The Longitudinal Ageing Study in India, Wave 1, 2017–18

Key Findings

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The Longitudinal Ageing Study in India is the world's largest and India's first ever survey that provides a longitudinal database for designing policies and programmes for the older population in the broad domains of social, health, and economic well-being, in addition to understanding the science of ageing. In this paper, key findings from the baseline survey of LASI on a range of indicators that cover chronic health conditions, biomarkers (based on direct health examinations), healthcare utilisation, social and economic well-being of older adults in India and its states and union territories are presented.

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Population ageing, which entails an increasing share of older persons aged 60 years and above in a population, represents an unprecedented global demographic transformation, and is expected to intensify during the remainder of the 21st century. Ageing results from demographic transition, a process whereby reductions in mortality are followed by reductions in fertility. Individuals are living longer than ever before. The global life expectancy at birth for males and females reached 68.5 and 73.3 years between 2010 and 2015, up from 45.5 years and 48.5 years, respectively, since 1950. Global life expectency is projected to reach 74.5 years for males and 79.1 years for females in 2050 (UN 2019).

With approximately 1.36 billion inhabitants in 2019, India is projected to become the world's most populous country in the next five years. In the 2011 Census, the elderly population aged 60 years and above accounted for 8.6% of the total Indian population, numbering 103 million elderly persons (RGI 2011). The share of the elderly population is projected to further rise to 19.5% (319 million) by 2050 (UN 2019). Including the pre-retirement adult phase, the population in older adult ages of 45 years and above will rise to constitute over 40% of the population of India, or 655 million people, by 2050. The number of people aged 75 years and above is expected to increase by 340% between 2011 and 2050.

The dramatic and widespread nature of these current and ongoing demographic shifts indicate that the population ageing challenges that India will face are both inevitable and exist on an enormous scale. These demographic changes present complex health, social, and economic challenges to which this heterogeneous country must rapidly adapt, both in the present and the future. The demographic vis-à-vis the epidemiological transition in India has shifted a major share of the country's burden of disease to the older population. The transition from high to low rates in mortality and fertility that accompanied socio-economic development also meant a shift in the leading causes of diseases and deaths, known as "epidemiologic transition." This is characterised by the waning of infectious and acute diseases and the emerging incidence of chronic and degenerative diseases. However, infectious/parasitic diseases still pose significant challenges to the public health system, causing India to bear a double burden of disease and, consequently, a significant share of the global burden of disease (Arokiasamy 2018).

The alarming population projections and dramatic shift in age-structure call for robust and internationally harmonised data on ageing. Although adult health and ageing is a subject that is being increasingly investigated, there are currently no comprehensive and internationally comparable national survey data in India that cover and connect the full range of topics necessary to understand the health, economic, social, and psychological aspects of the ageing process. The Longitudinal Ageing Study in India (LASI) is designed to fill this data gap and lay the foundation for evidence-based research and policy.

The Longitudinal Ageing Study in India

The LASI is a nationwide survey of scientific investigation of the health, economic, and social determinants and consequences of population ageing in India. LASI is a biennial panel survey representative of the population aged 45 years and above for India and its states and union territories. LASI Wave 1 covered a sample of 72,250 individuals aged 45 years and above and their spouses regardless of age, including 31,464 elderly persons aged 60 and above and 6,749 oldest-old persons age 75 years and above from all (35) states and union territories of India (excluding Sikkim) (IIPS et al 2020). LASI is India's first and the world's largest survey that provides a longitudinal database for designing policies and programmes for the older population in the broad domains of social, health, and economic well-being. A pilot study was conducted in 2010 to test the tools, protocols, and feasibility aspects of the LASI (Arokiasamy et al 2012).

Objectives and Innovations

The main objective of the LASI is to provide comprehensive scientific evidence on the demographics, household economic status, chronic health conditions, symptom-based health conditions, functional health, mental health (cognition and depression), biomarkers, healthcare utilisation and financing, family and social networks, social security programmes, employment, retirement, life satisfaction and expectations.

LASI adopted state-of-the-art large-scale survey protocols and field implementation strategies with one or more of the following innovative attributes that existing studies lack: representative sample of India and its states and by socio-economic spectrum, an expansive topical focus, harmonisation with the worldwide Health and Retirement Study (HRS), a longitudinal design, coverage of comprehensive biomarkers, and the use of computer-assisted personal interviewing (CAPI) technology for data collection, quality control, and geographic information system. No other survey in India collected such detailed data on health and biomarkers together with information on family and social network, income, assets, and consumption.

Methodology

LASI sampling frame included only the household population. Considering the longitudinal design and the geographic and socio-economic disparities in India, LASI adopted a multistage stratified area probability cluster sampling design. Within each state, a three-stage sampling design in rural areas and a four-stage sampling design in urban areas were adopted. The field survey was conducted across 35 states/union territories from April 2017 to December 2018. The overall household response rate was 96%. The household response rate ranged from 99% in Arunachal Pradesh to 85% in Dadra and Nagar Haveli. The individual response rate ranged from 96% in Nagaland to 74% in Chandigarh (Table 1).

