

## Determinants of Poor Health Outcome Among Older Adults in India

Sneh Shrivastava<sup>1</sup> | Dr. Sandhya R. Mahapatro<sup>2</sup>

<sup>1</sup>Research Scholar Division of Economics and Agricultural Economics A N Sinha Institute of Social Studies, Patna Aryabhatta Knowledge University, Patna

<sup>2</sup>Associate Professor Department of Population Studies Nabakrushna Chaudhary Centre for Development Studies, Odisha, India

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### Abstract:

Self-rated health (SRH) is a crucial indicator of overall health status, functionality, and mortality among older adults. This study examines the socio-economic correlates of health outcomes among older adults aged 45-59 in India using data from the Longitudinal Ageing Study of India Wave-I. Descriptive analysis, bi-variate analysis, and multivariate logistic regression were performed to investigate the factors that best explain and predict SRH. The results show that age, gender, place of residence, education, marital status, religion, social category, living arrangements, work status, income, multimorbidity, functional limitations, nutritional status, and health behaviours are significant determinants of poor SRH. Multimorbidity and functional limitations were found to be the principal determinants of poor SRH. The likelihood of reporting poor SRH increases with age, being female, living in rural areas, having lower education, being unmarried, divorced, or widowed, belonging to disadvantaged social categories, living with a spouse or others, not currently working, having lower income, being underweight, and engaging in risky health behaviours. The findings highlight the need to strengthen healthcare services for older adults in India, considering the ongoing demographic transition and the substantial proportion of poor SRH in this age group. Addressing the needs of older adults aged 45-59 can help the nation benefit from the demographic dividend.

**Keywords:** Self-rated health, Socioeconomic determinants, Older adults, Healthcare, Ageing

### Introduction:

Ageing is an inevitable biological phenomenon in humans. This is a consequence of the ongoing worldwide demographic transition. Ageing can potentially alter the disease burden, healthcare system, and associated costs. In India, the proportion of the population aged  $\geq 60$  years accounts for 8.6% of the total population (Census 2011). The share of the elderly population is projected to increase further to 19.5% by 2050 (UN

Population Division, 2019). These trends, largely a result of fertility decline and increasing life expectancy, indicate increasing future vulnerabilities such as increasing old-age dependency and reducing potential support levels. This rapid ageing in India is coupled with evolving family structure and limited social provision leading to pressing economic, social and health challenges. Furthermore, ageing has shifted a

major share of the nation's burden of disease on the older population.

Including the pre-retirement phase (45-59), the older adult population is expected to increase to 45% by 2050 (LASI, 2020). The age group 45-59 are mostly the main carers and earners of their family and it is important to understand their issues in greater detail which have been missing in previous studies, as most of the studies focused on elderly population (60+) when studying older people. Healthy ageing largely depends on an individual's experiences at younger age and this is why ageing should be studied from a life-course perspective. Seigel, Patel and Ali (2014) in their work found out that the onset of non-communicable disease in India happens at least a decade earlier (less than 45) than the developing countries (more than 55). Now this age group not only serves as the part of labour force but also as a part of potential support system for the elderly population. Research suggests that limitations in functioning also begins between age 40-55 (Brown et al., 2017; Brown et al., 2019). Therefore, it becomes important to study their health status so that they can contribute to the economic well being of the nation by participating in labour force and well being of their dependents both elder and younger ones.

Greying population in a country is associated with social, economic, and public health implications. These include, higher expenditure on health care needs, need for social security reforms, shrinkage of workforce, leading to shortage of active persons who are able to support dependent older adults (Rajan et al., 2001; Singh et al., 2013). Furthermore, it is also observed that with population ageing the disease profile also changes i.e. from heavier burden of communicable disease to non-communicable disease (Omran, 2005). Previous literature has significantly studied the impact of socioeconomic factors on health of older population. Age, Sex, education, income, work status are found to be significant correlates in predicting health status of an individual (Singh et al., 2013). Denton, Prus and Walters (2004) provides a useful framework and suggest that

health status of an individuals does not only depends on socioeconomic determinants but also behavioural determinants like smoking, drinking, and obesity. Individuals with higher socioeconomic status tend to have lower morbidity and mortality and perceived being in better health than individuals of lower socioeconomic status (Srivastava et al., 2021). The availability of resources to the higher socioeconomic status individuals explains the positive association between socioeconomic status and better health status.

