Figure 1: Percentage distribution of the prevalence of long-term morbidity in metropolitan and non-metropolitan areas



Source: IHDS-II

However, the prevalence of cataract, tuberculosis, leprosy, and paralysis is quite low. On the other hand, in non-metropolitan areas of India, the prevalence of cataract, tuberculosis, leprosy, cancer, paralysis, mental illness, and other long-term morbidities is quite high. However, the proportion of the prevalence of high blood pressure, heart disease, and diabetes is almost at par. Interestingly, while metropolitan areas face a significantly high prevalence of asthma, the non-metropolitan areas observed the lowest. Again, if we delineate the prevalence of different types of long-term morbidities in six metropolitan areas of India including Mumbai, Delhi, Kolkata, Chennai, Bangalore, and Hyderabad, a different scenario could be observed for each area (Table 2). While the problem of cataract could be observed to have a declining trend for all the metropolitan areas except for Kolkata and Bangalore. For instance, Kolkata witnessed a sharp increase in cataract prevalence to a significantly high percentage of 61 per cent in 2011 from 46 per cent in 2005. Similarly, for Bangalore, cataract prevalence was only 2 per cent in 2005, but it rapidly increased to 14 per cent in 2011-12.

On the other hand, while the prevalence of tuberculosis increased in 2011 for Delhi, Kolkata, Bangalore, and Hyderabad, the rate of increase was highest in Delhi at 17 per cent, followed by Hyderabad (10 per cent), Kolkata (8 per cent), and Bangalore (7 per cent). The increase in high blood pressure marginally increased in Kolkata, but it significantly increased at a rate of 12 per cent in Bangalore, while the rest of the metropolitan areas observed a decline in it.

Again, it is observed that the prevalence of heart disease marginally declined in Mumbai, and Chennai in 2011-12. However, in the rest of the areas, the prevalence of heart disease significantly increased, especially in Delhi and Hyderabad.

While the increase in the prevalence of diabetes could be observed in Delhi, Kolkata, Bangalore, and Hyderabad, however the highest increase rate was observed in Hyderabad at 26.6 per cent (from 9 per cent in 2005 to 36 per cent in 2011). Leprosy, on the other hand, was observed to increase in Delhi, Bangalore, and Hyderabad, but the rate of increase in Bangalore was the highest at 26 per cent. The prevalence of cancer increased in Delhi. Further, if we examine the prevalence of asthma, it could be observed in Mumbai, Delhi, Kolkata, and Bangalore, but the highest increase rate was in Kolkata at 21 per cent in 2011-12. Surprisingly, the rate of increase in the prevalence of mental illness increased in Kolkata by 38 per cent and in Hyderabad by 18 per cent. In the case of the prevalence of other long-term morbidities, it could be observed in Kolkata and Bangalore.

Therefore, the prevalence of chronic diseases shows varying patterns across major Indian cities. For instance, in Mumbai, asthma prevalence has significantly increased, likely due to rising air pollution, industrial emissions, and urban lifestyle changes that exacerbate respiratory illnesses. In Delhi, the prevalence of tuberculosis, heart disease, diabetes, leprosy, cancer, asthma, and epilepsy are on the rise. This can be attributed to severe air pollution, overcrowding, unhealthy diets, sedentary lifestyles, and inadequate healthcare. Kolkata has seen a rise in all types of chronic diseases except for leprosy and cancer, suggesting that public health measures might have effectively controlled leprosy while cancer trends remain relatively stable. However, factors such as lifestyle changes, environmental issues, and an aging population likely contribute to the increase in other chronic conditions. In Bangalore, chronic diseases are increasing except for mental illness, which may be underreported due to a lack of awareness or stigma. Rapid urbanization, dietary shifts, and increased stress levels likely explain the rise in conditions such as diabetes, heart disease, and asthma. In Chennai, tuberculosis, heart disease, diabetes, leprosy, and mental illness are becoming more prevalent. Crowded living conditions might drive the increase in tuberculosis, while lifestyle and dietary changes contribute to heart disease and diabetes. The rise in mental illness reflects the growing stress and pressures of urban life. Overall, these trends can be linked to urbanization, environmental factors such as air pollution, population aging, and gaps in healthcare infrastructure, underscoring the need for targeted public health interventions in each city.

