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Equity and Elderly Health in India: Reflections from 75th Round National Sample Survey, 2017-18, amidst the COVID-19 Pandemic

Alok Ranjan (alokranjancmc@gmail.com)
Indian Institute of Technology Madras https://orcid.org/0000-0001-9333-6520
Muraleedharan V R
Indian Institute of Technology Madras

Research

Keywords: Elderly Heath, Equity, COVID-19, India

DOI: https://doi.org/10.21203/rs.3.rs-41285/v1

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Abstract

Background: Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) outbreak, called coronavirus disease - 2019 (COVID-19), has affected more than 200 countries across the globe with a higher fatality rate in the elderly population. Historical experience shows that the pandemic disproportionately afflicts the socioeconomically disadvantaged population. Aim of the study is to highlight the vulnerability of the aged amidst the current pandemic, in the light of the recent international evidence, and what government could do to mitigate their vulnerability.

Methods: Data from the recently released (November 2019) 75 th Round National Sample Survey (NSS), which was conducted from July 2017 to June 2018, across 8077 rural villages and 6181 urban wards was used for this study. Data collected from 555115 individuals (rural: 325232; urban: 229232) included that of 42762 elderly individuals (60 years or above). Bivariate and multivariate analysis was used for the calculation.

Results: 27.7 % of elderly reported suffering from any ailment in the last 15 days, whereas 8.5% had hospitalization during the last 365 days. Hospitalization rate was higher in the urban areas (OR: 1.21), general category (OR: 1.18), richest economic quintile (OR: 1.68), and among elderly living alone (OR: 2.05), which was statistically significant. 64% of the scheduled tribe and 51.0% of the poorest income quintile elderly utilized public facilities during hospitalization. Cardiovascular ailments were major cause for hospitalization (18.1%) and outpatient visit (32.0%) in the elderly. Diabetes and hypertension together constituted 55% of outpatient visit for the elderly. 18.9% of the elderly has health insurance though chances of facing catastrophic health expenditure was high in the elderly. 6.6% of elderly female and 1.6% male live alone, and 27.5% of elderly of age 80 years or above are immobile. 50% of male and 90% of female are financially dependent on others and more so in poorer economic quintiles.

Conclusions: The vulnerability of India’s elderly increases across various equity dimensions which include the place of residence, gender, caste, marital status, economic quintile, living arrangements, surviving children, and economic dependence. The current COVID-19 pandemic poses a greater risk of social isolation among the elderly, which may lead to detrimental health impact.

Trial Registration: No applicable since the study is based on secondary data.

Background

As the current Coronavirus Disease (COVID-19) pandemic is spreading across the globe, the elderly population (60 years or above) becomes more vulnerable [1, 2]. Being elderly in itself is a fragile condition, and the current COVID-19 pandemic exposes it more. After its outbreak in December 2019 from Wuhan city of Hubei province, China, the Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2) has spread to more than 200 countries in the world [3, 4]. It has infected more than ten million population across the globe, among whom five lakh has died by the end of June 2020 [5].

Mortality data from different countries and various other studies show that the elderly population is more susceptible compared to their younger counterparts [2, 6]. However, all elderly are not equally vulnerable to COVID-19. Mortality data from South Korea shows fatality due to COVID-19 was 1.8% in the age group 60–69 years, 6.3% in 70–79 years, and 13% in the age group 80 years or above [7]. Emerging studies from the United States also show that chances contracting COVID-19 was three times higher in black counties compared to white counties, and similarly, the death rate in black counties was six times higher than white counties [8]. Even in India, spread and fatality of COVID-19 is significantly higher in slums where poor people live [9].

Prior pandemic experience and various studies have shown that the impact of the pandemic is disproportionately higher among the poor and marginalized sections of society [10]. Impact of the *Black Death* due to bubonic plague in the 14th century was significantly higher on malnourished and overworked farmers [11]. The first wave of the 1918-Spanish Flu significantly affected the poor first and studies show that in the case of any pandemic, the socioeconomically disadvantaged population should be prioritized first [12].

In this regard, it is becoming imperative to understand the current status of the elderly's health and related socioeconomic dimensions in India. This may provide valuable insights about mitigation strategies to take care of the elderly during the current COVID-19 pandemic, equitably. Recently released data (November. 2019) by the National Sample Survey (NSS) for its 75th Round, 2017-18, on social consumption related to health, gives a valuable opportunity to visit health status of elderly in the country [13]. It also gives the opportunity to see health status and social support system of the elderly across socioeconomic indicators. To the best of the author's knowledge, this is the most recent national-level unit data on the elderly before the outbreak of the COVID-19 pandemic. Aim of this study is to present the current health status of the elderly in the country across various socioeconomic categories, and to relate it with the impact of COVID-19 pandemic. Even in the elderly population, vulnerability varies across various equity dimensions viz-a-viz place of residence, gender, caste, occupation, income quintile, living arrangements, and economic dependence. This study aims to provide insights about the interplay of these dimensions of vulnerability on elderly health, which might help with future mitigation policies in the country. This paper is organized as follows:, Section II presents details of the methods used for analysis: Section III presents results related to elderly health status, access to healthcare, financial risk protection, living arrangements, economic dependence, physical immobility, perception of self-health, and changes in the health status of elderly from 2014 to 2017-18; Section IV presents a discussion on lessons learned from these finding, and Section V concludes with a few suggestion for mitigating the adverse impact of the current pandemic on the elderly in India.

Methods

Data for the current study is extracted from the 75th Round of NSS, which is a nation-wide sample survey conducted by the Government of India from July 2017 to June 2018 [13]. Data was collected from 113823 sample households and 555115 individuals (Rural: 325883; Urban: 229232; Male: 283200;

Female: 271877) from randomly selected 8077 villages and 6181 urban wards by double stage sampling. In the first stage, rural villages and urban wards were selected, and in the second stage, households were selected. This entire sample included 42762 elderly individuals.

The 75th Round NSS, 2017-18, collected data related to demographic details, household characteristics, morbidity and mortality, hospitalization in the last 365 days, health insurance coverage, out-of-pocket expenditure (OOPE), healthcare utilization, immunization coverage, maternal health, and elderly health. The current study focuses on elderly health and indicators related to that.

For analysis purpose, age of the elderly was categorized as 60–69, 70–79, and 80 years and above. Employment status was broadly categorized as self-employed, regular wage, casual labourer, and others. Economic quintile for the household was assigned based on the usual annual per capita consumption expenditure (UAPCE) for rural and urban areas separately. UAPCE does not include expenditure on health. It categorized households in five economic quintiles (1-poorest, 2-poor, 3-middle, 4-rich, 5-richest). All individuals above the age of seven were categorized under broader education category of illiterate, up to primary (8th std.), up to secondary (10th std.), and above secondary level.

All members of the household were asked if they were hospitalized in the last 365 days, which was used for calculating hospitalization rate. They were also asked if they were suffering from any long term chronic ailment or any acute ailment in the last 15 days. Both chronic and acute ailment data was used for calculating proportion of ailing person (PAP) in the last 15 days. In both situations of hospitalization and outpatient care, patients were asked as to where they sought care and how much they spent. Service providers were broadly categorized as those under the public and private sector. Public providers included Accredited Social Health Activist (ASHA) worker, Auxiliary Nurse & Midwife (ANM), Health Sub Centre (HSC), Primary Health Centre (PHC), district/ sub-district/ taluk hospitals, government hospitals, and government medical colleges. Private providers included private doctors or clinics, private hospitals, charitable/trust/ non-governmental run organizations, and informal care providers.