A widely used tool to measure the overall health status of an individual is the self-rated health (SRH). Self-rated measures directly depend on an individual's health assessment (Sen, 2002). SRH is a subjective measure of health closely associated with the objective health status and health care demand. It is a useful indicator of health care needs while designing programmes and is highly sensitive to social factors that causes health inequalities (Machón et al., 2016). SRH is one of the key determinants of general health, functionality, and mortality, especially among older adults. It is a complex measure that "represents a summary statement about how numerous aspects of health, both subjective and objective, are combined with the perceptual framework on the individual respondents" (Tissue, 1972). A four- or five-point survey scale, ranging from bad to outstanding, is typically used to measure SRH (Shields & Shooshtari, 2001). According to Zimmer et al. (2000), it is a sensitive and trustworthy indicator of health that also has a strong correlation with other, more focused health indicators. Previous studies have confirmed that with ageing population, socioeconomic variables tend to play a rather significant role in determining the perceived health status of older adults (Kumar & Pradhan, 2019; Pandey & Ladusingh, 2015). Many studies have also emphasised that lifestyle factors and health-related behaviours such as smoking, alcohol consumption also play a significant role in determining the general health status. Prevalence of disease is also found to be significant determinant (Harrington et al., 2010).

Population ageing is an emerging as a major demographic issue in India, with implication for the economy and for the society in general. Although, previous studies have tried to bring out evidence of the assessment of self-rated health among the Indian elderly but very few studies have considered the older adults of the pre-retirement age group. This age group is extremely vital they are currently part of the labour force and help directly in economic development of nation by participating in economic activities. With non-communicable diseases showing incidence nearly a decade earlier (below 45 years) it becomes important to access the health status of older adults. The present study examines the socio-economic correlates of health outcomes among older adults in India. Its findings might be useful for health planners and policymakers, especially for those promoting health in countries with rapid health transitions like India.

### Methods:

#### Data Source:

The data used in the study were obtained from the Longitudinal Ageing Study of India Wave – I (International Institute for Population Sciences (IIPS) et al., 2020). It is multidisciplinary, internationally harmonized panel study of 72,250 older adults aged 45 and above. The study design, tools and protocols are harmonised with the Health and Retirement Study (HRS) in the United States and its sister surveys in Asia, Europe, and elsewhere. The LASI I use a multistage stratified area probability cluster sampling design to arrive at the eventual unit of observation. It uses a three-stage sample design in rural areas and four-stage sampling design in urban areas. For the purpose of our study, we have used only the age group 45-59 which brings down our total sample size to 34,098. Further, nearly 241 observations were missing for the variable self-rated health. So, the final analysis was done on 33,857 samples.

#### Outcome Variable:

Self-Rated Health (SRH) Respondents were asked: How is your health in general, would you say your health is excellent, very good, good, fair or poor.

For the purpose of this study, we have categorised the response into two groups: “Good”, which included excellent, very good and good, and “Poor”, which included fair and poor to facilitate more meaningful interpretation of the findings.

### Explanatory Variables:

Information on the following demographic, social, economic and health related variables were used for this study.

Age (45-49, 50-54, 55-59), Sex, marital status, years of schooling, religion, social category, living arrangements, place of residence, work status, mpce quintiles, multimorbidity, functional limitations (ADL, IADL), Body mass index, Health Behaviour (Smoking and Drinking).

### Statistical Analysis:

Descriptive analysis was performed to examine the older adults self-rated health status. First, univariate analysis was applied to determine respondents’ socio-demographic characteristics. This was followed by a bi-variate analysis to examine the nature of association between self-rated health and selected demographic, social or health characteristics using the chi-square test of significance. Lastly, to investigate which factors best explain and predict self-rated health, a multivariate logistic regression model was applied. For the entire statistical test,  $p$  values of  $<0.01$ ,  $<0.05$  and  $<0.1$ , were considered for statistical significance. All statistical analysis were carried out with STATA 17.0.