Economic Sciences
https://economic-sciences.com
ES (2025) 21(1), 01-13 | ISSN:1505-4683

Table 2: Prevalence of long-term morbidities in metropolitan areas (in per cent)

	Mumbai		Delhi		Kolkata		Chennai		Bangalore		Hyderabad	
	2005	2011	2005	2011	2005	2011	2005	2011	2005	2011	2005	2011
Cataract	13	2	18	7	46	61	10	8	2	14	12	14
Tuberculosis	21	-	27	45	25	33	-	-	2	9	13	8
High BP	16	11	16	15	35	36	7	8	10	22	16	22
Heart Disease	6	4	12	21	38	46	36	10	5	9	4	9
Diabetes	8	8	10	17	20	28	43	22	9	14	9	14
Leprosy	11	-	31	39	31	25	-	-	9	36	17	36
Cancer	25	-	13	27	54	43	-	9	-	22	8	22
Asthma	8	12	8	16	32	52	45	8	3	6	4	6
Paralysis	54	10	-	35	-	-	-	20	16	30	30	-
Mental illness	14	-	23	7	42	80	-	1	12	11	9	6
Other long-term morbidity	25	1	12	18	44	48	14	4	2	26	3	27

Source: IHDS-I and IHDS-II

- Represent the absence of data

3.3. Econometric Analysis

3.3.1. Multivariate binary logit regression model

Our analysis shows that while the prevalence of long-term morbidity such as tuberculosis and leprosy is less likely to take place in metropolitan areas, the prevalence of cataracts, high blood pressure, heart disease, asthma, mental illness, and other types of chronic diseases is higher in the metropolitan areas compared to the non-metropolitan areas. In terms of economic status, it is observed that cataracts, tuberculosis, and mental illness are most likely to be prevalent among the economically worse-off (poor) section of society, while their likelihood to suffer from high blood pressure and diabetes becomes lower.

Our analysis shows some interesting perspectives related to the correlation between substance use and the incidence of long-term morbidity. For instance, chronic conditions such as cataracts, high blood pressure, diabetes, and other long-term morbidity show a negative correlation with substance use. This means that individuals who suffer from such conditions have lower chances of using substances such as smoking cigarettes, bidis, chewing tobacco, and consumption of alcohol. However, mental illness and substance use show a positive correlation at a high significant level, which means those with mental illness have increasing chances of using substances.

In terms of health security status, it is found that individuals who suffer from cataracts, tuberculosis, and other types of long-term morbidity have lower chances of having a health security policy, either a life insurance or a health insurance in any of the organization. However, the chances of having one health security policy are higher among people who suffer from high blood pressure, diabetes, and cancer.

Table 3: Multivariate binary logit regression model

	Place of residence Metropolitan=1 Non-metropolitan=0	**Economic Status** Poor=1 Non-poor=0	**Substance Use** Use=1 No use=0	**Insurance covered status** At-least one insurance policy=1 No insurance at all=0
Cataract	0.53***(0.14)	0.06*(0.03)	-0.03**(0.01)	-0.22**(0.05)
Tuberculosis	-0.03***(0.30)	0.11*(0.06)	-0.06**(0.02)	-0.07**(0.10)
High BP	0.35***(0.06)	-0.04**(0.01)	0.50(0.10)	0.12***(0.02)

Economic Sciences
https://economic-sciences.com
ES (2025) 21(1), 01-13 | ISSN:1505-4683

