Evaluation of Poor Self Rated Health Among Older People in India from 2004 to 2014: A Decomposition Analysis

Background

Throughout most of the developed and developing countries, one of the most formidable issues has been the rapid increase in the aged population. Many major demographic trends that are rapidly changing population ageing throughout the world and Asia is no exception (1). With 1.21 billion inhabitants counted in its 2011 census (2), India is the second-most populous country in the world. Currently, the 60+ population accounts for more than 8% of India's population, translating into roughly 104 million people. By 2050, the share of the 60+ population is projected to climb 19%, or approximately 323 million people (3). The ageing process implies a higher probability of suffering from disease and disability (3). Self-Rated Health (SRH) status is a measure widely used measure in many studies as it is closely associated with the objective of health status and health care demand. It is a useful indicator of health care needs while designing programs and is highly sensitive to social factors that cause health inequalities (4). While assessing a person's health condition and the health-care demand, it is essential to take into consideration the perception of the individual about his/her health (5). SRH, one of the key determinants of general health, functionality, and mortality, especially among older adults is a complex measure that "represents a summary statement about how numerous aspects of health, both subjective and objective, are combined within the perceptual framework of the individual respondent" (6).

Previous studies have confirmed that the oldest old, poor people, and the people with low educational levels are more likely to report poor self-perceived health status (4, 7, 8). Self-perceived health is primarily a reflection of physical and medical conditions – when a set of appropriate variables such as number and duration of illness episodes, diagnosis, and functional impairment were available; socio-cultural factors including age, gender, socioeconomic status, income, the household composition which contributed only marginally to self-perceived health (9). Moreover, studies indicate that age, number of diseases, perceived family respect, neighborhood relations, and percentage of income spent on rent are some of the significant predictors of self-perceived physical health (10). One of the study shows that negative attitudes towards ageing are formed in early life, either implicitly or explicitly, are reinforced through adulthood and become internalized as one reaches old age, leading to self-stereotypes (11). The context of negative attitudes towards ageing is defined as a perspective that older age is a time of physical and mental decline (11). It is evident from various studies that the risk of mortality is higher among those whose self-perceived health status is poor in comparison to those whose self-perceived health status is good (12,13).

Poor SRH and poor social roles were identified as significant predictors for total mortality among both men and women (14). Older people who assessed their global health, self-care ability, and physical activity less favorably were more likely to experience poor health outcomes. Gender disparity, however, was observed with poor global health affecting the functional decline in men only. Self-care ability was predictive of functioning in women only, whereas it was predictive of mortality in men only (15). Gender differentials have also been stated in many studies, e.g., men have higher odds to state poor SRH in comparison to women (16-18), whereas other studies show the entirely different result, i.e., women are having higher odds to state poor SRH in comparison to their male counterpart (16-18). In the context of urban-rural differentials in SRH, it was found that SRH is higher among urban residents in comparison to their rural counterpart (18) . However, other studies confirm that rural residents are more likely to report that they are in ill health than the urban residents (22). Through the urban living status, older people acquire a good social network and active social participation,

which positively support the SRH among them. The level of SRH goes down with an increasing level of loneliness (23). Few studies have confirmed that poor SRH is significantly associated with low educational levels, low physical activity, poor mental health, and being alone (19–21).

Aims and Objectives

There is a paucity in literature in India, focusing on decadal differentials in SRH among older people. Therefore, this paper aims to find whether decadal differences in SRH can be attributed to the socio-economic context in which older people dwell. Contribution in determining SRH among older people of various socio-economic variables has been assessed in this article.

Methods

The data for the analysis have been taken from schedule 25.0 of the 60th (2004-05) and 71st round (2014-15) of the National Sample Survey (NSS) conducted by National Sample Survey Organization (NSSO), India. These rounds of survey provide data on the utilisation of the curative health care services, morbidity profile of the population, and hospitalised and non-hospitalised treatment of ailments together with the estimates of expenditure incurred for treatment of diseases. Also, data on aged persons are provided separately. A total of 383,338 individuals including 34,831 older people aged 60 and above were interviewed from 73,868 households in the 60th round (2004). Similarly; a total of 335,499 individuals including 27,245 older people aged 60 and above were interviewed from 65,932 households in 2014. All states and union territories were covered, and the households were selected using a multistage stratified sampling procedure (24,25).