Data were collected at three levels—household, individual, and community—using computer assisted face-to-face personal interviews and direct health measurements of a range of biomarkers. The English version of the LASI instrument was translated into 16 major state languages. Trained interviewers administered the face-to-face interviews. In addition, trained health investigators conducted direct health examinations. Separate written informed consent was administered for household, individual, and biomarker surveys. Ethical approval was granted by all collaborating institutions and the Indian Council of Medical Research (ICMR). More detailed description of study design, tools, protocols, and process adopted for LASI can be accessed from IIPS, HSPH and USC (2020).

In this paper, we present key findings from LASI Wave 1 on a range of indicators that cover self-reported chronic health

Table 1: Number of Households and Individuals Interviewed by States/Union Territories, LASI Wave 1, 2017–18

States/Union Territories	Number of Age Eligible Households Interviewed	Total Individuals Age 45 and Above Interviewed*	Number of Individuals Age 60 and Above Interviewed
India	42,949	72,250	31,464
Bigger states			
Andhra Pradesh	1,511	2,679	1,105
Assam	1,511	2,366	816
Bihar	2,083	3,520	1,808
Chhattisgarh	1,189	2,055	780
Gujarat	1,455	2,341	991
Haryana	1,251	1,898	848
Jammu and Kashmir	957	1,613	731
Jharkhand	1,408	2,464	1,168
Karnataka	1,488	2,420	1,004
Kerala	1,411	2,497	1,209
Madhya Pradesh	1,690	2,914	1,313
Maharashtra	2,421	3,973	1,790
Odisha	1,645	2,917	1,237
Punjab	1,234	2,124	1,004
Rajasthan	1,302	2,244	1,078
Tamil Nadu	2,150	3,530	1,534
Telangana	1,418	2,475	1,061
Uttar Pradesh	2,747	4,567	2,169
Uttarakhand	863	1,358	641
West Bengal	2,279	3,933	1,544
Smaller states/union territories			
Andaman and Nicobar Islands (UT)	725	1,244	523
Arunachal Pradesh	702	1,215	318
Chandigarh (UT)	651	1,026	394
Dadra and Nagar Haveli (UT)	631	1,090	451
Daman and Diu (UT)	577	991	434
Delhi	754	1,319	495
Goa	877	1,427	637
Himachal Pradesh	805	1,388	621
Lakshadweep (UT)	627	1,139	502
Manipur	860	1,369	606
Meghalaya	636	969	412
Mizoram	732	1,246	531
Nagaland	799	1,316	608
Puducherry	839	1,428	640
Tripura	721	1,195	461

*Including spouse less than 45 years of age.

conditions, biomarkers based on direct health examinations, healthcare utilisation, and social and economic well-being of older adults in India and its states.

Key Findings

Health conditions of older adults in India: In accordance with the progress in demographic-epidemiological transition, India's burden of non-communicable diseases (NCDs) is escalating. Understanding the burden of chronic conditions, as well as their risk factors, is important for developing appropriate and effective healthcare policies for the prevention and control of NCDs. Also, while NCDs typically occur in individuals aged 55 years or older in many developed countries, in India, their onset occurs a decade earlier in the ages of 45–55 years (Arokiasamy 2018). In LASI, health conditions of survey participants have been assessed based on (i) self-reported measures of health particularly focused on chronic health conditions; (ii) symptom-based conditions, functional and mental health; and (iii) direct health examinations (biomarkers). In this section, we present key findings of self-reported and symptom-based conditions as well as measured biomarkers.

Chronic health conditions: All LASI participants were asked if they were ever diagnosed with (for each condition) chronic health condition by a health professional. In this section, we present (Table 2) weighted mean proportions of participants who reported chronic health conditions with diagnosis that include: cardiovascular diseases (CVDs) (includes hypertension, heart disease, and stroke), diabetes mellitus, chronic lung diseases, and neurological or psychiatric problems by age and states/union territories.

One-third of the elderly aged 60 and above (35%) compared to a fifth of older adults aged 45–59 years (22%) reported that they have been diagnosed with CVDs in India. The prevalence of CVDs among elderly aged 60 and above was markedly higher in the states/union territories of Goa (60%), Kerala (57%), Chandigarh (55%), Andaman and Nicobar (51%), and Jammu and Kashmir (J&K) (51%). About one-third of older adults aged 45–59 years have been diagnosed with CVDs in Chandigarh (34%), Haryana (34%), J&K (34%), and Punjab (33%). Among CVDs, the self-reported prevalence of diagnosed hypertension was much higher among elderly aged 60 and above (32%) compared to older adults aged >60 (21%). The high prevalence of CVDs among the elderly as well as older adults confirms the rising burden of NCDs in India.