Heart Disease	0.11**(0.12)	-0.03(0.02)	-0.02**(0.01)	0.15(0.04)
Leprosy	-0.28**(0.77)	-0.08(0.14)	-0.05(0.13)	0.61(0.25)
Diabetes	0.36***(0.08)	-0.15***(0.01)	-0.01***(0.05)	0.08**(0.02)
Cancer	-1.05(0.88)	-0.19(0.16)	0.01(0.06)	0.21*(0.29)
Asthma	0.68***(0.44)	0.28(0.08)	0.01(0.03)	-0.07**(0.14)
Paralysis	-1.59(1.20)	0.40(0.29)	0.01(0.10)	-0.60(0.50)
Mental illness	0.39***(1.08)	0.41**(0.20)	0.14***(0.07)	-0.48(0.35)
Other long term morbidity	0.49***(0.06)	0.71(0.01)	-0.17***(0.20)	-0.07***(0.02)
CONSTANT	2.89(0.02)	0.09(0.11)	0.99(0.12)	0.48(0.12)

Source: IHDS-II

standard error in parentheses;

Level of significance ***p<0.01, **pp<0.05, *p<0.1

3.3.2. Binary logit regression model

The results of our analysis show that women are more likely to suffer from long-term morbidities compared to men, and this likelihood further increases with age. In terms of the economic status of individuals, it shows that poor people are less likely to suffer from long-term morbidities, which means that the chances of exposure to long-term morbidities among the non-poor or economically better-off sections of society are higher. Regarding religion, Christians and those belonging to the 'others' category have higher chances of exposure to long-term morbidities compared to the Hindu community. In terms of caste category, irrespective of one's category, the likelihood of suffering from long-term morbidities is observed to be lower than the general category. In terms of health security status, individuals with at least one insurance policy have a higher likelihood of suffering from long-term morbidities compared to those who have not secured any type of insurance policy. Again, if we look at the major income sources of the people, those who work as artisans/petty shop owners, in the organized sector, and those who are retired and others have a higher likelihood of suffering from long-term morbidities compared to those who work in agricultural activities.

Table 4: Determinants of long-term morbidity outcome (binary logit regression model)

Long-term morbidity outcome	Coef.	Std. Err	95 % [Conf. Interval]	
Sex				
Ref. Male				
Female	0.377429***	0.0163411	0.3454014	0.4094572
Age	0.053595***	0.0004374	0.0527352	0.0544498
Place of Residence				
Ref. Metro				
nonmetro	0.025149	0.0279282	-0.0295894	0.0798872
Economic status				
Ref. Non-poor				
poor	-0.571449***	0.0256829	-0.6217826	-0.5211073
Religion				
Ref. Hindu				

Muslim	-0.018046	0.0245381	-0.0661424	0.0300452
Christian	0.258279***	0.049388	0.1614791	0.3550766
Others	0.273517***	0.0403519	0.1944254	0.3526019
Health security status				
Ref. No insurance policy undertaken				
1 type of insurance undertaken	0.034436*	0.0181408	-0.0011316	0.0699789
2 types of insurance policy undertaken	0.174008***	0.0324651	0.1103784	0.2376392
3 types of insurance policy	0.185342*	0.0885188	0.0118406	0.3588278
4 types of insurance policy	0.065583	0.2019663	-0.3302584	0.461435
Caste				
Ref. General				
OBC	-0.140585***	0.0191301	-0.1780429	-0.1030541
SC	-0.254859***	0.0247182	-0.3033017	-0.2064082
ST	-0.824349***	0.0423593	-0.9073706	-0.7413251
others	-0.155906*	0.0724961	-0.2979994	-0.0138198
Major Income source				
Ref. Agricultural activities				
Agricultural wage labour	-0.043025	0.0344237	-0.1105417	0.0243968
Non-agricultural wage labour	0.053427	0.0249811	0.0044586	0.1023828
Artesian/petty shop owners	0.098834***	0.0273284	0.0452808	0.152406
Organised sector	0.130058***	0.0245162	0.0819849	0.1780866
Retired n others	0.593505***	0.0306851	0.5334188	0.6537022
_cons	-5.15903***	0.0426449	-5.242646	-5.075481

Source: IHDS-II

standard error in parentheses ;

Level of significance ***p<0.01, **pp<0.05, *p<0.1

4. Discussion and Conclusion

Chronic illnesses have a profound and far-reaching impact on the lives of individuals affected by them. These conditions go beyond merely affecting physical health; they deeply influence how patients experience their own bodies and navigate their daily lives. The experience of living with a chronic illness can disrupt one's sense of self and identity, as well as their autonomy. Patients often find themselves confronted with the need to adjust their lifestyles in response to the demands imposed by their condition, which can leave them feeling a sense of loss of control over their lives. This loss of control encompasses various aspects of their existence, including their health, personal choices, and overall well-being.