The analysis part for this study is based only on the population aged 60 and above. The sample size for older people in 60th round of NSSO is 34,831 and 27,245 in the 71st round of NSSO. The current study used "own perception of the current state of health" as a measure of health status. The question has three categories, i.e., excellent/very good, good/fair, and poor. We categorised the outcome variables into two categories, i.e., "good "which includes excellent/very good and good/fair and "poor" which includes only poor. Information of various socio-economic variables is available in the survey, which is categorised based on the literature review. Diseases are grouped into two categories, i.e., Infectious and chronic, and their classification is stated in Appendix A-1 (ICD-10).

Statistical analysis

To assess the determinants of decadal differences in SRH status among the older population, firstly bivariate analysis was used to examine the extent of association between SRH and background characteristics. Secondly, to explain which factor best describes or determine SRH among older people, the logistic regression model was used. For all statistical tests, p values of <0.05 were considered as statistically significant. To access the inequality between poor and rich and concentration index was calculated and to quantify the contribution of background variables for poor-rich inequality, Wagstaff's decomposition method was employed to decompose socio-economic related inequality in reporting poor SRH among older people (26). The analysis was conducted using Stata version 13.0.

Results

Profile of the respondents

Table 1 shows the percentage distribution of demographic and socio-economic characteristics of the elderly population in India. In both the rounds of the survey, the majority of the older

population belonged to the youngest old age group (60-69). In the 60th round, there was a higher proportion of the older male population while it was vice versa for the 71st round. Although the elderly population was highly concentrated in the rural pockets of the country in both the rounds, the urban-rural difference was much higher in the 60th round (51.46) as compared to the 71st round (37.5). Most of the elderly population belonged to Hindu religion in both the surveys. Approximately 23% of the older population belonged to Sc/St in both round of the surveys. The majority of the older population were found to be illiterate in both the 60th and 71st rounds of the survey. The proportion of elderly living below the poverty line decreased from 24.37% in the 60th round to 16.29% in the 71st round. The majority of the older population reported living with their spouse in both the surveys. A smaller proportion of the elderly population reported living alone, the percentage of same declined from 5.22 in the 60th round to 4.08 in 71st round. More than 33% of the older population reported economic independence in the 60th round, which decreased to 28% in the 71st round. One in every three of the older person reported economic independence in the 60th round while only one in every four older person in 71st round reported the economic independence. With respect to regions, the majority of the older population was residing in the southern region followed by central and eastern regions in both the rounds of the survey.

Differentials in Poor SRH

Table 2 presents the results of selected socioeconomic factors with poor SRH among the older population according to the 60th and 71st rounds of the NSSO. The poor SRH among the older population was higher in the 60th round (23.65%) than in the 71st round (22.42%); the significant relative decadal difference of the same is (-5.20%) indicating the improvement in the SRH between the two periods. Poor SRH increased consistently with age and was highest in the age group 80+ in both the rounds; the significant relative decadal difference (-7.29%) in the poor SRH was found in the age group 60-69. Although, the incidents of poor SRH were more common among older population residing in the rural areas, the significant relative decadal difference is found to be higher in the urban population. The poor SRH is found to be highest among the people belonging to Islam religion as compared to people from any other religion; even the significant relative difference of -18.06 is highest in Islam population. Education was negatively associated with poor SRH outcomes among the older population in both rounds of survey. The highest significant relative decadal difference was found among older people with secondary education (-7.90%). Poor SRH was higher among older people living below the poverty line as compared to older people living among above poverty line, the relative difference of which was also found to be higher among them (-9.64%). Economic dependence was negatively associated with poor SRH among the older population in both the 60th and 71st rounds of the survey. A higher proportion of older people living without spouse reported poor SRH in both 60th (28.8%) and 71st (30.54%) round. A high proportion of poor SRH was found among the older population in all the regions of India except the western part in both the round of survey; also, the highest relative decadal difference was found for the west region (-24.94%). The result found that the older population having no disease is least likely to report poor SRH, while poor SRH was highest in the older people suffering from chronic diseases (33.8%) and other diseases (39.2%) in the 60th and 71st rounds respectively. However, the highest relative decadal difference was also observed among the older population having chronic diseases (-21.60%).