Diabetes mellitus is a growing and widespread health problem in India. Overall, the self-reported prevalence of diabetes mellitus with diagnosis was 14% among elderly aged 60 and above and 9% among older adults aged <60 in India. More than a quarter of the elderly aged 60 and above have been diagnosed with diabetes in demographically advanced Kerala (35%), Puducherry (28%), Lakshadweep (28%), Goa (27%), Delhi (26%), Tamil Nadu (26%), and Chandigarh (25%). This demonstrates the substantially higher burden of diabetes especially in south Indian states/union territories pointing to the need for their effective screening, prevention, and control and to address the economic burden of diabetes.

Eight percent of elderly aged 60 and above reported chronic lung diseases, including chronic obstructive pulmonary disease, bronchitis, or asthma compared to 4% of older adults aged 45–59. More than one in 10 elderly aged 60 and above have been diagnosed with chronic lung diseases in Rajasthan (15%), Puducherry (13%), Kerala (12%), West Bengal (11%), and Karnataka (10%). Chronic lung disease is the second largest

Table 2: Self-reported Prevalence (%) of Chronic Health Conditions among Older Population across States/Union Territories

States/ Union Territories	Cardiovascular Diseases[1]		Hypertension		Diabetes Mellitus		Chronic Lung Disease[2]		Neurological/ Psychiatric Conditions[3]	
	Age 45–59*	Age≥ 60	Age 45–59*	Age≥ 60	Age 45–59*	Age≥ 60	Age 45–59*	Age≥ 60	Age 45–59*	Age≥ 60
India	21.9	34.6	20.5	32.0	9.2	14.2	4.4	8.3	1.9	2.6
Bigger states										
Andhra Pradesh	27.2	46.5	25.1	44.1	15.9	20.8	4.7	9.8	2.4	3.6
Assam	24.6	41.8	23.4	40.2	6.3	8.8	1.6	4.7	1.7	2.2
Bihar	20.0	28.1	18.7	24.8	6.6	8.2	4.0	6.6	0.4	0.5
Chhattisgarh	13.7	20.9	12.9	20.1	5.2	9.2	2.0	3.5	0.3	0.9
Delhi	28.1	47.4	27.0	45.3	11.6	26.4	5.1	9.3	1.9	1.8
Gujarat	20.1	34.2	18.5	31.1	8.1	17.6	3.9	8.7	2.7	2.7
Haryana	34.2	41.9	33.1	39.8	6.2	10.5	4.6	9.1	0.6	1.1
Jammu and Kashmir	33.6	51.2	30.9	47.8	6.2	9.4	2.5	7.6	2.7	5.3
Jharkhand	16.5	27.7	16.1	26.3	6.1	12.3	1.8	3.8	1	[0.6]
Karnataka	21.0	35.0	20.0	32.6	12.9	19.1	6.3	10.4	2.4	2.8
Kerala	28.5	57.1	26.1	53.2	19.5	34.7	5.9	11.9	2.9	1.7
Madhya Pradesh	18.3	23.1	17.4	21.9	4.2	7.9	4.6	8.4	0.9	1.8
Maharashtra	19.7	41.1	18.1	37.5	8.3	16.6	3.8	7.3	0.7	1.2
Odisha	13.8	28.2	13.3	27.0	5.8	9.9	2.5	4.7	1	1.3
Punjab	32.6	46.8	31.2	44.2	11.1	20.2	4.2	5.4	2.4	2.2
Rajasthan	24.7	32.7	22.9	31.4	6.9	9.3	5.6	15.0	0.8	1.5
Tamil Nadu	21.2	36.8	19.7	34.5	14.6	25.5	4.4	7.3	2.6	4.8
Telangana	22.6	44.1	21.9	42.8	11.9	15.6	3.2	5.6	5.2	7
Uttar Pradesh	19.1	22.4	18.3	20.4	6.2	8.0	3.8	7.5	1.4	1.6
Uttarakhand	25.8	30.2	24.9	27.7	8.4	10.4	6.4	7.8	[0.4]	[1.0]
West Bengal	25.4	43.2	22.7	37.8	8.9	13.3	4.9	10.9	4.7	8.1
Smaller states										
Arunachal Pradesh	18.7	26.6	17.6	26.4	5.3	8.2	1.9	4.2	[0.4]	[1.2]
Goa	27.0	60.3	26.3	58.1	17.4	27.3	1.1	3.8	0.8	2.8
Himachal Pradesh	27.9	42.7	26.5	38.4	8.7	16.1	1.9	5.1	0.9	0.9
Manipur	22.4	32.7	21.5	30.1	7.7	10.6	2.4	3.9	[1.2]	1.2
Meghalaya	20.0	36.2	19.2	35.6	1.9	5.9	0.2	1.2	[0.3]	[1.0]
Mizoram	18.1	33.2	17.1	31.7	5.6	11.4	3.0	8.6	[0.4]	3.1
Nagaland	15.5	16.0	15.3	15.2	6.7	7.8	0.2	1.2	[0.3]	[4.7]
Tripura	23.9	40.4	22.5	38.1	7.0	11.9	5.3	9.3	0.8	2.5
Union territories										
Andaman and Nicobar	32.3	50.5	31.3	49.0	16.4	23.7	2.7	5.7	2.3	3.8
Chandigarh	34.4	55.3	31.7	50.1	18.3	25.0	2.3	4.7	1.5	4.6
Dadra and Nagar Haveli	15.3	24.4	14.6	24.0	8.6	11.1	4.0	9.9	2	3.2
Daman and Diu	28.3	43.3	27.3	39.5	14.7	20.0	4.5	4.0	2.6	0.8
Lakshadweep	31.8	47.4	29.2	44.8	18.0	28.1	3.4	8.3	1.4	[0.4]
Puducherry	23.9	45.2	22.8	43.5	17.1	28.4	8.8	12.8	1.9	6.9