A total of reported 63 different ailments were broadly categorized under following 15 categories: infections, cancer, blood disease, endocrine and metabolic disease including diabetes, psychiatric and neurological, genito-urinary, eye, ear, cardio-vascular including hypertension, respiratory, gastrointestinal, skin, musculoskeletal, injuries, obstetric, and unclassified conditions.

Every individual was asked regarding coverage under any of the following health insurance schemes: 1. Publicly funded health insurance (PFHI) schemes like Rashtriya Swathya Bima Yojana (RSBY), Arogyasri, 2. Government or PSU as an employer like the Central Government Health Scheme (CGHS), 3. Employer supported insurance like Employer State Insurance Scheme (ESIS), 4. Private insurance arranged by household, and 5. Not covered at all. Every individual was also asked if their health insurance provider reimbursed their medical bill. However, the amount of money directly reimbursed by government to healthcare provider under PFHIs could not be ascertained. OOPE was calculated after adding medical expenditure and transportation charge followed by deducting reimbursement from the insurance schemes. Catastrophic health expenditure at 10% (CHE-10) and 25% (CHE-25) threshold was calculated if

the total annual health expenditure of the household was higher than 10% and 25% of UAPCE. These are the two financial risk protection indicators which are proposed in WHO SDG goals[14]. Previous studies have also adopted similar methodologies [15].

Elderly were asked regarding their living conditions which were categorized as: 1) Living with spouse and other members, 2) Living with spouse only, 3) Living without spouse but with children or relatives, 4) Living alone but not as an inmate of old age home, and 5) Living alone as an inmate of old age home. In terms of financial independence, the elderly were asked if they are totally independent, partially independent, or totally dependent on others for economic point of view. In current analysis, partially dependent or totally dependent where considered as “dependent”.

Physical mobility, which could be one of the proxy indicators of disability [16], was also inquired which they responded if they were confined to bed, confined to home, movement on the wheelchair or physically mobile. In present paper “confined to bed”, “confined to home”, “movement on wheelchair” were considered as ‘physically immobile’.

Elderly were also asked about their number of surviving children. In this paper, we categorize them as under “at least one living child” and “no child” for analysis purpose.

Elderly were asked about their self-perception of current health status, which was categorized as excellent, good, and poor. They were also asked about their perception towards own health compared to the previous year for which responses were noted as ‘much better’, ‘somewhat better’, ‘nearly the same’, ‘somewhat worse’, and ‘worse’. “Somewhat worse” and “worse” have been categorized as “worse” in the analysis.

Binary logistic regression was used to understand factors affecting hospitalization, PAP, CHE-10, CHE-25, living arrangements, and economic dependence in the elderly. In case of hospitalization, the dependent variable was the incidence of hospitalization whereas independent variables were age group, place of residence, gender, marital status, surviving children, social group (caste), education category, household occupation, economic quintile, insurance coverage, economic independence, and living arrangements. Similarly, for the incidence of PAP, the same independent variables were used like hospitalization except insurance coverage since by mandate, insurance schemes do not cover outpatient care. For CHE-10 and CHE-25, other than these independent variables, choice of provider (public or private) was used. To understand factors affecting living arrangements and economic independence in the elderly population, chances of ‘living alone’, and chances of ‘being dependent’ were dependent variables whereas independent variables were similar as in logit model of hospitalization, though economic independence and living arrangements were not the independent variables.

Findings of the 75th Round NSS, 2017-18, were also compared with 71st Round NSS, 2014, for similar indicators, to understand the change in state of elderly health from 2014 to 2017-18. Bivariate and multivariate analysis was used during analysis, and STATA 14.0 version was used.

Results

Findings of the study are organized under eight themes as follows: 1) Demographic characteristics 2) Disease burden and access to healthcare, 3) Financial hardship, 4) Living arrangements, 5) Economic dependence, 6) Physical immobility, 7) Perception towards own health, 8) Change in the health status of elderly from 2014 (71st Round NSS) to 2017-18 (75th Round NSS).

1. Demographic characteristics. The average age of the elderly population in India was 67.5 years (see Table 1). Out of total elderly population (60 years or above), 66.1% were in the age group of 60-69 years, 25.9% in (70-79), and 8% were aged 80 years or above. 67.1% of India's elderly live in rural areas. Proportion of female (50.9%) is higher than male (49.1%). In terms of the social group, 6.2% elderly belong to ST category, 17.4% SC Category, 42.3% to OBC, and 34.3% belongs to general category. More than half (54.1%) of elderly people are illiterate, and 20% belongs to those households where casual labour was the main household occupation. 4.3% of the elderly in India did not have a surviving child (see Table 1).

2. Diseases burden and access to healthcare:

Outpatient care. Proportion of elderly person (PAP) who reported ailments in the last 15 days was 27.7 per 100 out of which, population who reported chronic conditions in the last 15 days was 22.4% whereas for acute ailments it was 5.7% (see Table 2). PAP was significantly higher in population subgroup 80 years or above (36.7%), urban areas (34.0%), widowed (30.8%), general category (33.2%), regular wages (31.5%) and richest economic quintile (rural-36.8%, urban-43.8%, see Table 2) compared to their counterparts and it was statically significant (see Table 3). The logistic model also shows that chances of reporting ailment in last 15 days was 1.43 times higher in 80 years and above compared to 60-69 years, 1.40 times in higher in urban areas compared to rural areas, 1.1 times higher in male compared to female, 2.27 times higher in general category compared to ST category, 1.32 times higher in primary level educated elderly compared to illiterate, 1.16 times higher in casual labourer compared to regular wages employee, and 2.23 times higher in richest economic quintile compared to their poorest counterparts (see Table 3).

Cardiovascular conditions including hypertension (32.0%), endocrine conditions including diabetes (22.5%), musculoskeletal conditions (13.9%), infectious diseases (10.0%), and respiratory ailments (7.3%) were the top-five conditions for seeking outpatient care in the last 15 days (see Table 4). In terms of seeking care, 33.6% of the elderly went to a public provider in the last 15 days. Cancer (55.8%) and eye problems (47.5%) were the top two major ailments for which half of the elderly patients went to a public provider (see Table 4). Public healthcare utilization was higher in rural areas (39.7%), ST category (43.5%), casual labourer (50.3%), illiterate (37.7%), never married or divorced (47.6%) and poorest economic quintile (rural-45.3%, urban-41.6%) population (see Table 2).

Inpatient care. Hospitalization rate in elderly was 8.5%, and it was highest in 80 years or above (14.3%) age group. Hospitalization rate was significantly higher for male (9.5%), urban areas (10.1%), never married/divorced (8.8%), with no surviving children (21.3%), general category (10.0%), regular wages

employee (9.2%) and richest income quintile (rural-11.2%, urban-11%) population compared to their counterparts and it was statistically significant (see Table 2 and Table 3). For instance, hospitalization rate was 1.26 times higher in age group 80 years of above compared to 60-69 years, 1.21 times higher in urban areas compared to rural areas, 1.2 times higher in general category compared to ST category, 1.1 times higher in primary educated elderly compared to illiterate, 1.38 times higher in financially dependent compared to independent, 2.1 times higher in living alone compared to living with significant others, 1.3 times higher in elderly with health insurance compared to no insurance, and 1.68 times higher in the richest quintile compared to poorest quintile (see Table 3).