Determinants of Poor SRH

Table 3 presents the results of logistic regression, which examined the association between selected socioeconomic and demographic characteristics on SRH in two rounds of NSSO (60th and 71st). Increasing age was found to be positively and strongly associated with the poor SRH

in both the rounds while Sex, residence, caste, and MPCE turned up insignificant for the analysis for 71st round. The older population in the age group 70-79 [OR= 1.85*, p<0.05, C.I. = 1.74-1.97] and 80+ [OR= 3.34*, p= p<0.05, C.I. = 3.06-3.64] were more likely to report poor SRH compared to age group 60-69 in the 60th round. Similar results were found for the 71st round as well. The older population in the rural areas was more likely [OR= 1.25*, p= p<0.05, C.I. = 1.18-1.33] to report poor SRH than their urban counterparts in the 60th round of survey. The odds of reporting poor SRH were lower [OR= 0.93*, p<0.05, C.I. = 0.87-1] among the non-Sc/St older population as compared to the older people in Sc/St in the 60th round. The likelihood of poor SRH was higher among older Islamic people [OR= 1.31*, p<0.05, C.I. = 1.2-1.43] compared to their Hindu counterparts in both the rounds of survey. Educational attainment was positively and significantly associated with SRH among the older people in both the rounds. In the 60th round, a higher and significant likelihood of SRH was found among older people living below the poverty line [OR= 1.26*, p<0.05, C.I. = 1.18-1.35] than their respective counterparts. The older population who were fully dependent on others had a higher likelihood to report SRH in 60th [OR= 2.83*, p<0.05, C.I. = 2.63-3.05], and 71st round [OR= 2.55*, p<0.05, C.I. = 2.34-2.78] as compared to the economically independent older population. Older people living in the east, northeast, and central regions were more likely to report poor SRH in both the 60th and 71st rounds. Lastly, the odds of reporting poor SRH were found to be highest among older people having chronic diseases [OR= 2.96*, p<0.05, C.I. = 2.75-3.19] in the 60th round as compared to their respective counterparts.

Figures 1 and 2 depicts the concentration curves for the dependent variable (poor SRH among older) in India for the 60th and 71st round of NSSO. The CI will be a 45-degree line (line of equity) if an elder, irrespective of his wealth status, has the same values for poor SRH. A concentration curve that lies above the line of equity represents a situation where poor SRH is more concentrated among the "disadvantaged" population. In both rounds of NSSO, we observed that poor SRH is concentrated among economically disadvantaged older people. The value of CI for poor SRH was (-0.183) in 2004 and (-0.0177) in 2014.

Table 4 shows the contribution of predictor variables in explaining the inequality in reporting poor SRH among older people during both the time-periods. In 2004, wealth status (62.02%), economic dependence (35.31%), residential differences (29.77%), and educational status (19.85%) contributed most to economic inequalities in poor SRH among older people in India. Whereas in 2014, the scenario changed a bit, i.e., education (43.72%), economic dependence (33.57%), residential differences (30.43%), and wealth status (24.88%) contributed most in explaining the economic inequalities for reporting poor SRH among older people. Wealth status was the important factor contributing to the inequality in 2004, a decade later education was observed as an important factor contributing in the inequality in poor SRH among older people.

Discussion

The study reveals the socioeconomic factors that affect the decadal differences in poor SRH among older persons in India. The results of this study confirmed the findings from previous studies, the oldest-old age group has higher odds of stating poor SRH in both the rounds of NSSO (27). In the present study, it was confirmed that rural residents were having higher odds of reporting poor-SRH in 2004, but the same results were not visible in 2014. It has been argued that rural areas are structurally disadvantaged, including poor health infrastructure, higher unemployment rates, and population loss and lower levels of educational attainment; therefore, poor SRH is high among rural residents (28). For social and religious groups, Sc/St in 2004 and the Islamic population in 2004 and in 2014 were having a higher likelihood of stating poor SRH. The findings that Islam and Sc/St populations are more likely to report poor SRH is

consistent with other research findings (16,29,30). The relationship between poor SRH and Sc/St population discontinued in 2014, indicating the benefits of intervention programs by the government for the older person in general and Sc/St in particular (31–33).