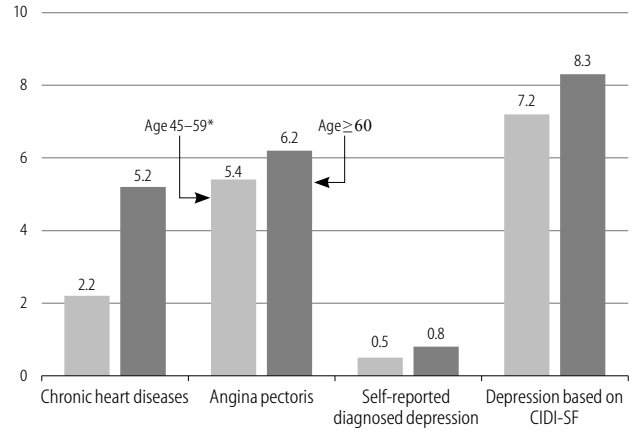
* Including spouse irrespective of age.

(1) Cardiovascular diseases include hypertension, heart disease and stroke (any one or more) .

(2) Chronic lung diseases include chronic obstructive pulmonary disease (COPD), bronchitis and asthma (any one or more).

(3) Any neurological/psychiatric problem includes depression, Alzheimer's disease, dementia or psychiatric problem or neurological problem.

Figure 1: Self-reported Chronic Heart Diseases and Depression with Diagnosis versus Symptom-based Prevalence of Angina Pectoris (Rose) and Prevalence of Major Depressive Disorders (CIDI-SF) by Age



* Including spouse irrespective of age.

contributor to the burden of mortality and morbidity in India (ISDBS Collaborators 2017).

In the LASI, information was gathered on neurological or psychiatric conditions attributable to diseases of the nervous system such as depression, Alzheimer's disease, dementia, psychiatric problems (unipolar/bipolar disorder, schizophrenia), and neurological problems (neuropathy, convulsions, migraine, and Parkinson's disease. The self-reported prevalence of diagnosed neurological or psychiatric problems among older adults aged >60 years and among elderly aged 60 and above in India was 1.9% and 2.6%, respectively. More than 5% of elderly aged 60 and above reported neurological or psychiatric problems with diagnosis in West Bengal (8.1%), Telangana (7%), Puducherry (6.9%), and J&K (5.3%).

Figure 1 compares (i) the prevalence of heart diseases with self-reported diagnosis and that of angina pectoris based on symptom-based algorithm of WHO Rose Questionnaire (Rose GA 1962), and (ii) self-reported prevalence of depression with diagnosis and prevalence of depressive disorders based on the Composite International Diagnostic Interview-Short Form (CIDI-SF) scale (Kessler and Ustun 2004). The symptom-based prevalence of angina pectoris among older adults aged 45–59 years (5.4%) was much higher compared with the self-reported prevalence of chronic heart diseases among older adults aged <60 (2.2%). This difference was lower among elderly aged 60 and above in India suggesting a higher burden of undiagnosed heart diseases among older adults aged <60. While self-reported prevalence of depression with diagnosis was 0.6% in both age groups, the prevalence of depressive disorders (based on CIDI-SF) was much higher in both age groups (7.2% and 7.7%, respectively) suggesting that just about 10% of depressive disorders have been diagnosed and treated among older adults in India and pointing to the inadequate diagnosis of mental health disorders. The continuing neglect of mental disorders without screening and diagnosis is a major contributor of disability among older adults. The National Mental Health Survey (NMHS) of India also confirms similar findings suggesting the need for immediate attention of policymakers, health professionals, opinion-makers, and society at large to the substantial burden of mental, behavioural, and substance use disorders in India (Gururaj et al 2016).

