

# Health disparity along the social class gradient of elderly in India

## Abstract

**Background:** Present study attempts to quantify caste-based differentiation in health among elderly individuals in India and role played by social cast the gradient on elderly health. Social classes are detrimental to the health status of the elderly in any society, especially when society is diverse, multicultural, overpopulated, and undergoing rapid unequal economic growth. Data from the Study on global aging and adult health survey (SAGE) is used for the analysis.

**Methods:** Logistic regression, adjusted and unadjusted models are carried out to assess the health disparity among social groups with and without selected background characteristics. The outcome in logistic regression analysis is often coded as 0 and 1, where 1 indicates that the outcome of interest is present, and 0 indicates that the outcome of interest is absent.

**Results:** Other backward caste experience the highest incidence of arthritis followed by other cast group and ST were found lowest, Hypertension is elevated in female and non-educated elderly. Diabetes is prevalent among higher age. Breathing was high in the SC caste, and it was positively related to increases in age while negatively associated with wealth.

**Conclusion:** The result reveals the health status among the elderly in India differs from distinct caste groups. Lower Caste groups experience marginally higher diseases due to their association with manual jobs and lower occupational status. It also shows that health care services do not significantly differ by the caste groups in India. The socio-economic condition is the most critical predictor of influencing health inequality among caste groups in elderly people.

**Keywords:** health inequality, social stratification, elderly, gender, India

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## Introduction

Globally, the number and proportion of the elderly population are increasing. The challenge in developed and developing nations is to deal with health complications of the elderly population and provide them good health and well-being. The health-related problem is acute in developed countries as a higher proportion of the population is at elder ages.<sup>1</sup> In developing countries, this issue is arising gradually with an effect of social and economic factors, as these factors are detrimental to the health status of elderly in any society, mainly when the society is diverse, multicultural, overpopulated and undergoing rapid but unequal economic growth.<sup>2</sup> Vast inequalities both between and within countries persist, in elderly health status. Amid countries, both average life expectancy has improved more in wealthy nations than in poorest.<sup>3</sup> Evidence suggests that the prevalence of ill health among individuals aged 50-59 from routine and manual social classes is higher than among older people from professional and managerial social class.<sup>4</sup> This could mean people from disadvantaged social class groups live less healthy lives as compared with professional classes.<sup>5,6</sup> The gap in the health outcome of have's, and the have-not surely are widening.

India is the second largest populated country in the world, with about 1.21 billion population.<sup>7</sup> In India, caste is one of the paramount factors to determine the socio-economic condition of individuals. In a society fractured since ages where social stratification have been

fragmented according to the occupation. Still, seventy years after Independence cast of an individual plays profound role in its social fabric. Moreover, there exists a clear divide in social and health status between an individual of higher cast and an individual destined to be in Other Backward Classes (OBC), Scheduled Caste (SC), and a person from schedule Tribe (ST).<sup>8-12</sup> Social inequalities bring inequalities in self-reported health among elderly, and it is witnessed that increase in early old age people from lower occupational grades age faster regarding a quicker deterioration in physical health compared with people from higher grades. This widening gap increases the health inequality in the caste groups primarily in the aging population.<sup>5</sup>

An estimated 15% of the world's population experience some form of disability or impairment.<sup>13</sup> People with disabilities are increasing due to rapid population growth, aging, amplification of chronic diseases, and medical advancement that preserve and prolongs life. Health inequality increases from young old (i.e., 60-70) to older old (i.e., 70-80) then to the oldest of the old population (80 and above). Socio economic differences in health status occur over the life course and are significantly experienced in the older life years.<sup>14-15</sup> The life course pathway linkin childhood experiences, occupational engagement, socioeconomic status, and their significant effects on adult health. The significance and nature of the association between childhood, socioeconomic status, and health in adulthood are similar across race/ethnicity among men.<sup>16</sup> Social stratification is unwaveringly related to the profession of individuals in India, implying differences

in morbidity condition. Several studies have illustrated existing disparities in health among racial/ethnic groups, some of these studies have examined how race/ethnicity and gender intersect or combine to affect the health of older adults in the developed countries.<sup>17</sup> The tendency of prior research to treat race/ethnicity and gender separately has potentially obscured essential differences in how health is a product of social stratification and class gradient have meticulous manifestations attached to it, restricting efforts of eliminating health disparities. Whereas, only a few existing literature explores the health situation of elderly along the social class gradients.<sup>18-19</sup>