There is a higher likelihood of reporting poor SRH among illiterates in comparison to any other educational category in both rounds of NSSO. Moreover in 2014, it was found that education contributed (43.72%) significantly towards inequality in poor SRH. Other findings also state that individuals with different education or income levels may evaluate their health differently; however, the opposite relationship was established between education and poor SRH, i.e., lower health ratings are more strongly associated with mortality for adults with higher education (34, 35). Findings from one of the studies suggests that lower health ratings are more strongly associated with mortality for adults with higher income levels which is just inverse of results in the current study which states that poor SRH is concentrated in respondents belonging to below poverty line in 2004, but that relationship was insignificant and in the opposite direction in 2014 (34). However, other studies state that poor SRH is significantly associated with poor socio-economic status and reduced income levels (36). Therefore, these statements prove that people from different socio-economic backgrounds report different self-assessed health status. A key reason why income inequality would be detrimental for people's health is that in unequal societal differences between people are larger, which might cause stress and, thus, lower levels of health (37). In a country like India, the most probable reason why economically well off older persons reports lower poor SRH is because they can spend more on health care needs, food and are stress-free in their later lives. In the analysis it was found that in 2004 wealth contributed (62.02%) in defining the inequality for poor SRH among older people. Older people who are living alone were more likely to report poor SRH in comparison to older people who do not live alone. This finding goes along with the lines of previous researches stating that emotional support from children play an essential role in maintaining physical and mental health (38,39). Social roles and responsibilities are also strongly associated with better health and lower mortality outcomes (14). It has been found in the study that an economically entirely dependent older person has a higher likelihood to state poor SRH in comparison to those who are financially independent. This finding is confirmed by previous studies arguing that economic condition seems to be the crucial factor determining the health status of the older population (16,40). In the present study, it is visible that older people belonging to north, central, east and north-east regions are more likely to report poor SRH in comparison to the southern part of India in both rounds of NSSO (the result got insignificant for north India in the year 2014). These results can be well verified with the other studies that health care infrastructure in the southern and western part of India scores well than to north, central, east, and north-east regions (41). In the case of North India, the result got insignificant in 2014 as northern India is probably witnessing the change from the last decade in terms of health care infrastructure. Morbidity is a significant predictor of poor SRH among older people in India. However, older people suffering from chronic diseases are having a higher likelihood of reporting poor SRH in comparison to older people who are not suffering from any morbid conditions. Other studies also confirm the same findings that people suffering from chronic conditions like heart disease, chronic lung problems or asthma, and diabetes were found to have a more significant impact on self-health perception (42–44).

National Policy on Senior Citizens 2011 has intervened in various ageing-related issues and to provide them with pensions, travel concessions, income tax reliefs, medical and health care benefits, etc. which will eventually help them to sustain a better standard of living (45). Another programme for health care need for ageing people is NPHCE (National Program for the Health-Care for the Elderly). The NPHCE is an articulation of the International and National commitments of the Government as envisaged under the UN Convention on the Rights of

Persons with Disabilities and National Policy on Older Persons. The Government of India adopted these in 1999 and Section 20 of "The Maintenance and Welfare of Parents and Senior Citizens Act, 2007" dealing with provisions for medical care of Senior Citizen. The Vision of the NPHCE are: (a) To provide accessible, affordable, and high-quality long-term, comprehensive and dedicated care services to an ageing population; (b) Creating a new "architecture" for Ageing; (c) To build a framework to create an enabling environment for "a Society for all Ages;" (d) To promote the concept of Active and Healthy Ageing. Other programmes like National Social Assistance Programme (1995) and National Policy on older persons (1999) have provided a social security network and started the provision of the pension scheme for older people in India (46).

Conclusion

The study examined the decadal difference in SRH among older people and found that there is 5.48% decrement in relative decadal variation (from 2004 to 2014) for poor SRH, which is also statistically significant. It also revealed that illiterates and respondents belonging to below poverty line status were more likely to report poor SRH. However, in the year 2014, the older people belonging to BPL status were having less likely to report poor SRH, but the result is statistically insignificant. North India is probably witnessing a positive change in health care infrastructure as the results are showing some hope of positive outcomes from the year 2004 to the year 2014. Chronic disease is found to be an important determinant of reporting poor SRH among older people.