Organ-related Conditions

Organ-related health conditions are those related to eyes, bones/joints, and the urogenital system, which impair health and functional abilities of older adults. The self-reported prevalence (%) of cataract, bone/joint diseases, urogenital conditions, injuries, and falls across states/union territories is presented in Table 3.

Table 3: Self-reported Prevalence (%) of Cataract, Urogenital Conditions, and Injuries among Older Population across States/Union Territories

States/ Union Territories	Cataract		Bone or Joint Diseases[1]		Urogenital Conditions[2]		Injuries[3]		Falls	
	Age 45–59*	Age ≥60	Age 45–59*	Age ≥60	Age 45–59*	Age ≥60	Age 45–59*	Age ≥60	Age 45–59*	Age ≥60
India	4.6	23.2	11.7	18.8	5.5	7.7	13.9	18.8	16.5	22.9
Bigger states										
Andhra Pradesh	5.6	18.8	14.3	22.4	3.6	6.1	9.9	14.1	10.6	15.3
Assam	4.6	17.7	3.5	4.7	3.6	7.0	19.0	25.4	20.9	28.9
Bihar	4.7	22.9	10.3	12.0	4.0	5.4	23.4	26.9	27.0	28.7
Chhattisgarh	2.8	19.4	4.4	9.2	2.2	3.6	8.8	12.3	13.1	17.6
Delhi	1.5	16.9	6.9	14.3	6.3	15.6	7.2	12.2	10.1	13.2
Gujarat	6.3	43.9	10.8	20.4	10.2	10.9	14.7	17.3	18.1	23.3
Haryana	2.5	15.3	5.5	9.6	6.9	6.9	9.4	13.0	10.9	18.1
Jammu and Kashmir	6.4	17.9	23.8	27.1	7.1	8.2	10.1	10.4	9.6	10.0
Jharkhand	4.3	22.6	5.5	8.0	5.3	9.1	18.7	19.9	24.1	26.6
Karnataka	5.3	23.6	10.8	24.5	5.1	3.1	7.8	18.3	9.3	21.2
Kerala	4.3	28.4	16.9	28.2	7.2	11.0	11.7	15.7	20.4	29.5
Madhya Pradesh	3.3	20.0	8.9	10.0	4.6	5.7	13.8	17.4	15.7	18.7
Maharashtra	4.3	28.5	13.6	26.2	6.6	9.4	13.7	18.6	17.2	23.5
Odisha	2.3	14.4	10.8	17.4	4.4	9.8	17.7	23.3	26.1	34.5
Punjab	3.1	15.9	10.2	11.8	6.6	4.7	18.7	21.6	26.8	30.8
Rajasthan	3.6	20.1	8.4	14.8	3.6	6.8	9.4	11.1	9.6	12.4
Tamil Nadu	6.2	25.2	15.4	25.2	1.9	4.0	8.6	10.9	11.2	15.9
Telangana	5.9	14.4	17.9	32.7	4.7	4.5	7.9	10.4	8.4	11.3
Uttar Pradesh	4.7	26.0	5.5	9.2	5.2	6.3	17.0	20.7	20.0	25.9
Uttarakhand	6.5	25.5	12.3	15.6	9.0	9.4	17.2	12.9	20.9	19.0
West Bengal	5.4	23.1	23.4	31.6	7.1	17.0	18.9	24.8	19.4	27.5
Smaller states										
Arunachal Pradesh	2.3	3.3	4.3	13.0	1.8	4.5	6.1	9.2	10.2	17.0
Goa	3.6	25.0	9.2	15.9	10.1	9.5	9.4	11.1	9.8	15.2
Himachal Pradesh	3.3	27.0	9.2	14.1	11.3	12.0	14.9	15.1	18.9	20.6
Manipur	3.5	9.2	1.4	4.6	11.9	8.6	5.9	9.5	5.8	8.6
Meghalaya	1.0	2.6	1.4	3.7	1.2	0.8	2.7	3.6	4.3	5.8
Mizoram	2.6	4.9	4.3	8.8	15.8	11.9	2.4	3.9	2.1	2.9
Nagaland	0.3	2.7	0.7	3.2	1.7	1.2	3.6	4.2	9.9	7.7
Tripura	2.3	9.6	9.2	10.5	3.5	7.3	13.7	15.7	16.2	19.5
Union territories										
Andaman and Nicobar	1.9	8.8	13.7	23.7	2.7	6.5	10.0	13.5	10.3	13.2
Chandigarh	5.0	20.7	7.4	12.6	4.1	3.7	9.8	15.8	12.5	19.5
Dadra and Nagar Haveli	2.6	21.7	12.0	24.3	8.4	9.3	9.3	16.4	13.4	23.4
Daman and Diu	2.3	43.7	19.5	29.7	10.7	11.4	13.3	20.5	16.6	24.5
Lakshadweep	4.3	22.6	8.2	16.0	3.8	5.8	4.1	9.6	6.8	10.7
Puducherry	7.4	22.9	15.3	22.3	2.5	6.3	11.9	15.4	14.0	18.2

*Including spouse irrespective of age.