Cardiovascular disease (18.1%), infectious diseases (16.6%), eye ailments (8.4%), psychiatric or neurological conditions (8.2%), and injuries (7.9%) were top five reasons for hospitalization in last 365 days (see Table 4).

Out of the total hospitalization episodes, 39.8% services availed from a public provider. It was higher in rural areas (44.5%), elderly with no surviving children (46.0%), ST category (64.0%), illiterate (46.1%), and poorest income quintile (rural-51.0%, urban-47.7%, see Table 2). Share of the public sector was higher in cancer (52.8%), skin (50.3%), infectious diseases (48.3%), and blood diseases (46.8%) whereas the share of the private sector was higher in most of the other conditions. For instance, 72.2% of genito-urinary, 63.2% of psychiatric and neurological conditions, and 63.1% of injury patient went to the private sector for hospitalization (see Table 4).

3. Financial risk protection

Publically funded health insurance (PFHI) coverage and provisioning of tax based subsidized public provisioning are two major strategies used by the government for providing financial risk protection in India [17].

Health Insurance. Overall insurance coverage in the elderly population of India was 18.9%, whereas PFHIs covered 14.3% population. PFHIs only cover inpatient care in India, whereas CGHS (2.1%) and ESIS (0.7%) also cover outpatient care, although to a lesser extent. Private insurance (1.8%) also provided coverage, but for inpatient care alone [13]. PFHI coverage was higher in rural areas (16.6%), ST category (20.7%), illiterate (16.6%), casual labourer (18.2%), and poorest rural quintile (12.8%) in India. Insurance coverage in urban areas was more equitable compared to rural areas, since PFHI coverage was higher in poorer quintile compared to richer quintile in urban elderly. In the rural areas, PFHI coverage was higher in top two quintiles compared to the bottom two quintiles (see Table 5).

Outpatient care. OOPE under public sector for outpatient care was Rs. 390 per visit whereas under private sector it was Rs. 852 (see Table 5). OOPE was significantly higher in 80 years or above age group (public: 430, private: 1039). OOPE was almost the same under rural and urban India. OOPE was higher for male compared to the female gender in the public sector, whereas under the private sector it was nearly the same. OOPE was higher in ST category population compared to general category population in the public and private sector. The public sector was more equitable compared to the private sector. For instance,

under public sector, OOPE was Rs. 371 for the poorest income quintile against 564 in the richest quintile. On the other hand, under the private sector, OOPE was Rs. 995 for poorest quintile and Rs. 916 for the richest quintile.

Inpatient care. Average OOPE was Rs. 6209 under public sector and Rs. 38709 under private sector. OOPE was significantly higher for male, urban areas, never married or divorced, elderly without children, ST category, above secondary literate, and richest quintiles compared to their counterparts (lower quintiles). For instance, OOPE for poorest rural quintile was Rs. 5084 in public and Rs. 19410 in private provider whereas it was Rs. 7949 and Rs. 39683 in the richest rural quintile, respectively (see Table 5).

CHE-10 and CHE-25 were calculated to understand the impact of OOPE on the households. Out of total households who went for hospitalization in the last 365 days, 23.2% faced CHE-10 in public whereas 64.9% faced under private sector. Similarly, CHE-25 was 9.1% under public and 37.0% under private sector. CHE-10 and CHE-25 was higher among 60-69 years age group, rural areas, male gender, never-married individuals, ST category, casual labourer, and poorest income quintile compared to their counterparts (see Table 5). Chances of facing CHE-10 and CHE-25 was statistically higher for rural areas, male gender, elderly without surviving children, poorest quintile, non-insured population, private provider and elderly living alone. For instance, chances to facing CHE-10, and CHE-25 was 2.38 and 2.29 times higher in elderly who were living alone compared to elderly living with spouse or another family member (see Table 3). Similarly, chances of facing CHE-10 and CHE-25 was 8.17 and 7.5 times higher, respectively, under the private sector compared to the public sector.

4. Living arrangements:

In India, 4.2% of the elderly population was living alone, whereas 14.1% of the elderly were living with spouse only (see table 6). 50.3% of the elderly lived with spouse and other members whereas 31.5% elderly were living without a spouse but with children or relatives. Population living alone was higher in rural areas (4.4%), female gender (6.6%), never married or divorced individuals (22.2%), elderly without any surviving child (16.1%), illiterate population (5.0%), and richest income quintile (rural-7.0%, urban-6.5%). Also, the population living with their spouse were higher in top two income quintiles compared to the bottom two quintiles. Chances of living alone was higher in 60-69 years age group, rural areas (OR: 1.35), female (OR: 1.24), widowed (OR: 2.4), general category (OR: 1.45), and richest income quintile (OR: 1.87), and it was statistically significant (see Table 3).

5. Economic dependence

47% of elderly in India were wholly dependent on others financially, whereas 30.1% were independent, and 22.9% were partially dependent (see table 6). In other words, 70% of India's elderly were, partially or entirely, dependent on others. Complete financial dependence was higher in 80 years or above age group (70.8%), female (67.1%), widowed (62.8%), illiterate (55.5%), and poorer quintiles. Chances of being economically dependent were higher in 80 years or above (OR: 3.36), female (OR: 9.5), general category

population (OR: 1.20), elderly not living alone, and poorer quintiles and it was statistically significant (see Table 3).

6. Physical immobility:

Physical mobility is one of the proxy indicators for locomotor disability. In India, 7.6% of elderly were either completely (bedridden) or partially immobile (on a wheelchair or restricted within the home). It was considerably high in 80 years above group (27.5%), female gender (8.9%), widowed (11.9%), illiterate population (8.7%), and poorer income quintiles. However, immobility increases steeply for the richest quintile (rural-8.3%, urban- 9.5%) compared to other quintiles (see Table 6).

7. Perception of self-health

In India, one in five elderly (19.6%) felt their current health was poor and a similar proportion felt (21.0%) that their health condition had deteriorated compared to the previous year (see table 6). Perception of health being poor was higher in the 80 years or above age group, rural areas (21.4%) and widowed elderly (26%). Perception towards the current state of health across income quintiles was mixed. However, the proportion of elderly who felt that their health got deteriorated compared to the previous year was considerably higher in poorest urban quintile (20.4%) compared to richer quintiles (see Table 6).

8. Change in the health status of the elderly in NSS 75th Round, 2017-18, compared to NSS 71st Round, 2014

Hospitalization rate among elderly decreased from 10.9% in 2014 to 8.5% in 2017-18 (see Table 7). Also, PAP fell from 30.3 in 2014 to 27.7 in 2017-18. Share of the public sector in outpatient care increased from 28.3% in 2014, to 33.6% in 2017-18, whereas its share in inpatient care it increased from 35.9% to 39.0%. OOPE under public sector decreased from Rs. 547 (in 2014) to Rs. 390 (in 2017-18) for per outpatient visit and from Rs. 7177 to Rs 6209 for per hospitalization visit. On the other hand OOPE under private sector increased from Rs. 802 to Rs 852 per outpatient visit and Rs. 31,875 to Rs. 38,709 per hospitalization visit (see table 7).

Proportion of elderly population living alone almost remains the same, whereas proportion of the elderly population being dependent on others decreased marginally from 71.7% (in 2014) to 69.7% (in 2017-18). Self-perception of having poor health decreased from 22.4% (in 2014) to 19.6% (2017-18). Similarly, elderly population who felt their health has deteriorated compared to last year dropped from 25%, in 2014, to 21%, 2017-18 (see Table 7).