Abbreviations

SRH: Self Rated Health

NSSO: National Sample Survey Organization

NPHCE: National Program for the Health-Care for the Elderly

Sc/St: Scheduled caste/ Scheduled Tribes

CI: Concentration Index

OR: Odds Ratio

UN: United Nations

ICD: International Classification of Diseases

Table 1.Sample distribution of older population by selected background characteristics, NSSO 60th and 71st round.				
	60th round		**71st round**	
Age (years)				
(youngest old) 60-69	22,722	65.23	17,580	64.53
(old-old) 70-79	9,114	26.17	7,412	27.20
(oldest-old) 80+	2,995	8.60	2,253	8.27
Sex				
Male	17,422	50.02	13,399	49.18
Female	17,409	49.98	13,846	50.82
Residence				
Urban	8,454	24.27	8,514	31.25
Rural	26,377	75.73	18,731	68.75
Caste				
Sc/st	8,369	24.03	6,326	23.22
Non Sc/st	26,453	75.97	20,919	76.78
Religion				
Hindu	29,369	84.33	22,730	83.43
Islam	3,223	9.26	2,711	9.95
Christianity	945	2.71	862	3.17
Others	1,290	3.71	942	3.46
Education				
Illiterate/No formal schooling	23,522	67.56	15,927	58.46
Primary completed	8,238	23.66	7,195	26.41
Secondary completed	1,548	4.45	1,886	6.92
Higher secondary completed	599	1.72	808	2.97
Graduate and above	907	2.61	1,428	5.24

BPL (Below Poverty Line)				
No	26,343	75.63	22,805	83.71
Yes	8,488	24.37	4,440	16.29
Living arrangement				
Alone	1,779	5.22	1,111	4.08
With spouse	19,691	57.74	16,834	61.79
Without spouse	12,634	37.05	9,300	34.14
Economic dependence				
Independent	11,630	33.98	7,707	28.30
Partially dependent	4,603	13.45	5,447	20.00
Fully dependent	17,996	52.57	14,080	51.70
Regions				
South	8,833	25.36	7,866	28.87
North	4,459	12.80	3,643	13.37
Central	8,050	23.11	5,472	20.08
East	7,021	20.16	5,554	20.39
North east	877	2.52	825	3.03
West	5,589	16.05	3,886	14.26
Disease condition				
No	25,224	72.42	19,228	70.58
Infectious	2,194	6.30	1,917	7.04
Chronic	5,263	15.11	5,127	18.82
Others	2,151	6.17	972	3.57
Total	**34,831**	**100**	**27,245**	**100**
BPL is calculated using Tendulkar committee estimates for the year 2004 and 2012				

Table 2: Bivariate association between poor SRH by decadal differential according to selected background factors.			
Background variables	**60th round**	**71st round**	

Age (years)	**(N=27,245)**	**(N=34,831)**	**Relative decadal difference (%)**
(Youngest-old) 60-69	17.57	16.29	-7.29*
(old-old) 70-79	31.65	29.26	-7.55
(oldest-old) 80+	45.81	47.74	4.21
Sex			
Male	21.52	20.05	-6.83
Female	25.78	24.71	-4.15*
Residence			
Urban	21.16	19.63	-7.23*
Rural	24.46	23.69	-3.15
Caste			
Sc/st	24.6	22.57	-8.25
Non Sc/st	23.35	22.38	-4.15*
Religion			
Hindu	22.72	21.99	-3.21*
Islam	32.45	26.59	-18.06*
Christianity	27.99	22.7	-18.90
Others	20.27	20.43	0.79
Education			
Illiterate/No formal schooling	25.78	25.91	0.50*
Primary completed	21.14	19.79	-6.39*
Secondary completed	13.42	12.36	-7.90*
Higher secondary completed	14.12	18.02	27.62
Graduate and above	14.9	12.52	-15.97
Below poverty Line (BPL)			
No	22.3	21.9	-1.79*
Yes	28.0	25.3	-9.64*
Living arrangement			

Alone	22.99	21.89	-4.78*
With spouse	20.41	17.97	-11.95
Without spouse	28.8	30.54	6.04*
Economic dependence			
Independent	13.06	12.4	-5.05*
Partially dependent	19.82	17.23	-13.07
Fully dependent	31.45	29.91	-4.90
Regions			
South	22.64	21.99	-2.87*
North	20.39	19.13	-6.18*
Central	25.52	23.94	-6.19
East	30.71	29.96	-2.44
North east	22.78	25.57	12.25*
West	17.04	12.79	-24.94*
Disease condition			
No	20.8	20.5	-1.44*
Infectious	22.1	22.5	1.81
Chronic	33.8	26.5	-21.60*
Others	32.7	39.2	19.88
Total	**23.65**	**22.42**	**-5.20***

* if P<0.05; BPL is calculated using Tendulkar committee estimates for the year 2004 and 2012; SRH: self-rated health.