(1) Bone/joint diseases include arthritis, rheumatism, and osteoporosis (any one or more).

(2) Urogenital conditions include chronic renal failure, incontinence, kidney stone, and benign prostate hypertrophy-BPH (only among men) (any one or more).

(3) Injuries include any traffic accident, violence, animal attack, or fall in the past two years (any one or more).

Cataract is a commonly prevalent among elderly persons in India. The self-reported prevalence of cataract is five times higher among elderly aged 60 and above (23%) than older adults aged <60 (4.6%). More than two-fifths in Daman and Diu (44%) and Gujarat (44%) and more than a quarter of elderly aged 60 and above in Maharashtra (29%), Kerala (28%), Himachal Pradesh (27%), Uttarakhand (26%), Uttar Pradesh (UP) (26%), and Tamil Nadu (25%) have been diagnosed with cataract. The state variations possibly highlight the differential access to cataract surgeries and treatment facilities.

Ageing is also associated with significant changes in bones and joints. With age, bone mass, or density, tends to fall. This can progress to a point where the risk of fracture is significantly increased (a condition known as osteoporosis), which has serious implications for disability, reduced quality of life, and mortality (WHO 2015). Overall, in India, 12% of older adults aged <60 and 19% of elderly aged 60 and above reported that they have been diagnosed with bone/joint diseases. One-third of elderly aged 60 and above reported bone/joint diseases in Telangana (33%) and West Bengal (32%).

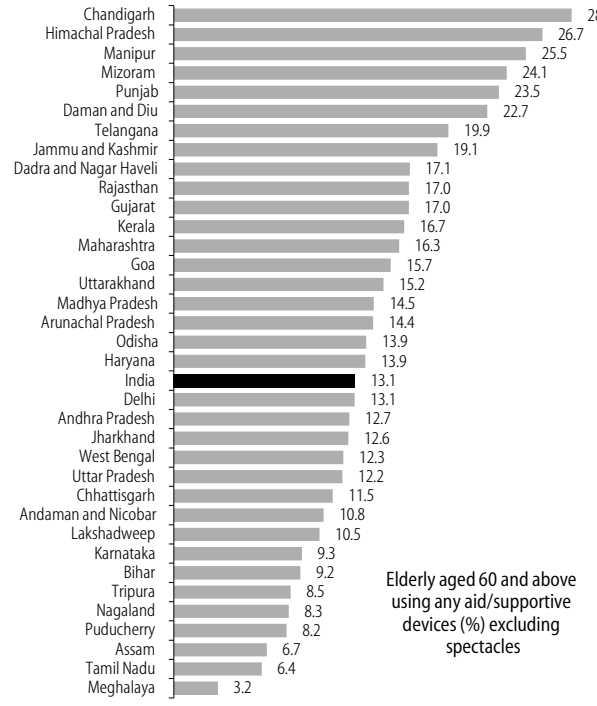
Overall, in India, the self-reported prevalence of urogenital conditions among elderly aged 60 and above was 7.7% and among older adults aged <60 was 5.5%. Urogenital conditions were more prevalent among elderly aged 60+ in West Bengal (17%), Delhi (16%), Himachal Pradesh (12%) and among older adults aged <60 in Mizoram (16%), Manipur (12%), Goa (10%), Punjab (7%), and Karnataka (5%).

Injuries, Falls, and Use of Supportive Devices

Globally, falls are a major public health problem among the elderly. An estimated 6,46,000 fatal falls occur each year, making falls the second leading cause of unintentional injury-related deaths after road traffic injuries and death rates from falls are the highest among elderly aged 60 years and more (WHO 2018). Injuries sustained due to any traffic accident, violence, animal attack, or fall in the past two years among elderly aged 60 and above in India were 19% with comparatively higher prevalence rate in Bihar (27%), followed by Assam (25%), West Bengal (25%), and Odisha (23%). In India, 23% of elderly aged 60 and above and 17% of older adults aged 45–59 years reported falls. Among elderly aged 60 and above, the prevalence of falls is higher in Odisha (35%), Punjab (31%), Kerala (30%), Assam (29%), and Bihar (29%).