Researchers have dealt with the question, on disparities in caste groups, in the form of a skewed distribution of wealth, education, and access to resources affect health? Globally, a growing number of studies have examined this question in an attempt to determine whether underlying socioeconomic disparities have implications on the health of the elderly. Many of these studies revealed that higher socioeconomic conditions correlated with the better health status.<sup>1,18-22</sup> Health interventions to reduce these social and spatial health inequalities are therefore necessary for the sake of not just to receive equity and reduction of the adverse impacts of social disparities, but also for the health improvement of all humans.<sup>23-26</sup> With a broad range of causes of mortality and increasing emphasis on the indicators of morbidity and disability-adjusted life years, the existence of inequality in health among elderly by caste groups brings into the need for academic investigation.<sup>27</sup>

### Need for the study

Health is the most critical factor in determining human behavior as well as a daily life activity, whereas implications health depends on individual social and economic factor. India is undergoing an epidemiological transition and experiencing the double burden of disease. Therefore addressing the issue of health status becomes imperative, especially for the older people and marginalized sections of the society whose utilization of health care facilities is limited. The study presents a framework, where we investigate the health status of the elderly by caste groups and examine diseases of the elderly by a relative risk of development by social status and their social demographic background. It is evident that the income of the households belonging to the Other Backward Classes (OBC), Schedule Caste (SC), and families from Schedule Tribe (ST) will be comparatively less than the household of General Category, resulting in the proportion of expenditure relatively low on healthcare services.<sup>28-31</sup> Congregating or widening the inequalities may increase since the time a person stops working, which leads in the change of socio-economic circumstance. However, this is catching momentum in developing countries as in the developing countries; population aging is becoming the cause of concern with the increase in life expectancy and reduction in fertility.<sup>32</sup> Disparities in elderly are persistent throughout the world. These differences are more apparent in developed countries as the pace of aging is faster than the developing countries. The manifestation of health inequalities in the elderly is multifaceted, as poor people may seem to live longer but perhaps live in ill health. Studies suggest the old and disabled including less empowered lower caste (OBC, ST, SC) population does not receive proper treatment and access to health care remains irregular than in the individuals of Upper general Cast.<sup>10,18,33</sup> The country like India is going through a demographic and epidemiological transition, experiencing the double burden of disease at older ages of life, leading to an imbalance in the health status of the elderly population.<sup>34</sup> India is predominantly a mixed economy where the distribution of resources allocates are not capitalist but one socialist front. Most of the existing literature has not considered

investigating the health of the elderly in perspective of caste group or social stratification. In India since ages, society is classified in a social hierarchy based on caste groups and religion, which dominates and regulates the social structure.<sup>35</sup> Therefore addressing the issue of health status among the elderly becomes paramount, more importantly, considering the role caste group play in India.

### Data and methods

This study analysed the data from the survey on Global Aging and Adult Health (SAGE, 2007-2008), India, 2007, conducted by the International Institute for Population Sciences (IIPS). SAGE was a global study implemented in six countries China, India, Ghana, Mexico, Russia, and South Africa. In India, SAGE was conducted in six states of Assam, Karnataka, Maharashtra, Rajasthan, Uttar Pradesh, and West Bengal. These six most elderly populated states, spread across India accounted for around 37 percent of India's population as per the 2011 census. The purpose of the SAGE survey was to collect data on a broad range of self-reported assessment of health and wellbeing. In India, multistage stratified cluster sampling design used to select the sample. Nineteen states selected based on their geographical location and level of development. These 19 states were grouped into six regions, north-central, central, east, northeast, west, and south. A composite index was used to categorize states in the different level of development. The state selected randomly such that one state selected from each region as well as from each level of development categories. The sample stratified by states and the locality (urban and rural), resulting in 12 nationally representative strata. Two-stage and three-stage sampling was adopted in rural and urban areas. It involved face to face interview with 12,198 individuals of age 18 years and above. For the present study, a sample of 6,530 individuals of age 50 and above is considered. It collected information about self-reported morbidities and health condition based on interview and health measurement and blood test. All statistical analysis was conducted using STATA 13.0. Level of significance for predicting probability is taken at 95% of confidence intervals.