Table 3. Determinants of poor SRH (SRH) among older population in India, 60th and 71st round of NSSO		
	60th round	**71st round**
Age (years)		
60-69	1.00	1.00
70-79	1.85*(1.74,1.97)	1.76*(1.65,1.88)
80+	3.34*(3.06,3.64)	3.15*(2.87,3.45)

Sex		
Male	1.00	1.00
Female	0.94(0.88,1.01)	0.96(0.9,1.03)
Residence		
Urban	1.00	1.00
Rural	1.25*(1.18,1.33)	1(0.94,1.06)
Caste		
Sc/st	1.00	1.00
Non Sc/st	0.93*(0.87,1)	0.97(0.9,1.04)
Religion		
Hindu	1.00	1.00
Islam	1.31*(1.2,1.43)	1.48*(1.36,1.62)
Christianity	1.07(0.93,1.24)	0.87(0.75,1.01)
Others	0.87(0.75,1.01)	0.82*(0.7,0.97)
Education		
Illiterate/No formal schooling	1.00	1.00
Primary completed	0.83*(0.77,0.89)	0.82*(0.76,0.88)
Secondary completed	0.76*(0.65,0.88)	0.71*(0.63,0.8)
Higher secondary completed	0.73*(0.58,0.91)	0.68*(0.56,0.81)
Graduate and above	0.72*(0.6,0.88)	0.58*(0.5,0.68)
BPL (Below Poverty Line)		
No	1.00	1.00
Yes	1.26*(1.18,1.35)	0.96(0.88,1.04)
Living arrangement		
Alone	1.00	1.00
With spouse	0.76*(0.66,0.87)	0.64*(0.53,0.78)
Without spouse	0.91(0.79,1.04)	0.8*(0.66,0.98)
Economic dependence		
Independent	1.00	1.00

Partially dependent	1.57*(1.43,1.72)	1.38*(1.26,1.53)
Fully dependent	2.83*(2.63,3.05)	2.55*(2.34,2.78)
Regions		
South	1.00	1.00
North	1.14*(1.04,1.25)	1.03(0.93,1.13)
Central	1.5*(1.39,1.63)	1.3*(1.19,1.43)
East	1.87*(1.72,2.03)	1.59*(1.45,1.74)
North east	1.16*(1.04,1.31)	1.34*(1.19,1.52)
West	0.87*(0.79,0.96)	0.62*(0.56,0.69)
Disease condition		
No	1.00	1.00
Infectious	1.77*(1.58,1.98)	1.24*(1.09,1.4)
Chronic	2.96*(2.75,3.19)	2.13*(1.97,2.29)
Others	2.5*(2.26,2.77)	2.35*(2.05,2.68)
*if p<0.05; BPL is calculated using Tendulkar committee estimates for the year 2004 and 2012; SRH: self-rated health		

Table 4. Contribution of predictor variables of older people with poor SRH based on decomposition analysis on NSSO 60th and 71st round

	60th round				**71st round**			
Variables	**Elasticity**	**CI**	**Contribution to CI**	**% contribution**	**Elasticity**	**CI**	**Contribution to CI**	**% contribution**
Age (years)	0.287	0.006*	0.0070	-13.36	0.175	0.002*	0.0016	-3.86
Sexual status	-0.009	-0.002*	0.0001	-0.19	-0.011	-0.005*	0.0002	-0.48
Residential status	0.063	-0.062*	-0.0156	29.77	0.047	-0.067*	-0.0126	30.43
Caste	-0.039	0.033*	-0.0051	9.73	0.002	0.034*	0.0002	-0.48
Religion	0.012	0.033*	0.0016	-3.05	0.001	0.030*	0.0001	-0.24