Discussion

Here we discuss the extent to which the elderly population is vulnerable in the light of the emerging international literature and evidence.

Disease burden in the elderly population (PAP: 27.7%, hospitalization rate: 8.5%- see Table 2) is disproportionately higher compared to the population below the age of 60 years (PAP: 5.9%, hospitalization rate: 2.4%) [13]. Self-reported hospitalization rate and PAP was significantly higher in upper socioeconomic population compared to the lower socioeconomic population since perceived healthcare needs are higher in upper socioeconomic population, which Amartya Sen called 'positional objectivity'[18, 19]. Various studies have shown that poor and marginalized section of society has a higher burden of non-communicable diseases and chronic conditions [20]. National Survey done in China shows that only 37% of diabetic people knew that they had diabetes, and only 32% were on treatment. This proportion was higher in socioeconomically disadvantaged population subgroup [21, 22]. Similarly, a study done in the Chhattisgarh state of India shows that only 24% of confirmed hypertensive individuals knew about their status, and of this, only 19.5% were taking treatment for the same. This unperceived unmet healthcare need was higher in the socioeconomically disadvantaged community [19]. In current COVID-19 pandemic, studies from China, Italy, Spain, and the United States have shown that NCD patient are at higher risk of mortality due to COVID-19 [23–25]. In the elderly population, these comorbid conditions further aggravate the COVID-19 condition and increase mortality [26].

In India, one-third of the elderly went to public healthcare facilities (hospitalization: 39.8%, outpatient care: 33.6% -Table 2), whereas remaining two-third went to private healthcare facilities. Often, elderly patients require lifelong treatment, curative and rehabilitative, for their chronic conditions. These conditions require regular follow-up, which includes doctor's consultation, continued medication, and diagnostic tests. India's healthcare systems, both public and private, lack this continuity of care, which leads to poor quality of care for the elderly, and it has its detrimental effects on the elderly's health [27]. Rehabilitative care is almost absent in India's public health system and in some urban areas where private sector provides this care is prohibitively costly, which poor and middle income elderly cannot afford [28]. All these may lead to unnecessary suffering, poor quality of life, and mortality for the elderly, which could be prevented.

In the current COVID-19 pandemic, the public healthcare system has been overstretched in handling the avalanche of COVID-19 patients. It has seriously disrupted provision of regular services at public healthcare facilities which include immunization, child and maternal health, dialysis services, emergency surgeries, and general outpatient care [29]. Considering the high disease burden in elderly, unmet healthcare needs is going to be very high, which will have its detrimental effect, and it will increase the mortality in the coming years. For instance, a study done by Stop TB Partnership shows that for every month of lockdown in India, there will be additional 232665 TB cases and 71,290 deaths in the period of 2020–2025 [30]. Public facilities are major service providers for the poor and marginalized elderly in society. For instance, 64% of ST, 54% of the casual labourer, and 51% of rural poorest elderly took inpatient care under the public facility in 2017-18 (see Table 2).

Private sector, which provides two-thirds of care for the elderly, has not been able to respond adequately in the country [31, 32]. A significant proportion of private providers has either stopped providing care due to fear of the spread of the diseases or they have started charging exorbitantly high which cannot be

afforded by the poor and middle-class person of the society [33, 34]. Ultimately burden of the care provisioning falls to underfunded public facilities in India.

Availability of regular drugs, related to chronic conditions is a problem due to logistic issues associated with production and transportation after the nation-wide lockdown [35]. Also, a considerable proportion of elderly people in remote and rural areas purchase these drugs from the local pharmacy or via informal care provider, which has now been affected [36, 37]. As part of the latest controversy on the use of hydroxychloroquine drug for covid-19 patients, this drug became unavailable for rheumatic patients, which is a common ailment in the elderly population in India and across the world [38, 39]. Public health facilities, where these drugs are provided free of cost to patients (who are largely poor), reported shortage of regular NCD drugs [40]. All these aspects are certainly increasing unmet healthcare needs in the society and especially for the elderly.

Elderly face greater risk of financial hardships due to chronic nature of ailment and comorbidities, which require long term care. In India, OOPE was Rs. 390 under public and Rs. 852 under private sector for per outpatient visit whereas it was Rs. 6209 and Rs. 38709 for inpatient care, respectively, for elderly. It was considerably higher and led to higher catastrophic health expenditure for lower socioeconomic households. Roll out of PFHIs, recently the Pradhan Mantri Jan Arogya Yojana (PMJAY) in 2018, was a significant health policy initiative by Government of India in recent years. However, in the current scenario where most of the private hospitals are closed or have halted their service provisioning, these PFHIs would not be able to provide adequate financial protection for the elderly. In many situations, private insurance companies have refused reimbursement for COVID-19 related hospitalization [41]. For instance, in one case, the patient was charged Rs.20 lakhs (USD 26780) for COVID-19 related hospitalization in Hyderabad [42]. Similar stories have come from many other cities of India, and undoubtedly this is going to hurt more the poor and middle class elderly.

Another dimension of financial hardship for the elderly comes from the fact that 70% are partially or wholly dependent on others financially (see Table 6). It is even higher for those in the lower socioeconomic groups. For instance, 50% of elderly males and 90% of females are dependent on other family members for financial support. In rural areas, elderly parents are dependent on their children who work as a migrant labourer in urban settings. In the current crisis with lockdown, the unemployed, migrants from urban areas to rural areas, would find it difficult to send money back home to their elderly dependent parents [43]. One of the direct impacts of the current pandemic for the elderly could be starvation. For instance, study done by Pradhan, shows that 50% of India's rural households are eating less compared to pre-COVID-19 outbreak [44]. Studies across the world also fear that food insecurity, hunger, and malnutrition could be one of the worst outcomes of the pandemic [45]. Impact of this will be higher on the elderly and more so on the poorer section of the society.

In terms of social welfare schemes, central and state governments have announced various measures for delivering free food grains and direct transfer of pension for the elderly people [46]. However, there is considerable variation in old age pension and the proportion of beneficiaries in different states of India.

Central government contribution in old age pension is Rs. 200 while state government contribution varies in different states. The highest state government contribution is from Puducherry (Rs. 1800) followed by Haryana (Rs. 1600) whereas states like Arunachal Pradesh, Assam, Karnataka and North- Eastern States do not contribute at all. Also, elderly pension beneficiaries vary from 1% in Goa to 69.8% in Rajasthan. There are only six states in India who have a share of old-age pension beneficiaries more than 50% of the total older population whereas 14 states have beneficiaries less than a quarter of the eligible elderly [47]. At all India level, only 29.6% of the elderly receive an old-age pension of the total older population. It is important to note that mandate for the old-age pension is for all irrespective of being from APL or BPL families. These figures show that old-age pension, one of the social care policies, is highly inadequate and leaves out a large section of the elderly population in India. Unfortunately, current COVID-19 situation is exposing the financial vulnerability of elderly population more than ever. It is evident that in coming days the economy is going to face a crisis and it will disproportionately affect the elderly poor and vulnerable population [48].