### Methods

Descriptive statistics and logistic regression model has used. The dependent variable health status among the elderly by the caste groups, and it was recorded in binary form. Logistic regression models are commonly estimated by maximum likelihood function. The odds ratios which indicate the magnitude of predictor's variables on the probability of the outcome occurring. The direction of logit coefficients, odds greater than one indicate as an increased probability, while those less than one indicate that a decreased probability. Here, Logistic regression analysis is used to estimate odds ratios and their 95% confidence intervals (CIs) for depicting the role of explanatory variables differential of elderly health in India. All covariates have been categorized based on systematic literature review. Two different models have been considered to find the influence of background characteristics. Health indicators such as diseases (arthritis, physical pain, asthma, hypertension, diabetes, vision, hearing, breathing), is used as a dependent variable, to measure health status. Likewise, Caste General, (Other Backward Classes, OBC), (Schedule caste, SC), (Schedule Tribe, ST) as an independent variable in the model. This study has analyzed each disease with caste group to see the differential in health among caste groups in the model -1 while in the model -2 caste groups with background variable. It examines health status among the elderly, i.e., a sample of respondent aged 50 and above, has considered for analysis. The outcome in logistic regression analysis is often coded as 0 or 1, where 1 indicates that the outcome of interest is present, and 0 indicates that the outcome of interest is absent.

## Results

Table 1 Shows the odds ratio for diseases such as arthritis, asthma, hypertension, and diabetes among elderly population within caste groups in India. Caste groups are prominent to determine elderly health status as it is more likely to determine the socio-economic condition and health status of the elderly in India. In the first age group, OBC caste group among the elderly have lower health status than another caste in India. Arthritis among elderly in OBC category was seen to be significantly higher than in other caste groups; it is also positively correlated with age. The economic condition has come out to be a profound predictor of elderly suffering from arthritis diseases in India. Female were more likely to have arthritis than male. Asthma was high in SC caste while negatively associated with wealth in India. Female were less likely to have asthma compare to male. Hypertension was high in OBC caste group; it is positively related to age and wealth quintile in India. Hypertension is elevated in female and non-educated elderly. Diabetes is prevalent among higher age. Table 2 Illustrates the

odds ratio for the physical pain, breathing, hearing, and vision among the elderly population. The first model shows that caste is a prominent outcome variable to determine the health status of the elderly in India. The model second indicates that socio-economic condition determines the health status of the elderly by caste groups. In the first age group, OBC caste group are more likely to have lower health status than another caste group. Physical pain among the elderly was high in the upper age group and is positively correlated with the age group in India, and it is higher among educated people was high compared with non-educated. Economic condition is quite stable for elderly physical pain diseases. Female were more likely to have physical pain than male. Breathing was high in SC caste, and it was positively related to increases in age while negatively associated with wealth. Female were less likely to have asthma compare to male. The hearing was high in OBC caste group while positively related to age group and wealth quintile. Hypertension is elevated in female and non-educated elderly. The vision was in high among higher age group whereas; it is positively related to age in India.

**Table 1** Odds ratio for the Arthritis, Asthma, Hypertension, and Diabetes among elderly population within the caste groups of India, SAGE, 2007-08

Background characteristics	Arthritis		Asthma		Hypertension		Diabetes	
	Model 1	Model-2	Model -1	Model-2	Model -1	Model-2	Model -1	Model-2
<b>Caste</b>								
ST®								
SC	1.226**	1.17**	1.098**	1.032*	1.271**	1.140**	1.214**	1.003*
OBC	3.014**	2.802***	1.29***	1.281**	2.916***	1.764***	5.279***	2.78***
Other	1.216**	1.155**	1.093***	1.126**	2.036***	1.302**	2.734***	1.523**
<b>Age groups</b>								
50-59®								
60-69		1.353***		1.503***		1.225***		1.177**
70-79		1.581***		1.888***		1.741***		1.445***
80+		1.466**		1.736***		1.714***		1.068*
<b>Wealth quintile</b>								
Poorest®								
Poorer		0.928**		0.983*		1.477***		1.172*
Middle		0.991*		0.898**		2.009***		1.708**
Richer		0.969*		0.739***		2.589***		2.322***
Richest		0.786**		0.739***		2.988***		2.730***
<b>Education</b>								
Literate®								
Illiterate		1.196**		0.97**		1.511***		1.845***
<b>Sex</b>								
Male®								
Female		1.536***		0.569***		1.692***		0.939**
<b>Marital status</b>								
Married®								
Never Married		2.291**		0.73**		1.147**		1.611*
Widow		1.959*		0.848*		1.223**		1.824**

Table Continued...