The findings of our study reveal several intriguing patterns regarding the incidence of chronic diseases or long-term morbidity among different demographic and socioeconomic groups in India. It is found that the aging population, particularly elderly women, are more susceptible to chronic conditions compared to men. This trend could be attributed to biological factors, as well as differences in healthcare-seeking behavior and access to healthcare services among older men and women. The disparity in the healthcare-seeking behavior among elderly men and women needs further academic investigation.

Economic Sciences
https://economic-sciences.com
ES (2025) 21(1), 01-13 | ISSN:1505-4683

We found that individuals from economically disadvantaged backgrounds are less likely to suffer from chronic conditions. This unexpected finding may suggest that factors other than socioeconomic status, factors such as lifestyle choices, genetic predispositions, or access to healthcare, could play a significant role in determining the incidence of chronic diseases. However, studies that took after 2011-12 shows that it is rather poor people who have higher chances of getting chronic diseases (Paul, 2023 and Jayathilaka et al., 2020).

Religion and caste were also found to influence the prevalence of chronic conditions, with Christians and individuals belonging to the general category having higher chances of suffering from such conditions. This could be linked to differences in healthcare utilization patterns, cultural practices, or environmental factors among different religious and caste groups. Furthermore, our study highlighted the association between chronic conditions and health security status of an individual. For instance, individuals with at least one chronic condition were more likely to have at least one insurance policy, indicating a greater awareness of healthcare needs and a proactive approach towards health management among this group.

Regarding occupation, individuals working in certain sectors such as artisan/petty shop owners, the organized sector, or retirees were found to have a higher prevalence of chronic conditions compared to those engaged in agricultural activities. This could be due to differences in occupational hazards, stress levels, or access to healthcare services among different occupational groups. In terms of geographic location, chronic conditions like tuberculosis and leprosy were less common in metropolitan areas, while conditions such as cataracts, high blood pressure, and mental illness were more prevalent in these areas. This geographical disparity in the prevalence of chronic diseases could be attributed to differences in lifestyle factors, environmental exposures, and healthcare infrastructure between these areas.

Finally, the relationship between substance uses and chronic conditions was found to be complex, with substance use showing both positive and negative correlations with different types of chronic diseases. Our study shows a strong positive correlation between substance use and mental illness.

Overall, our study underscores the importance of considering multiple factors, including demographic, socio-economic factors, in understanding the incidence and distribution of chronic diseases in India. Further research is needed to explore the underlying mechanisms driving these associations and to develop targeted interventions aimed at reducing the burden of chronic diseases among vulnerable populations.

Declaration of Interest Statement:

The authors disclosed no potential conflicts of interest.

Appendices

Appendix 1: Background characteristics of sample (in percentage)

Background	n=201727	in percentage
Sex		
Male	100,289.68	49.72
Female	101,437.32	50.28
Age (mean)	201,725	29.73
Place of residence		
Metropolitan areas[@]	19,669.07	9.75
Non-metropolitan areas	182,058.93	90.25
Economic status		
Poor	43,177.05	21.49
Non-poor	158,460.95	78.59
Religion		
Hindu	161,621	80.12

Muslim	27,640	13.70
Christian	5,267	2.61
Others#	7,200	3.57
Caste		
General$	51,716.6921	25.69
OBC^	87,128.636	43.29
SC&	43,409.809	21.57
ST*	16,316.562	8.11
Others%	2,707.3017	1.35
Insurance covered status		
0 type of insurance policy	125,972.85	62.45
1 type of insurance policy	63,411.492	31.43
2 types of insurance policy	10,855.524	5.38
>2 types of insurance policy	1488.130	1.3
Major income source		
Agricultural activities+	54,845.834	27.20
Agricultural wage labour	21,107.595	10.47
Non-agricultural wage labour	47,847.149	23.72
Artesian/petty shop owners	26,339.555	13.06
Salaried/Organized workers$$	38,747.951	19.21
Retired and others	12,786.916	6.34
Substance use		
0 substance use	675.907545	2.02
1 types of substance use	19,198.478	57.24
2 types of substance use	8,785.3289	26.19
3 types of substance use	3,452.1379	10.29
4 types of substance use	1,431.1474	4.27