### Results:

Table 1 gives the distribution and bi-variate analysis of self-rated health across different socio-economic variables. Age is found to have a significant influence on self-rated health of older adults in India. As age increases a higher proportion of older adults report their health as poor. We can see from table 1, older adults from the age group 45-49 are more likely to report their perceived health status as good (53 percent) while older adults from the age group 55-59, only 43.5 percent report good health and nearly 57 percent report their health as poor. This reflects the natural decline in

health status with age. It is also found that a substantial gender difference is found in the report self-rated health, with females consistently reporting poorer health than males. Nearly 56 percent of women report their health as poor while only 46 percent of males report poor self-rated health. Place of residence is also found to have a significant influence on the perceived health status of older adults in India. Our result shows that there is a rural-urban divide in perceived health status among older adults. Rural residents have a higher prevalence (53.1 per cent) of reporting poor self-rated health compared to urban dwellers (49.1 per cent). Table 1 also shows that, as the level of education increases, older adults tend to report better health outcomes. The health disparity across

education levels highlights the importance of education in health outcomes. Marital Status is another significant factor. Those older adults who are currently married have better perceived health outcomes compared to those who are widowed, separated or divorced. Currently married older adults report the best health with 49.7 percent rating their health as good. In contrast, widowed report poor health as a majority (59.2 percent) report poor health and the separated or divorced older adults reports the poorest health with nearly 68 reporting their health as poor. Such a result underscores the link between marital stability and health. Religion and social category are also found to have a significant association

**Table 1. Distribution and Bi-Variate Analysis of Self-Rated Health across Different Socioeconomic Variables**

	Self-Rated Health		n
	Good	Poor	
<b>Age***</b>			
45-49	53.0	47.1	13,081
50-54	47.3	52.8	10,845
55-59	43.5	56.5	9,931
<b>Sex***</b>			
Male	54	46	15,263
Female	43.7	56.3	18,594
<b>Place of Residence***</b>			
Rural	46.9	53.1	21,542
Urban	50.9	49.1	12,315
<b>Education</b>			
<b>Years_of_Schooling***</b>			
No Schooling	45.3	54.7	13,812
Less than 5 years	46	54	3,671
More than 5 but less than 10 years	47.6	52.4	8,805
10 or more years	56.1	43.9	7,569
<b>Marital Status***</b>			
Currently Married	49.7	50.3	28,689
Widowed	40.8	59.2	3,846
Divorced	42.2	57.8	161
Separated/Deserted/Other	32.3	67.6	668
Never Married	51.7	48.3	493
<b>Religion***</b>			
Hindu	47.7	52.3	24,894

Muslim	44.7	55.3	4,037
Christian	58.6	41.4	3,362
Others	46.6	53.5	1,564
<b>Social Category***</b>			
SC	43.2	56.8	5,776
ST	58.6	41.4	6,157
OBC	45.6	54.4	12,658
Others	48.6	51.4	9,266
<b>Living Arrangements***</b>			
Living Alone	43.6	56.4	686
Living with Spouse and/or others	44.1	55.9	4,050
living with spouse and children	50.5	49.5	23,911
Living with Children	41.7	58.3	4,002
Living with Others	43.9	56.1	1,128
<b>Work Status***</b>			
Currently Working	55.8	47.2	20,777
Currently Not Working	35.4	64.6	3,948
Never Worked	43.9	56.1	9,130
<b>MPCE_Quintile***</b>			
Poorest	48.5	51.5	6,317
Poorer	49	51	6,559
Middle	48.8	51.2	6,605
<i>Table 1 Continued</i>			
Richer	47.2	52.8	6,908
Richest	48.2	51.9	7,024
<b>Multimorbidity***</b>			
No	51.9	48.1	29,136
Yes	26.3	73.7	4,721
<b>Functional Mobility***</b>			
ADL	24.3	75.8	2,788
IADL	32.4	67.6	7,746
<b>BMI***</b>			
Underweight	45.8	54.3	4,911
Normal Weight	49.3	50.7	15,553
Overweight	48.3	51.7	8,348
Obese	47.1	52.9	3,209
<b>Smoking***</b>			
Yes	49.2	50.8	11,612
<b>Drinking***</b>			
Yes	51.2	48.4	6,329
<b>Total</b>	<b>44.6</b>	<b>55.5</b>	<b>33,857</b>

\*\*\* significant at 0.01 level of significance

with self-rated health. Prevalence of poor health is more among muslims and those who belong to scheduled caste. Living arrangement is also found

to have a link with health perceptions, with individuals living with spouse and children reporting best health while those living alone or

with children only tend to report poorer health. Across working status, those currently working have better health outcomes compared to those who are not working. Across the monthly per capita expenditure quintiles the health status remains relatively constant.