In current COVID-19 pandemic, physical/social distancing measures (restrictive movement, curfew, lockdown, transportation restrictions etc.) are considered to be one of the most important strategies, apart from tracing, testing and isolating, across the globe [49]. But this physical/ social distancing comes with high social and economic cost across nations, and more so for developing economies like India [48]. Physical/social distancing has considerably increased social isolation and more so for the elderly population, which is the most disadvantaged in the current pandemic [50]. Studies have established that social isolation increases depression, suicidality, and a higher chance of increased inflammatory response in the elderly [51, 52]. This will also exacerbate the vulnerability of those elderly who are already suffering from psychiatric or neurological conditions (8.2% of total hospitalization in the last 365 days and 4.4% of PAP in last 15 days). For instance, recent studies published post-COVID-19 outbreak has shown that this pandemic has considerably increased the vulnerability of demented patients and their caregivers across the world [53, 54]. One of the suggestions which have been given to elderly by Ministry of Health and Family Welfare (MoHFW), Government of India [55], and Centre for Diseases Control and Prevention (CDC), Atlanta, United States [56], is to be in contacted with significant others in current COVID-19 outbreak, through mobile phone and video call. However, a significant proportion of the elderly population finds it difficult to operate a mobile phone which is one of the instrumental activities of daily living (IADL) [57]. In India, 4.2% (50 lakhs) of elderly live alone, and it was more so for women (6.6%), never married elderly (22.2%), elderly without children (16.1%) and illiterate (5.0%).

In the current pandemic, the situation is not safe for elderly to visit the hospital for routine check-up and continuity of care since it increases the risk of contracting COVID − 19 through hospital-acquired infections (nosocomial). In recent days MoHFW has given guidelines for telemedicine-based consultation [58] which is a welcome move. However, it will be a barrier for the illiterate and poor elderly who do not have access to these technologies, or they cannot operate. For instance 54% (see Table 1) of elderly, who cannot use these modalities, faces greater vulnerability to cope.

In India, 7.6% elderly (one crore individuals) population are immobile, and it is even more so among poorest (rural: 8.4%, urban: 8.5%), illiterate (8.7%), and widowed (11.3%) elderly. Often, they are taken care of by a family member; care provision through a hired provider is rare. In current social distancing measures, it has adversely impacted the caregiving for these elderly. Studies also show informal or unpaid caregiving has been associated with an elevated level of depression and anxiety, higher use of psychoactive medication, worst self-reported physical health, compromised immune function, and increased risk of early death in caregiver providers of elderly [59].

In 75th Round NSS, 2017-18, 20% of elderly perceived that their current state of health was “poor” and an equal proportion felt that their health had been deteriorated compared to the previous year. It was even higher in poorest (20.4%) urban quintile compared to the richest quintile (15.5%). It is one of the important indicators of quality of life and predictors of life expectancy [60]. Uncertainty related to the pandemic is likely to increase the anxiety and deterioration in the quality of life in the elderly population [51, 61].

Finally, this unprecedented situation of COVID-19 draws our attention towards the need for strengthening public healthcare facilities in the country. With all its inadequacies and inefficiencies, it is only the public healthcare system which is largely managing the pandemic across the country. COVID-19 is a wake-up call for greater investment in public health facilities which include strengthening public infrastructure, skill building for health professionals, strengthening diseases surveillance system, improving quality of care in public healthcare facilities, and better continuity of care between primary and tertiary care. The idea of “Health and Wellness Centre (HWCs)” under Ayushman Bharat is a welcome decision since it proposes to provide comprehensive primary healthcare at health sub-centre (HSC), or nearer to home. The elderly population and poor will be the major beneficiaries of this scheme since they bear the greater diseases burden. Current COVID-19 pandemic shows the need of implementing the HWCs scheme as envisaged in the policy document is more than ever [62].

One of the possible limitations of the study could be the fact that it uses 2017-18 data and not the real-time, post COVID-19 outbreak, data. Real-time data has a greater possibility of capturing the human response to pandemic more accurately. However, considering the rapid spread of COVID-19 pandemic, and nation-wide lockdown, this is the latest national-level data which country has, and its insights can be used while formulating the mitigation strategies.

Conclusions

This section concludes with the learning points from across other regions and countries, and offer some suggestions to help mitigate the vulnerability of the elderly during and after the pandemic.

1. Maintaining the health record of all elderly in the community is the most important strategy to mitigate the impact of the current pandemic [63]. These records include medication history, doctor’s referral and phone number if possible, and contact details of significant others. Importance of maintaining health records of the entire population at health centres (HSC/PHC) could be felt so critical ever than before. Maintaining these records will help to gauge the healthcare needs (mostly

medications for chronic conditions) of the elderly population in the community. This will help in delivering those drugs at the doorstep of the elderly and reducing the chance of contracting COVID-19.

2. At these uncertain times, there is a greater need for community participation in helping the elderly so that they do not go through social isolation and anxiety[64]. At the governance level, we need more decentralized planning where every village and district have different capacity to handle the community. Government of India has taken initiatives in this regard. Kerala has done relatively better than other states which need to be learnt quickly by other states [65, 66].
3. There is a circulation of fake news which increases the fear and panic in the society. Health literacy is even more critical where more than 50% of the elderly in India are illiterate. Community members and grassroots health workers can help in increasing health literacy about COVID-19 and how to lead the day to day life with various mitigation strategies.
4. There is a need for greater connectedness with the elderly through various networks like a phone call and other live chats. Other family members and neighbours might help older adults in getting connected with their significant others by helping them to use advanced communication modalities. Often, the elderly live alone, and their social circle considerably lie outside the home, like community gatherings, parks, elderly exercise clubs, and places of worship. In current pandemic and lockdown, the elderly have been restricted inside the house and lose their social network to a great extent. Mainstream media such as television and radio can play an important role in reducing anxiety and social isolation [67].
5. Setting up of call centres for counselling and support for the elderly population could be very helpful. Prior research has shown that call based cognitive behaviour therapy (CBT) reduces the stress and anxiety in the elderly and improves the quality of life [68]. In the current scenario where finding reliable information is often difficult, call based counselling could help in giving correct information like what is the status of the pandemic and how to manage the day to day schedule, and existing medication regime.
6. There is no alternative to maintaining a good daily schedule, which includes a proper diet, exercise, and sleep. Research shows these small steps help in improving the physical health and immunity and reducing the stress [69, 70].
7. It is also time to prepare caregivers and family members for end of life care (palliative care) for critically ill elderly patients. The elderly prefer to have the end of life care at the home setting rather than on a hospital bed and ventilators [71, 72].

Abbreviations

CHE
Catastrophic health expenditure
CHE-10
Proportion of households in a population who face catastrophic health expenditure computed using the threshold of 10% of usual annual consumption expenditure

CHE-25
Proportion of households in a population who face catastrophic health expenditure computed using the threshold of 25% of usual annual consumption expenditure.
HSC
Health Sub Centre
HWC
Health and Wellness Centre
NSS
National sample survey
NSSO
National sample survey office
OOPE
Out-of-pocket expenditure
PFHI
Public Funded Health Insurance
PHC
Primary Health Centre
UAPCE
Usual annual per capita expenditure
UMPCE
Usual monthly per capita expenditure

Declarations

Ethics approval and consent to participate: The data analysed for this article are from the National Sample Survey, 75th Round, which contains anonymised data in the public domain (online available). The researchers had no access to personal identifiable data. The survey is undertaken by the National Sample Survey Office (NSSO) of the Ministry of Statistics and Programme Implementation of the Government of India. Data available in public domain are approved for use for research purpose by Ministry of Statistics and Programme Implementation, Government of India [13].