Source: IHDS-II

@ Metropolitan areas includes Mumbai, Delhi, Kolkata, Chennai, Bangalore and Hyderabad

It includes religions other than Hindu, Christian, and Muslims

$ General category includes those who are brahmins and non-brahmins who belong to the general category

^ Other Backward class

& Schedule Caste

*Schedule Tribe

% It includes any other caste other than General, OBC, SC, ST and others

+It includes cultivation and other agricultural allied activities

$$ It includes those who runs organized business, salaried individuals and professionals

References

1. Abdulah, D. M., & Hassan, A. B. (2020). Relation of dietary factors with infection and mortality rates of COVID-19 across the world. *The Journal of nutrition, health and aging*, *24*(9), 1011-1018.
2. Afshin, A., Sur, P. J., Fay, K. A., Cornaby, L., Ferrara, G., Salama, J. S., ... & Murray, C. J. (2019). Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The lancet*, *393*(10184), 1958-1972.
3. Anchala, R., Kannuri, N. K., Pant, H., Khan, H., Franco, O. H., Di Angelantonio, E., & Prabhakaran, D. (2014). Hypertension in India: a systematic review and meta-analysis of prevalence, awareness, and control of hypertension. *Journal of hypertension*, *32*(6), 1170-1177.
4. Arokiasamy, P., & Pradhan, J. (2011). Measuring wealth-based health inequality among Indian children: the importance of equity vs efficiency. *Health policy and planning*, *26*(5), 429-440.
5. Azupogo, F., Abdul-Rahaman, F., Gyanteh, B., & Atosona, A. (2019). Hygiene and sanitation practices and the risk of morbidity among children 6–23 months of age in Kumbungu