Multimorbidity and functional limitations shows strong association with poorer health. Individuals with multimorbidity are significantly more likely to report poor health. Similarly, individuals with both ADL and IADL report higher proportion of poor health with ADL limitation showing the most severe impact on health outcomes. Other health-related factors such as nutritional status (BMI), smoking and drinking also show variations. Underweight people have the highest proportion of reporting poor self-rated health. Smokers and drinkers, somewhat counterintuitively, reported better health.

The result of the multivariate logistic regression is given in table 2. It can be interpreted that, as age increases, the odds of reporting poor self-rated health increases. The odds of reporting poor self-rated health is 1.16 times higher for the age group 50-54 and 1.17 times higher for 55-59 age group compared to those within the age group 45-59. Gender is also found to have a significant contribution in predicting poor self-rated health. The odds of reporting poor self-rated health for females are 1.14 time higher than males. Place of residence is also a significant factor in determining the health outcome of the older adults. In comparison to those living in urban areas, the people in rural area are 1.33 times more likely to report poor self-rated health. From our result it can be reported that as the level of education increases the odds of reporting poor self-rated health decreases. The likelihood of reporting poor self-rated health for those who have less than 5 years of schooling is 1.15 times higher compared to those who had no schooling. This likelihood decreases for those who have studied for more than 5 and less than 10 years (1.03) which further declines for those who have studied for more than 10 years. Marital status is found to be a statistically significant variable in predicting poor self-rated

health. Separated/Deserted/Other have the highest likelihood of reporting poor self-rated health compared to currently married. Never married, Divorced and widows also have a higher likelihood of reporting poor self-rated health. Those who belong Muslim, Christian and Other religions were 1.15, 1.31 and 1.15 times, respectively, more likely to assess their health as poor compared to follower of Hindu. The likelihood of older adults belonging to schedule caste are 1.09 times higher compared to those belonging to other social category. However, the likelihood of reporting decreases for people belonging to schedule tribe and other backward castes. Living arrangements are an important predictor of older adults' health. Those living with spouse and/or others have the higher likelihood (1.52) of reporting poor self-rated health compared to those living alone. The likelihood of reporting poor self-rated health decreased by 6 percent when the older adults live with their children. Those older adults who have worked previously but currently does not work are 1.37 times more likely to report poor self-rated health than those who are currently working. For those who have never worked the likelihood of reporting poor self-rated is 1.13 times than that of currently working older adults. Across income quintile, it is observed that the likelihood of reporting poor self-rated health decreases as the income level increases.

Across health specific variables, having multimorbidity increases the likelihood of reporting poor self-rated health by nearly 3.5 times. Those who have ADL limitations the likelihood of reporting poor self-rated health increases by 2.4 times while those having IADL limitations, the likelihood of reporting of poor self-rated health increases by 1.5 times. The older adults who are underweight are more likely (1.08 times) to report self-rated health compared to normal weight. The likelihood of reporting poor self-rated health decreases for both overweight and obese older adults by nearly 5 percent. Those older adults who smoke or drink, have a higher likelihood, 1.03 and 1.12 times, respectively, for reporting poor self-rated health.

**Table 2. Result of multivariate logistic regression of poor self-rated health among older adults across background characteristic, LASI 2017-18**

Variables	Odds Ratio	Standard Error
<b>Age (ref 45-49)</b>		
50-54	1.16***	.001
55-59	1.17***	.001
<b>Sex (ref Male)</b>		
Female	1.14***	.001
<b>Place of Residence (ref Urban)</b>		
Rural	1.33***	.001
<b>Years_of_Schooling (ref no schooling)</b>		
Less than 5 years	1.15***	.001
More than 5 but less than 10 years	1.03***	.001
10 or more years	.77***	.0
<b>Marital Status (ref Currently Married)</b>		
Widowed	1.68***	.003
Divorced	2.45***	.010
Separated/Deserted/Other	3.00***	.006
Never Married	2.88***	.007
<b>Religion (ref Hindu)</b>		
Muslim	1.15***	.001
Christian	1.31***	.001
Others	1.15***	.001
<b>Social Category (ref Others)</b>		
SC	1.09***	.000
ST	.74***	.000
OBC	.97***	.000
<b>Living Arrangements (ref Living Alone)</b>		
Living with Spouse and/or others	1.52***	.003
Living with spouse and children	1.34***	.002
Living with Children	.94***	.002
Living with Others	1.04***	.002
<b>Work Status (ref Currently Working)</b>		
Currently Not Working	1.37***	.001
Never Worked	1.13***	.001
<b>MPCE_Quintile (ref Poorest)</b>		
Poorer	1.05***	.001
Middle	1.04***	.001
Richer	.97***	.001
Richest	.93***	.001
<b>Multimorbidity (ref No)</b>		
Yes	3.51***	.002
<b>Functional Mobility</b>		
ADL (ref No)	2.40***	.001
IADL (ref No)	1.59***	.001