Consent for publication: Not Applicable.

Availability of data and materials: The present study is based on India's National Sample Survey, 2017-18, which is freely available in the public domain (http://www.mospi.gov.in/unit-level-data-report-nss-75th-round-july-2017-june-2018-schedule-250social-consumption-health) [13].

Competing interests: The author declares there was competing interest.

Funding: None.

Author's contributions: RA and VRM contributed to the study design, to the interpretation of results, and writing the manuscript. RA analyzed the data and VRM verified the results. Both authors read and approved the final version of the manuscript.

Acknowledgements: Not applicable.

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Tables

Table 1: Demographic and Socio-economic characteristics of sample elderly population in India

	India	Sample size (N)
Mean Age (years)	67.5	42762
Age group (years)		
60-69	66.1	27769
70-79	25.9	11235
80 and above	8.0	3758
Place of Residence		
Rural	67.1	23599
Urban	32.9	19163
Gender		
Male	49.1	21902
Female	50.9	20858
Marital Status		
Never Married/ divorced/ separated	0.9	395
Currently married	64.7	29324
Widowed	34.4	13043
Surviving Children		
At least one surviving child	95.7	41409
No child	4.3	1353
Social Groups		
ST	6.2	3913
SC	17.4	6133
OBC	42.3	16519
General	34.3	16197
Education		
Illiterate	54.1	20194
Up to primary	21.1	9375
Up to secondary	14.3	7752
Above Secondary	10.5	5441
Household occupation		
Self employed	48.1	20986
Regular Wages	15.5	8536
Casual Labourer	20.0	6709
Others	16.5	6531
Economic quintile-Rural		
Poorest	19.1	3773
Poor	19.0	3945
Middle	21.0	4651
Rich	19.5	4949
Richest	21.3	6281
Economic quintile-Urban		
Poorest	21.7	4776
Poor	18.0	3614
Middle	20.9	3696
Rich	22.0	3537
Richest	17.3	3540

Source: Authors' computation from unit records of NSSO 75th Round 2017-18

Table 2: Disease burden and access to healthcare in elderly population of India

	Hospitalization (in %)		Out-patient care (in %)			
	Hospitalization rate	Share of hospitalization under public sector	Proportion of population reporting chronic condition	Proportion of population reporting ailment in last 15 days	PAP in last 15 days	Share of PAP under public sector
	8.5	39.8	22.4	5.7	27.7	33.6
up (years)						
60-69	7.1	40.4	20.3	5.2	25.1	34.0
70-79	10.1	40.8	25.3	6.8	31.7	33.2
80 and above	14.3	35.5	31.2	6.8	36.7	32.2
Residence						
Rural	7.7	44.5	19.0	6.0	24.6	39.7
Urban	10.1	32.7	29.5	5.2	34.0	25.5
Male	9.5	40.3	22.2	5.8	27.5	33.5
Female	7.5	39.3	22.6	5.7	27.9	33.7
Status						
Never Married/ divorced/	8.8	41.8	23.1	2.2	25.0	47.6
Currently married	7.8	38.1	21.2	5.3	26.1	32.1
Widowed	7.7	40.4	24.8	6.5	30.8	35.7
ıg Children						
t least one ıg child	7.8	38.9	22.5	5.8	27.9	33.5
No child	21.3	46.0	19.9	4.5	24.2	37.0
Groups						
ST	5.5	64.0	10.6	7.3	17.8	43.5
SC	7.5	53.2	18.4	6.5	24.7	38.6
OBC	8.2	38.4	20.9	5.6	26.0	42.2
General	10.0	33.8	28.5	5.3	33.2	22.7
on						
Illiterate	6.1	46.1	17.8	5.9	23.4	37.7
Up to primary	10.3	42.8	26.5	6.8	32.6	41.2
Up to secondary	9.7	29.1	30.4	4.9	34.5	26.7
Above Secondary	8.0	17.4	27.5	3.7	30.8	15.3
old occupation						
Self employed	7.1	36.5	20.1	6.0	25.8	31.0
Regular Wages	9.2	37.4	25.7	6.2	31.5	27.1
Casual Labourer	6.5	53.8	18.6	5.8	24.0	50.3
ic quintile-						
Poorest	5.0	51.0	9.6	7.3	16.7	45.3
Poor	5.0	52.2	15.8	5.9	21.5	34.9

Middle	6.7	47.1	15.6	6.2	21.6	39.1
Rich	8.3	44.3	20.0	5.6	25.3	39.4
Richest	11.2	37.7	32.7	5.1	36.8	40.5
ic quintile-						
Poorest	9.7	47.7	22.5	4.7	26.7	41.6
Poor	9.7	41.6	28.4	3.4	31.4	31.5
Middle	9.7	35.1	27.3	8.3	35.1	27.1
Rich	10.1	26.4	30.8	4.8	34.7	22.5
Richest	11.0	14.4	40.2	4.3	43.8	12.5

Source: Authors' computation from unit records of NSSO 75th Round 2017-18

Table 3: Factors affecting hospitalization, PAP, CHE-10/25, living arrangements and economic independence in India's elderly

	Reporting of hospitalization	Reporting of PAP	CHE-10	CHE-25	Living alone	Economically dependent
ears, ref:60-69)						
)-79	1.28 (1.22-1.35)*	1.23 (1.17-1.29)*	1.05 (0.95-1.16)	1.09(0.98-1.2)	0.62 (0.51-0.76)*	1.88 (1.77-1.99)*
) and above	1.26 (1.17-1.36)*	1.43 (1.33-1.55)*	1.06 (0.91-1.23)	1.03 (0.88-1.22)	0.33 (0.25-0.45)*	3.36 (3.02-3.74)*
dence (ref: rural)						
rban	1.21(1.15-1.28)*	1.40 (1.33-1.47)*	0.51 (0.45-0.56)*	0.53(0.47-0.59)*	0.74 (0.60-0.91)**	0.90 (0.84-0.95)
nale)						
emale	0.64 (0.60-0.67)*	0.93 (0.89-0.98)*	0.85 (0.76-0.95)**	0.83 (0.74-0.94)**	1.24 (1.00-1.54)**	9.5 (8.90-10.13)*
s (ref: never married)						
urrently married	0.92(0.72-1.17)	0.94 (0.73-1.20)	1.65 (1.5-2.59)**	1.52(0.92-2.51)	0.01(0.01-0.03)*	0.44 (0.33-0.57)*
idowed	1.17(0.92-1.49)	1.08 (0.85-1.39)	1.30 (0.82-2.05)	1.26(0.75-2.09)	2.4 (1.54-3.98)*	0.61 (0.46-0.80)*
ldren (ref: no child)						
least one child	0.97(0.85-1.10)	1.29 (1.12-1.48)*	0.71 (0.56-0.90)**	0.77(0.60-0.99)**	0.32 (0.24-0.45)*	2.21 (1.91-2.56)*
(ref: ST)						
C	1.09(0.99-1.20)	1.97 (1.76-2.19)*	1.33 (1.08-1.64)**	1.54(1.18-1.99)**	1.58(1.07-2.34)**	1.04 (0.94-1.15)*
BC	1.16(1.07-1.26)*	2.02 (1.83-2.22)*	1.44 (1.20-1.73)*	1.67(1.32-2.11)*	1.36(0.96-1.94)	1.22 (1.12-1.34)*
eneral	1.18 (1.08-1.29)*	2.27(2.06-2.51)*	1.39 (1.16-1.68)*	1.58(1.25-2.00)*	1.45 (1.01-2.08)*	1.20 (1.09-1.32)*
f: illiterate)						
p to primary	1.10 (1.04-1.17)*	1.32 (1.25-1.40)*	1.17 (1.04-1.31)**	1.25(1.09-1.42)**	0.76 (0.60-0.97)**	0.86 (0.80-0.92)*
p to secondary	1.01(0.94-1.08)	1.19 (1.11-1.27)*	1.36(1.19-1.56)*	1.47(1.27-1.70)*	0.32 (0.23-0.44)*	0.55 (0.51-0.59)*
bove Secondary	0.94(0.86-1.02)	1.01 (0.93-1.10)	1.43(1.22-1.69)*	1.56(1.31-1.86)*	0.31 (0.22-0.44)*	0.27 (0.24-0.29)*
cupation (ref: self-						
egular Wages	1.00(0.94-1.06)	1.05 (0.99-1.11)	1.02(0.90-1.15)	0.94(0.82-1.08)	0.40 (0.22-0.72)**	1.67 (1.55-1.70)*
asual Labourer	1.01 (0.5-1.09)	1.16 (1.08-1.24)*	0.99 (0.86-1.14)	1.14 (0.97-1.33)*	2.45 (1.79-3.35)*	1.14 (0.82-0.95)
ntile (ref: poorest)						
oor	1.1 (1.02-1.19)**	1.26 (1.17-1.37)*	0.62 (0.53-0.73)*	0.62 (0.52-0.74)*	0.62 (0.44-0.87)**	0.94(0.86-1.02)
iddle	1.31 (1.21-1.41)*	1.50 (1.39-1.61)*	0.55 (0.47-0.64)*	0.58(0.49-0.68)*	0.89 (0.66-1.21)	0.88(0.81-0.95)**
ch	1.44 (1.33-1.55)*	1.58 (1.46-1.70)*	0.46 (0.40-0.54)*	0.50(0.43-0.59)*	1.37 (1.02-1.82)**	0.79 (0.73-0.86)*
chest	1.68(1.56-1.81)*	2.23 (2.07-2.41)*	0.35 (0.30-0.41)*	0.40(0.34-0.47)*	1.87 (1.41-2.47)*	0.70 (0.64-0.76)*
erage (ref: No)						