District, Ghana. *Advances in Public Health*, *2019*, 1-12.
6. Basu, J., Avila, R., & Ricciardi, R. (2016). Hospital readmission rates in US states: are readmissions higher where more patients with multiple chronic conditions cluster?. *Health services research*, *51*(3), 1135-1151.
7. Bera, A (2017). Long term Morbidity Pattern among the Residents of the Six Largest Metropolitan Areas of India. Accessed online, 12th April 2024, https://www.grin.com/document/355227?lang=en
8. Booth, F. W., Roberts, C. K., & Laye, M. J. (2012). Lack of exercise is a major cause of chronic diseases. *Comprehensive physiology*, *2*(2), 1143.
9. Brahmanandam, N., & Nagarajan, R. (2021). Impact of change in household hygiene conditions on morbidity in India: Evidence from longitudinal survey. *Clinical Epidemiology and Global Health*, *11*, 100793.
10. Buttorff, C., Ruder, T., & Bauman, M. (2017). *Multiple chronic conditions in the United States* (Vol. 10). Santa Monica, CA: Rand.
11. Chakma, J. K., & Gupta, S. (2014). Lifestyle and non-communicable diseases: a double edged sword for future India. *Indian Journal of Community Health*, *26*(4), 325-332.
12. Colzani, E. (2019). Beyond morbidity and mortality: the burden of infectious diseases on healthcare services. *Epidemiology & Infection*, *147*, e251.
13. Danaei, G., Ding, E. L., Mozaffarian, D., Taylor, B., Rehm, J., Murray, C. J., & Ezzati, M. (2009). The preventable causes of death in the United States: comparative risk assessment of dietary, lifestyle, and metabolic risk factors. *PLoS medicine*, *6*(4), e1000058.
14. Deaton, A. (2013). The great escape: health, wealth, and the origins of inequality.
15. Farcher, R., Syleouni, M. E., Vinci, L., & Mattli, R. (2023). Burden of smoking on disease-specific mortality, DALYs, costs: the case of a high-income European country. *BMC Public Health*, *23*(1), 698.
16. Folkman, S., & Moskowitz, J. T. (2004). Coping: Pitfalls and promise. *Annu. Rev. Psychol.*, *55*, 745-774.
17. Ghosh, S., & Arokiasamy, P. (2009). Morbidity in India: Trends, patterns and differentials. *Journal of Health Studies*, *2*(1), 2.
18. Gullacksen, A. C., & Lidbeck, J. (2004). The life adjustment process in chronic pain: psychosocial assessment and clinical implications. *Pain Research and Management*, *9*, 145-153.
19. Heijmans, M., Rijken, M., Foets, M., de Ridder, D., Schreurs, K., & Bensing, J. (2004). The stress of being chronically ill: from disease-specific to task-specific aspects. *Journal of Behavioral Medicine*, *27*, 255-271.
20. Higuchi, M. (2010). Lifestyle Diseases: Access to Chronic Disease Care in Low-and Middle-Income Countries. *Un Chron*, *47*(2).
21. Howden-Chapman, P., Roebbel, N., & Chisholm, E. (2017). Setting housing standards to improve global health. *International journal of environmental research and public health*, *14*(12), 1542.
22. Islam, S. M. S., Purnat, T. D., Phuong, N. T. A., Mwingira, U., Schacht, K., & Fröschl, G. (2014). Non-Communicable Diseases (NCDs) in developing countries: a symposium report. *Globalization and health*, *10*, 1-8.
23. Jana, A., & Chattopadhyay, A. (2022). Prevalence and potential determinants of chronic disease among elderly in India: rural-urban perspectives. *Plos one*, *17*(3), e0264937.
24. Jayathilaka, R., Joachim, S., Mallikarachchi, V., Perera, N., & Ranawaka, D. (2020). Do chronic illnesses and poverty go hand in hand?. *PloS one*, *15*(10), e0241232.
25. Joe, W., Mishra, U. S., & Navaneetham, K. (2008). Health inequality in India: evidence from NFHS 3. *Economic and Political Weekly*, 41-47.
26. Kanavos, P. (2006). The rising burden of cancer in the developing world. *Annals of oncology*, *17*, viii15-viii23.
27. Keys, A., Mienotti, A., Karvonen, M. J., Aravanis, C., Blackburn, H., Buzina, R., ... & Toshima, H. (1986). The diet and 15-year death