The elderly are likely to experience variations in impairments and they depend on supportive devices and aids to maintain their functional abilities. All LASI survey participants were asked about the use of any aid or supportive device to assist them in their day-to-day life. Overall, in India 13% of elderly aged 60 and above were using any aid/supportive devices that included hearing aid, denture, and aid for physical disability, such as walker, walking sticks, wheelchair, adjustable showers stools/commodes, back/neck collar, and orthosis/prosthesis (Figure 2). More than quarter of elderly aged 60 and above were using supportive devices in Chandigarh (29%), Himachal Pradesh (27%), and Manipur (26%); whereas the use of aid/supportive devices is very low in Meghalaya (3%), Tamil Nadu (6%), and Assam (7%).

Figure 2: Percentage of the Elderly Aged 60 and Above Using Any Aid/Supportive Devices (Hearing Aid, Denture, Aid for Physical Disability), States/Union Territories



Biomarkers Based on Direct Health Examinations

The inclusion of biomarkers in large-scale health surveys represents an important innovation in the LASI. This is particularly crucial for India in view of the lower prevalence rates of self-reported morbidity caused by the low awareness of symptoms of many health conditions, limited access to healthcare services, and inadequate diagnoses (Sen 2002; Arokiasamy et al 2012). The prevalence rates of chronic health conditions based on direct health examinations provide a more accurate assessment of the prevalence of chronic health conditions and to discern the extent of undiagnosed and untreated conditions. The full range of the LASI biomarkers included measures of functional health (physiology), performance-based markers, and anthropometric measures for assessing NCDs/risk factors that are internationally validated, relatively inexpensive, and logistically feasible tests. These include hypertension, visual impairment, overweight/obesity or undernutrition, and chronic respiratory diseases.

Table 4 (p 44) presents the prevalence of measured high blood pressure, low vision, and nutritional status of older adults in India. Hypertension or high blood pressure is defined as systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg (WHO 2019). A quarter of older adults aged <60 (25%) and one-third of elderly aged 60 and above (36%) in India have been measured with high blood pressure. More than half of elderly aged 60 and above have been measured with high blood pressure in Lakshadweep (65%), Nagaland (62%), Andaman and Nicobar (53%), and Meghalaya (52%). The prevalence of measured hypertension is higher compared

with self-reported prevalence of hypertension with remarkable state variations, showing extremely high rates of undiagnosed hypertension in less developed states with poor access to healthcare and lack of awareness about symptoms.

Low vision is defined as either low near vision or low distance vision in the better eye with best correction available with the respondent, where low near vision is near visual acuity is equal to or poorer than 20/80 and equal to or better than 20/400 and low distance vision is distance visual acuity is equal to or poorer than 20/80 and equal to or better than 20/200. The prevalence of low vision is much higher among the elderly aged 60 and above (37%) compared with older adults aged 45–59 years (26%). More than half of elderly aged 60 and above have low vision in Arunachal Pradesh (66%), Meghalaya (65%), and Tripura (50%).

Table 4: Measured Prevalence (%) of Health/Health Risk Conditions among Older Population across States/Union Territories