<b>BMI (ref Normal Weight)</b>		
Underweight	1.08***	.001
Overweight	.95***	.000
Obese	.95***	.001
<b>Risky Health Behaviour</b>		
Smoking (ref No)	1.03***	.000
Drinking (ref No)	1.12***	.001

\*\*\* significant at 0.01 level of significance

## Discussion:

Our study found out that all demographic, social and health variables are significant correlates of determining health outcomes among older adults in India. Among these, the health variables such as presence of multimorbidity and functional limitations are found to be the principal determinants of poor self-rated health outcomes among the older adults. This result conforms with the findings of previous studies by (Harrington et al., 2010; Kumar & Pradhan, 2019). It was also found in this study that, age, place of residence, marital status, religion, caste, year of education, work status, and income group had significant impact of health outcomes of the older adults. Increasing age was found to have a linear relationship with poor self-rated health. This result is relevant in context of previous studies done on elderly people (Kumar & Pradhan, 2019; Pandey & Ladusingh, 2015). Age is an important predictor of self-rated health because as age increases the possibility of individual suffering from chronic disease also increases. Ageing also leads to difficulties in physical mobility and in the ability to carry out basic ADLs independently (Sibthorpe et al., 2001).

The findings revealed that the older adults who resided in rural areas are more likely to have poor self-rated health, probably due to the disadvantageous position regarding availability and accessibility of health services. This conforms with another study conducted among older adults in India (Pandey & Ladusingh, 2015; Singh et al., 2013). It was also found out in our study that, older adults who had 10+ years of schooling are less likely to report self-rated health, which is in agreement with previous studies (Bakshi & Pathak,

2010; Kumar & Pradhan, 2019). A possible reason for such a result might be that the educated elderly are more aware of diseases, their consequences, and the utilisation of health services compared to the less educated or illiterate. The study also revealed that not married, divorced/separated and widow were more likely to report for poor self-rated health. This result is in line with the study done by Kumar and Pradhan (2018). Marital support influences health outcomes by mutually enabling access to health care, the ability to fulfil basic needs and by supporting participation in society.

An interesting result was that of the older adults belonging to the scheduled tribes. Despite being in a social and economic disadvantageous situation their likelihood to report poor self-rated health is the least. Past studies have indicated that higher self-rated health of the individuals belonging to scheduled tribes could be because of the lower expectation and acceptance of a poor health situation (Sen, 1993, 1999). We found that, elderly who lived with their spouse are more likely to report poor self-rated health. Another interesting find was that, gender was found to be a significant predictor of poor self-rated health among the older age population in India. This result is in line with a previous study done by Mishra, Sharma and Talukdar (2017). However, previous study by Kumar and Pradhan (2018) did not find gender to be a significant determinant of poor self-rated health.

This study caters to the population research gap among Indian population and provides an update on health status of the older adults and its correlates among the individuals aged 45-59 in India. It identified multiple indicators of self-rated health



and the findings are of importance for on-going prospective programs and policy. The cross-sectional nature of the data limits us to display any causal relationship between poor self-rated health and its correlates. Furthermore, there may be other factors influencing poor health outcomes such as psychological phenomenon, which this study does not consider.

### Conclusion:

This study examined the self-rated health status among older adults aged 45-59 in India and found that substantial number of them reported poor health. The study revealed a sizeable variation in poor self-rated health by socio-economic and demographic variables. Multimorbidity, IADL limitations, being underweight and risky health behaviour also were found to be strong predictor of poor self-rated health. Given the considerable proportion of poor self-rated health among older adults and the ongoing demographic transition, this study indicates the need to strengthen health care services for this age group also. As discussed, this age group has not been studied in Indian context and this study try to fill the existing gap. Catering to the needs of this age group will help the nation to benefit from the window of opportunity available to us in the form of demographic dividend.

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