s	1.26 (1.20-1.33)*	NA	0.51 (0.46-0.57)*	0.56(0.50-0.64)*	NA	NA
public)						
ivate	NA	NA	8.17 (7.41-9.01)*	7.50(6.63-8.49)*	NA	NA
ependence (ref:						
pendent	1.38 (1.30-1.46)*	1.26 (1.19-1.33)*	1.06 (0.95-1.18)	0.94(0.83-1.06)	0.25 (0.20-0.30)*	NA
ement (ref: with						
ving alone	2.05 (1.76-2.39)*	1.53 (1.31-1.79)*	2.38 (1.84-3.07)	2.29(`1.76-2.98)*	NA	0.15 (0.12-0.18)*

(*) p-value <0.001, (**) p-value<0.05 ; Source: Authors' computation from unit records of NSSO 75th Round 2017-18

Table 4: Disease burden and health seeking behavior in elderly during hospitalization and out-patient care in India

	Hospitalization		Out-patient care	
	Diseases burden during hospitalization	Share of hospitalization episodes treated under public sector	Diseases burden in out-patient care	Share of out-patient care treated under public sector
ction	16.6	48.3	10.0	33.5
ncers	4.6	52.8	0.5	55.8
od diseases	0.9	46.8	0.9	15.3
locrine, metabolic, ritional cludes diabetes)	5.3	40.3	22.5	35.5
chiatric and urological	8.2	36.8	4.4	28.2
uito-urinary	5.3	27.8	1.0	33.9
	8.4	37.8	1.5	47.5
	0.2	36.4	0.4	35.6
rdio-vascular (includes ertension)	18.1	37.7	32.0	33.4
spiratory	7.8	45.3	7.3	37.5
tro-Intestinal	7.5	36.7	2.6	30.3
n	0.7	50.3	0.9	22.7
sculo-skeletal	6.2	34.8	13.9	33.0
ries	7.9	34.9	0.7	31.1
ers	2.4	31.4	1.6	15.3
al	100.0	39.8	100.0	33.6

Source: Authors' computation from unit records of NSSO 75th Round 2017-18

Table 5: Financial Protection during hospitalization and outpatient care for India’s Elderly

	Insurance coverage		OOPE in out-patient care		OOPE during hospitalization		CHE-10		CHE-25	
	Total insurance coverage	Coverage under PFHI	Pub	Pvt	Pub	Pvt.	Pub	Pvt	Pub	Pvt.
	18.9	14.3	390	852	6209	38709	23.2	64.9	9.1	37.0
ɣears)										
60-69	19.3	14.5	410	822	5315	39051	22.2	67.5	7.6	38.8
70-79	17.8	13.9	336	841	8364	38523	25.4	63.0	13.0	36.6
80 and above	18.7	14.3	430	1039	4745	37828	23.0	58.9	6.4	30.7
ɨidence										
Rural	18.1	16.6	388	816	6180	32009	25.2	67.8	10.0	40.7
Urban	20.4	9.5	394	892	6268	47200	19.0	61.3	7.1	32.4
Male	19.0	14.1	441	857	7336	44666	25.7	67.6	10.8	41.2
Female	18.7	14.5	342	847	4780	31459	20.2	61.7	6.9	31.9
ɯs										
Never Married	17.3	14.6	318	1849	7857	88010	16.6	62.0	5.7	46.6
Currently married	18.3	13.5	484	861	6381	40639	21.7	67.1	9.5	38.6
Widowed	19.9	15.8	256	818	4370	26638	19.8	58.1	6.1	29.7
hildren										
At least one surviving child	18.7	14.1	393	849	5676	36426	20.3	63.5	8.1	35.3
No child	21.3	18.9	306	937	9320	56542	40.6	77.0	14.8	51.6
ɔs										
ST	22.5	20.7	246	613	4102	22546	25.2	69.2	3.5	43.3
SC	15.1	13.6	451	1063	7229	24972	27.8	61.2	12.8	31.8
OBC	20.0	16.9	324	782	5523	33098	23.6	66.8	8.9	38.8
General	18.8	10.3	492	860	6779	48538	19.9	64.1	8.5	36.5
lliterate	17.9	16.6	333	732	4409	25878	19.7	63.5	6.4	34.3
Up to primary	19.3	14.7	363	856	6065	31672	21.9	65.2	11.6	33.9
Up to secondary	19.4	11.8	530	786	6678	46869	23.7	63.7	8.7	39.6
Above Secondary	22.2	4.8	615	1222	13856	57350	21.2	63.3	7.5	36.6
ɔccupation										
Self employed	14.9	13.0	500	846	6961	37673	19.7	63.5	9.4	35.9
Regular Wages	24.3	10.4	308	1046	5998	36478	21.9	65.2	5.3	26.3
Casual Labourer	18.8	18.2	268	618	3509	22085	23.7	63.7	8.2	36.0
Others	25.2	17.1	387	830	5260	42098	21.2	63.3	8.4	43.3
ıintile-Rural										
Poorest	13.5	12.8	381	761	5084	19410	43.3	75.2	17.5	47.4
Poor	10.6	10.1	477	908	4858	28978	24.3	67.7	4.4	45.1
Middle	19.0	18.2	360	725	6293	24807	19.3	71.4	8.7	37.8
Rich	20.9	19.6	421	659	5470	32435	22.6	72.9	10.7	44.6
Richest	25.6	21.7	353	918	7949	39683	22.7	60.6	9.9	36.5
ıintile-Urban										
Poorest	13.4	10.4	371	995	5577	32077	27.6	77.1	11.8	44.4
Poor	18.1	13.2	322	862	4227	41811	21.6	63.2	6.4	34.7
Middle	18.3	9.1	352	845	5850	42262	13.6	63.8	3.7	34.2
Rich	19.2	9.0	441	868	7091	50633	11.6	62.3	4.9	28.2
Richest	35.6	5.5	564	916	13025	60067	11.2	48.6	6.2	26.0