Background characteristics	Arthritis		Asthma		Hypertension		Diabetes	
	Model -1	Model-2	Model -1	Model-2	Model -1	Model-2	Model -1	Model-2
<b>Residence</b>								
Urban®								
Rural		1.035**		0.837***		0.67***		0.470***

®, Reference group; Level of significance: \*\*\* p &lt;0.01; \*\* p &lt;0.05; \* p &lt;0.10

**Table 2** The odds ratio for the Physical Pain, Breathing, Hearing and Vision among the elderly population within the caste groups of India, SAGE, 2007-08

Background Characteristics	Physical pain		Breathing		Hearing		Vision	
	Model -1	Model-2	Model -1	Model-2	Model -1	Model-2	Model -1	Model-2
<b>Caste</b>								
ST®								
SC	1.466***	1.453***	1.623***	1.584***	1.036*	0.973*	1.623***	1.584***
OBC	1.722***	2.044***	1.264**	1.331**	1.243**	1.161**	1.264**	1.331**
Other	1.241**	1.45***	1.321***	1.404***	0.792**	0.760***	1.321***	1.404***
<b>Age groups</b>								
50-59®								
60-69		1.12**		1.509***		2.526***		1.509***
70-79		1.588***		2.041***		4.953***		2.041***
80+		1.515***		2.77***		8.612***		2.770***
<b>Wealth quintile</b>								
Poorest®								
Poorer		0.872*		0.995*		0.781*		0.995*
Middle		0.804***		0.965**		0.717**		0.965*
Richer		0.759***		0.813***		0.529***		0.813**
Richest		0.557***		0.799***		0.639***		0.799**
<b>Education</b>								
Literate®								
Illiterate		0.695***		0.868***		1.331***		0.868**
<b>Sex</b>								
Male®								
Female		1.776***		0.982**		1.189*		0.982*
<b>Marital status</b>								
Married®								
Never Married		1.896***		0.686*		3.603*		0.686*
Widow		1.696*		0.818**		3.560*		0.818**
<b>Residence</b>								
Urban®								
Rural		1.255***		1.263***		1.308**		1.263***

®, Reference group; Level of significance: \*\*\* p &lt;0.01; \*\* p &lt;0.05; \* p &lt;0.10

## Discussion

The cast groups in India that are generally considered disadvantaged (known as Scheduled Castes or Scheduled Tribes) have, as one would expect, substantially lower wealth than the “forward” caste groups, while the other backward classes and non-Hindus occupy positions in the middle.<sup>28</sup> Wealth inequality is an integral aspect of economic inequality among persons at a given point in time, as well as across generations. Disparities in wealth can also translate into disparities in economic security. For a substantial portion of the Indian population that is dependent on agriculture, the land is the major source of livelihood. The near consensus in these studies is that the less privileged caste groups tend to be worse off than the others on the measured indicators across the country, although there are regional differences. Health status of elderly people in India differs from distinct caste groups and by a different type of disease.<sup>35,36</sup> Other backward caste experience the highest incidence of arthritis followed by other cast group and ST were found lowest. A significant association is confirmed between age and arthritis as with the increase in age, there is an increase in the prevalence of arthritis. Whereas education is negatively associated with arthritis as findings suggested education increased among women prevalence of arthritis decreased, suggesting uneducated women are at higher risk of experiencing arthritis.

Elderly residing in rural areas experience higher asthma to urban counterpart, asthma is high among SC cast and less in OBC and other caste groups, as age increases asthma increases, its show positive association age while contrary with wealth, it is less in female and rural area.<sup>10</sup> Hypertension among the elderly is high among OBC caste and less in SC caste than other caste groups; is positively related to age and wealth. Asthma is high among illiterate and female, whereas it is low in the rural area. Physical pain is high among OBC caste; it is also high among SC caste group. It is positive with were negative with wealth relation among the elderly in India. It is low in illiterate were high in female, and among the never-married group, it is also high in the rural area. Breathing problem among elderly in India within caste group, its high among SC caste compare OBC and other caste groups in India; it is high in “70-79” age group whereas it has a negative relation with wealth among elderly in India, its low in illiterate and female but high in the rural area. The hearing problem in elderly within caste group is high among OBC caste group, after than SC and other, it is positively related to caste and negative with wealth. Wealth inequality exists in India by the caste groups.<sup>11,36</sup> It is high in illiterate, female, never married, widow, and in a rural area among elderly within caste group of India. Lower caste groups like SC and ST have a low vision problem. In the lower caste, the low vision problem increases with increase in age and decreases with higher economic status among the elderly. Low vision also differs by the place of residence, it is higher in a rural area, and illiterate, female, never married, widow. Diabetes is high in the OBC caste group rather than Other Caste. With wealth diabetes have a positive relationship as wealth increases problem increases, whereas for educational status diabetes have more in literate than illiterate, in an urban area is more diabetes than rural where male have high compared to female and married have high.

## Conclusion

Health status of elderly people in India differs from the distinct caste groups and also with the different type of disease. There is a substantial gradient of wealth with diabetes and have a positive association, where in education, diabetes, are more in literate than illiterate, the urban area is more prone to diabetes than rural. Where male has high compared to female and married, have high.

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## Conflicts of interest

The author declares there is no conflict of interest.

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