rate in the seven countries study. *American journal of epidemiology*, *124*(6), 903-915.
28. Kralik, D., Koch, T., Price, K., & Howard, N. (2004). Chronic illness self-management: taking action to create order. *Journal of clinical nursing*, *13*(2), 259-267.
29. Krieger, J., & Higgins, D. L. (2002). Housing and health: time again for public health action. *American journal of public health*, *92*(5), 758-768.
30. Kumar, A. S., & Sinha, N. (2020). Cardiovascular disease in India: A 360 degree overview. *Medical Journal Armed Forces India*, *76*(1), 1-3.
31. Kuppusamy, P., Prusty, R. K., & Kale, D. P. (2023). High-risk pregnancy in India: Prevalence and contributing risk factors–a national survey-based analysis. *Journal of Global Health*, *13*.
32. Liu, Y. T., Lee, J. H., Tsai, M. K., Wei, J. C. C., & Wen, C. P. (2022). The effects of modest drinking on life expectancy and mortality risks: a population-based cohort study. *Scientific Reports*, *12*(1), 7476.
33. Mutharayappa, R., & Bhat, T. N. (2008). Is lifestyle influencing morbidity among elderly?. *Journal of Health Management*, *10*(2), 203-217.
34. Nugent, R. (2008). Chronic diseases in developing countries: health and economic burdens. *Annals of the New York Academy of Sciences*, *1136*(1), 70-79.
35. Palo, S. K., Kanungo, S., Samal, M., Priyadarshini, S., Sahoo, D., & Pati, S. (2021). Water, Sanitation, and Hygiene (WaSH) practices and morbidity status in a rural community: findings from a cross-sectional study in Odisha, India. *Journal of Preventive Medicine and Hygiene*, *62*(2), E392.
36. Patel, V., Chatterji, S., Chisholm, D., Ebrahim, S., Gopalakrishna, G., Mathers, C., ... & Reddy, K. S. (2011). Chronic diseases and injuries in India. *The Lancet*, *377*(9763), 413-428.
37. Patel, V., Chatterji, S., Chisholm, D., Ebrahim, S., Gopalakrishna, G., Mathers, C., ... & Reddy, K. S. (2011). Chronic diseases and injuries in India. *The Lancet*, *377*(9763), 413-428.
38. Paul, S. (2021). Income inequality and individual health status: evidence from India. *Journal of Quantitative Economics*, *19*(2), 269-289.
39. Paul, S. (2023). Do Income and Income Inequality Have Any Impact on Morbidity? Evidence From the India Human Development Survey. In *India's Social and Economic Transformation in the 21st Century* (pp. 55-74). Routledge India.
40. Prasad, R., Gupta, N., & Banka, A. (2017). 2025 too short time to eliminate tuberculosis from India. *Lung India*, *34*(5), 409-410.
41. Raghuvanshi, V. P. (2013). Study on healthy lifestyle behaviour and cardiovascular mortality among urban and rural populations in India. *Intl J Life sci biotechnology and pharma res*, *2*(1), 176-182.
42. Rao, T. S., & Andrade, C. (2016). Alcohol intake, morbidity, and mortality. *Indian journal of psychiatry*, *58*(1), 1-3.
43. Reddy, K. S., Shah, B., Varghese, C., & Ramadoss, A. (2005). Responding to the threat of chronic diseases in India. *The Lancet*, *366*(9498), 1744-1749.
44. Röing, M., & Sanner, M. (2015). A meta-ethnographic synthesis on phenomenographic studies of patients' experiences of chronic illness. *International journal of qualitative studies on health and well-being*, *10*(1), 26279.
45. Sathishkumar, K., Chaturvedi, M., Das, P., Stephen, S., & Mathur, P. (2022). Cancer incidence estimates for 2022 & projection for 2025: result from National Cancer Registry Programme, India. *Indian Journal of Medical Research*, *156*(4&5), 598-607.
46. Srinivasan, T. N., Muraleedharan, V. R., & Pratap, B. (2017). Morbidity in India since 1944. *Indian Economic Review*, *52*, 3-35.
47. Steyn, K., & Damasceno, A. (2006). Lifestyle and related risk factors for chronic diseases. *Disease and mortality in sub-Saharan Africa*, *2*, 247-65.
48. Subramanian, S. V., Kawachi, I., & Smith, G. D. (2007). Income inequality and the double burden of under-and overnutrition in India. *Journal of Epidemiology & Community Health*, *61*(9), 802-809.

49. US Department of Health and Human Services. (2014). Smoking-attributable morbidity, mortality, and economic costs. *The health consequences of smoking–50 years of progress: a report of the Surgeon General. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health*, 647-84.
50. World Health Organization. (2012). Noncommunicable diseases in the South-East Asia Region, 2011: situation and response.
51. Xu, Y. Y., Xie, J., Yin, H., Yang, F. F., Ma, C. M., Yang, B. Y., ... & Li, S. L. (2022). The Global Burden of Disease attributable to low physical activity and its trends from 1990 to 2019: An analysis of the Global Burden of Disease study. *Frontiers in public health*, *10*, 1018866.
52. Yohannes, T., Laelago, T., Ayele, M., & Tamrat, T. (2017). Mortality and morbidity trends and predictors of mortality in under-five children with severe acute malnutrition in Hadiya zone, South Ethiopia: a four-year retrospective review of hospital-based records (2012–2015). *BMC nutrition*, *3*, 1-8.
53. Zhao, J., Stockwell, T., Naimi, T., Churchill, S., Clay, J., & Sherk, A. (2023). Association between daily alcohol intake and risk of all-cause mortality: a systematic review and meta-analyses. *JAMA network open*, *6*(3), e236185-e236185.