Education	-0.019	0.139*	-0.0104	19.85	-0.012	0.379*	-0.0181	43.72
Wealth status	0.012	-0.687*	-0.0325	62.02	0.003	-0.808*	-0.0103	24.88
Living arrangement	0.020	-0.011*	-0.0009	1.72	0.092	-0.011*	-0.0040	9.66
Economic dependence	0.169	-0.027*	-0.0185	35.31	0.148	-0.024*	-0.0139	33.57
Regional status	-0.005	-0.013*	0.0003	-0.57	-0.011	-0.043*	0.0018	-4.35
Infectious diseases	0.003	-0.015*	-0.0002	0.38	0.004	-0.110*	-0.0016	3.86
Chronic diseases	0.023	0.233*	0.0218	-41.60	0.017	0.223*	0.0152	-36.71
Total			**-0.0524**	**100.00**			**-0.0414**	**100.00**
CI (SRH)		**-0.0183***				**-0.0177***		
*if p<0.05; CI: concentration index; SRH: self-rated health								

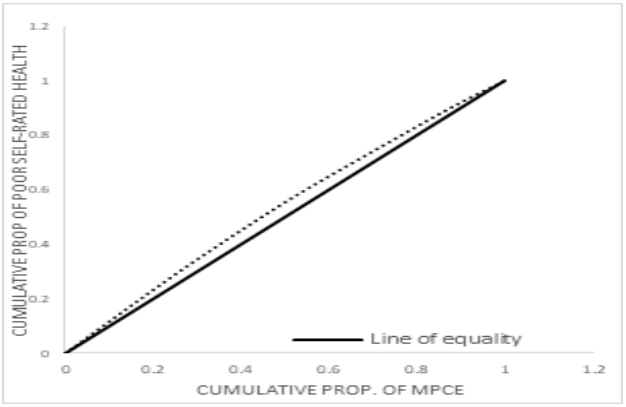

Figure 1. Concentration curve for inequality among older people reporting poor self-rated health in 2004.

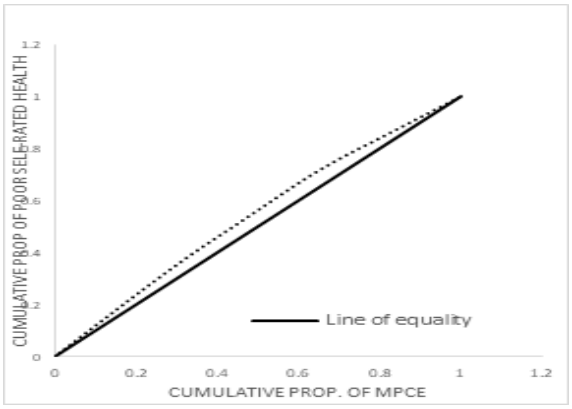

Figure 2. Concentration curve for inequality among older people reporting poor self-rated health in 2014

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Appendix A-1

Classification of chronic and infectious diseases used in this study according to ICD - 10	
Chronic diseases	***Infectious Diseases***
Cancer	Fever with loss of consciousness or altered consciousness
Anaemia	Fever with rash/ eruptive lesions
Diabetes	Fever due to DIPHTHERIA, WHOOPING COUGH
Goitre and other diseases of thyroid	All other fevers: (Includes malaria, typhoid and fevers of unknown origin, all specific fevers that do not have a confirmed diagnosis)
Obesity	TUBERCULOSIS
Psychiatric and Neurological: (Mental retardation and Mental disorder, Headache, Seizures or known epilepsy, Stroke/ hemiplegia/ sudden onset weakness or loss of speech in half of body and memory loss/confusion.	Filariasis
Cataract	Tetanus
Glaucoma	HIV/AIDS
Decreased vision (chronic)	Other sexually transmitted diseases
loss of hearing	Jaundice

CVD (Hypertension and heart diseases)	Diarrhea/ dysentery/ increased frequency of stools with or without blood and mucus in stools
Bronchial asthma/ recurrent episode of wheezing and breathlessness with or without cough over long periods or known asthma)	Worms infestation
Musculo-skeletal: (Joint or bone disease/ pain or swelling in any of the joints, or swelling or pus from the bones and back or body aches)	Skin infection: (boil, abscess, itching) and other skin disease
	Respiratory Infections: [Cough with sputum with or without fever and NOT diagnosed as TB, acute upper respiratory infections (cold, runny nose, sore throat with cough, allergic colds included)]