Source: Authors' computation from unit records of NSSO 75th Round 2017-18

Table 6: Living arrangement and economic independence in elderly population of India

	Living arrangements				Economic independence			Physically immobile	Poor perception of current health	Perception of change in state of health being worse
	Living with spouse and other members	Living with spouse only	Living without-spouse but with children/relatives	Living alone	Independent	Partially dependent	Fully dependent			
Total	50.3	14.1	31.5	4.2	30.1	22.9	47.0	7.6	19.6	21.0
Age group (years)										
60-69	54.9	16.0	25.1	4.1	35.0	23.9	41.2	4.5	13.6	16.2
70-79	44.2	11.5	39.9	4.5	23.1	22.5	54.4	9.3	26.8	26.3
80 and above	31.7	7.3	57.1	4.0	12.3	17.0	70.8	27.5	46.0	43.7
Place of Residence										
Rural	51.1	13.4	31.1	4.4	28.5	24.5	47.0	7.6	21.4	22.8
Urban	48.6	15.5	32.2	3.7	33.3	19.7	47.0	7.5	16.1	17.3
Gender										
Male	64.1	17.9	16.4	1.6	50.9	22.9	26.1	6.2	17.4	19.6
Female	37.0	10.4	46.0	6.6	10.0	23.0	67.1	8.9	21.7	22.4
Marital Status										
Never Married/	4.6	3.6	69.6	22.2	37.3	17.1	45.6	8.4	21.7	19.4
Currently married	74.8	21.7	3.3	0.3	38.3	23.1	38.6	5.3	16.2	18.6
Widowed	5.4	0.2	83.4	11.0	14.5	22.7	62.8	11.9	26.0	25.6
Surviving Children										
At least one child	52.1	12.8	31.5	3.6	29.1	23.5	47.5	7.6	19.7	21.3
No child	8.9	43.5	31.4	16.1	53.1	11.3	35.6	7.4	17.3	15.0
Social Groups										
ST	48.7	12.6	34.5	4.2	25.7	25.3	49.1	6.4	17.6	15.7
SC	51.1	14.4	30.2	4.2	29.0	25.2	45.8	7.6	21.3	22.6
OBC	48.3	13.1	34.3	4.3	28.5	23.8	47.7	8.0	18.8	20.8
General	52.6	15.4	28.0	4.0	33.4	20.3	46.3	7.2	20.2	21.3
Education										
Illiterate	44.9	11.3	38.8	5.0	21.0	23.5	55.5	8.7	21.8	23.5
Up to primary	54.0	13.2	29.4	3.4	29.5	26.0	44.5	7.6	20.2	20.3
Up to secondary	60.1	17.8	19.8	2.4	42.0	22.2	35.8	5.4	16.9	18.5
Above Secondary	57.0	25.4	13.8	3.8	61.8	15.0	23.2	4.5	10.9	12.8
Household occupation										
Self employed	58.0	9.2	32.1	0.8	30.3	22.6	47.1	7.3	18.9	21.1
Regular Wages	56.3	3.5	39.7	0.5	21.8	26.0	52.2	9.3	17.5	18.4
Casual Labourer	48.3	10.2	38.5	3.1	26.7	25.9	47.4	7.9	22.0	22.8
Economic quintile-Rural										
Poorest	55.3	10.5	29.7	4.5	26.2	28.1	45.7	8.4	21.8	22.5
Poor	54.2	6.0	36.7	3.1	25.4	25.3	49.3	7.6	22.3	20.9

Middle	53.7	12.3	31.5	2.5	27.0	25.7	47.4	6.4	19.5	24.5
Rich	49.2	14.5	31.4	4.8	29.1	23.5	47.4	7.2	21.3	21.8
Richest	43.6	22.7	26.7	7.0	34.2	20.5	45.3	8.3	22.1	24.1
Economic quintile-Urban										
Poorest	54.2	6.6	35.9	3.2	26.3	25.4	48.4	8.5	16.5	20.4
Poor	56.0	7.5	34.3	2.3	30.6	19.5	49.9	7.3	16.9	17.9
Middle	50.4	12.6	34.7	2.3	30.6	18.5	50.8	5.9	17.4	17.3
Rich	45.8	22.2	27.8	4.3	35.9	18.6	45.5	6.8	14.1	15.1
Richest	35.6	29.8	28.2	6.5	45.1	15.7	39.3	9.5	15.5	15.6

Source: Authors' computation from unit records of NSSO 75th Round 2017-18

Table 7: Variation in various indicators of elderly health from 71st Round NSS, 2014, to 75th Round NSS, 2017-18

		71st Round NSS, 2014	75th Round NSS, 2017-18
Access			
Inpatient care	Hospitalization rate	10.9	8.5
	Share of public sector during hospitalization	35.9	39.0
	Share of private sector during hospitalization	64.1	61.0
Out-patient care	PAP	30.3	27.7
	Share of public sector in out-patient care	28.3	33.6
	Share of private sector in out-patient care	71.7	66.4
Financial Protection			
Inpatient care	Any insurance coverage	19.0	18.9
	PFHI coverage	16.2	14.3
	OOPE during hospitalization in public sector (in Rs.)	7177	6209
	OOPE during hospitalization in private sector (in Rs.)	31875	38709
	CHE-10 in public sector during hospitalization	27.3	23.2
	CHE-10 in private sector during hospitalization	65.9	64.9
	CHE-25in public sector during hospitalization	12.5	9.1
	CHE-25in private sector during hospitalization	38.2	37.0
Out-patient care	OOPE in out-patient care under public sector (in Rs.)	547	390
	OOPE in out-patient care under private sector (in Rs.)	802	852
Living Arrangements			
Living with spouse and other members		47.0	50.3
Living with spouse only		14.8	14.1
Living without spouse but with children/relatives		34.1	31.5
Living alone but not in old age home		4.1	4.2
Economic Independence			
Independent		28.3	30.1
Partially independent		20.0	22.9
Totally dependent		51.7	47.0
Physical mobility			
Physically immobile-Confine to bed		1.6	1.4
Confined to home		6.0	5.5
Able to move outside but with wheelchair only		0.4	0.6
Physically mobile		92.0	92.5
Perception towards health			
Own perception of current state of health			
Excellent/ very good		6.8	8.8
Good/fair		70.6	71.6
Poor		22.4	19.6
Own perception about change in the state of health compared to previous year			
Much better		4.6	5.8
Somewhat better		12.9	12.6
Nearly the same		57.5	60.6
Somewhat worse		20.5	18.3
Worse		4.5	2.6

Source: Authors' computation from unit records of NSSO 71st, 2014, and 75th Round 2017-18