States/Union Territories	Measured High Blood Pressure[1]		Low Vision[2]		Obesity[3]		Underweight[4]		High-risk Waist–Hip Ratio[5]	
	Age 45–59*	Age ≥60	Age 45–59*	Age ≥60	Age 45–59*	Age ≥60	Age 45–59*	Age ≥60	Age 45–59*	Age ≥60
India	25.2	36.1	25.7	37.1	9.0	5.5	15.6	26.7	78.4	78.9
Bigger states										
Andhra Pradesh	31.6	44.2	27.5	40.1	15.3	9.3	8.1	15.3	78.9	77.7
Assam	25.9	44.8	25.8	49.9	2.5	1.1	19.8	33.7	86.7	84.6
Bihar	19.1	32.0	32.3	40.2	5.7	3.7	17.9	31.3	85.2	78.5
Chhattisgarh	32.6	42.5	25.2	37.0	2.6	1.6	29.7	36.2	69.3	75.8
Delhi	25.4	42.8	29.8	49.4	19.3	18.2	3.6	8.4	86.8	92.8
Gujarat	27.5	40.4	13.0	22.3	10.0	7.5	16.4	21.7	72.6	79.6
Haryana	24.9	31.7	36.1	42.0	12.3	4.9	13.0	22.1	82.2	87.6
Jammu and Kashmir	23.9	37.8	21.3	28.1	16.1	5.3	6.7	15.6	91.1	94.4
Jharkhand	24.3	42.2	31.7	44.3	4.1	2.8	22.2	33.0	79.7	82.1
Karnataka	27.3	37.1	23.7	33.0	12.7	9.0	11.9	22.3	67.3	69.9
Kerala	32.7	48.0	30.9	39.4	10.6	6.3	4.1	9.5	94.9	94.1
Madhya Pradesh	23.3	30.4	19.6	25.4	4.9	2.8	19.2	35.3	65.9	71.1
Maharashtra	30.4	38.4	20.4	29.2	10.3	6.7	12.6	20.2	72.7	74.5
Odisha	23.0	30.8	26.5	44.6	4.8	3.4	24.4	37.1	76.6	79.4
Punjab	37.9	48.6	29.4	42.7	21.3	12.8	5.0	11.3	95.4	94.0
Rajasthan	19.7	31.9	31.3	43.3	4.9	5.1	19.1	26.0	78.3	81.8
Tamil Nadu	25.4	37.2	22.3	34.6	14.1	7.4	8.0	18.5	83.8	83.3
Telangana	26.9	37.0	27.0	42.0	11.6	7.2	13.4	19.7	70.5	76.9
Uttar Pradesh	16.0	28.8	35.5	43.0	6.0	3.0	21.5	36.6	77.9	75.7
Uttarakhand	28.6	39.2	31.1	38.6	11.1	3.6	11.2	25.0	85.5	87.4
West Bengal	24.2	40.2	21.6	36.5	5.5	2.4	16.6	31.5	86.5	83.2
Smaller states										
Arunachal Pradesh	31.6	38.5	18.4	66.4	5.8	3.6	7.0	10.8	77.8	77.7
Goa	23.1	42.3	21.2	32.2	12.1	10.6	7.9	12.6	85.4	85.8
Himachal Pradesh	32.7	49.1	13.3	28.2	14.2	8.2	5.6	16.8	86.5	90.4
Manipur	30.8	36.3	21.0	33.9	8.4	4.8	5.8	19.4	83.6	81.3
Meghalaya	30.6	51.6	43.8	64.6	2.8	1.5	13.4	28.3	79.1	83.3
Mizoram	20.2	29.8	28.8	43.2	6.8	4.8	6.5	18.2	69.7	68.7
Nagaland	41.1	61.5	17.5	32.2	3.0	4.5	4.7	11.2	81.9	80.5
Tripura	26.5	37.2	28.0	50.0	3.7	0.7	20.2	37.3	76.9	78.8
Union territories										
Andaman and Nicobar Islands	39.7	52.5	21.6	33.6	14.1	7.2	7.6	14.8	81.5	85.3
Chandigarh	31.1	35.2	20.5	27.5	25.9	21.5	3.7	6.1	95.4	96.2
Dadra and Nagar Haveli	30.6	38.2	20.8	36.9	8.4	6.5	18.8	40.1	81.8	81.5
Daman and Diu	27.9	41.8	18.7	34.9	17.9	14.7	7.4	12.8	79.7	87.5
Lakshadweep	46.2	64.9	26.1	36.2	13.3	10.0	5.0	4.7	94.9	97.7
Puducherry	25.0	32.8	15.7	25.5	14.9	15.1	6.0	8.7	84.9	84.3

*Including spouse irrespective of age.

(1) Prevalence of measured high blood pressure refers to those measured with systolic blood pressure of ≥ 140 mmHg or diastolic blood pressure of ≥ 90 mmHg or both.

(2) Low vision refers to either low near vision (equal to or poorer than 20/80 and equal to or better than 20/400) or low distant vision (equal to or poorer than 20/80 and equal to or better than 20/200) in the better eye with best correction available with the respondent.

(3) BMI levels have been classified according to WHO classifications - 1 underweight ≤ 18.4; 2 normal = 18.5 to 24.9; 3 overweight=25.0 to 29.9; 4 obese ≥ 30.0.

(4) According to WHO criteria of classification of waist–hip ratio (WHR).

Risk Level	Male	Female
Low (normal)	< 0.90	< 0.85
High	≥ 0.90	≥ 0.85

Body mass index (BMI) is calculated by dividing an individual's weight (in kilograms) by the square of their height (in metres). Based on WHO classification, BMI levels have been classified into underweight (BMI ≤ 18.4), normal (BMI 18.5 to 24.9), overweight (BMI 25 to 29.9), and obese (BMI ≥ 30) (WHO 2011). WHR was calculated by dividing the waist circumference in centimetres by the hip circumference in centimetres. WHR was categorised as low ≤ 0·95 and ≤0·80; moderate 0·96–1·0 and 0·81–0·85; high >1·0 and > 0·85 for males and females, respectively (WHO 2011).

The prevalence of obesity, underweight, and high-risk WHR is presented in Table 6 (p 45). The prevalence of obesity is higher among older adults aged <60 (9%) compared with elderly aged 60 and above (6%); in contrast, underweight is more prevalent among elderly aged 60 and above (27%) than among older adults aged <60 years (16%). More than 15% of elderly aged 60 and above were obese in Chandigarh (22%), Delhi (18%), and Puducherry (15%); whereas more than 35% of elderly aged 60 and above are underweight in Dadra and Nagar Haveli (40%), Tripura (37%), Odisha (37%), UP (37%), Chhattisgarh (36%), and Madhya Pradesh (MP) (35%). In India, three quarters of older adults aged <60 years (78%) as well as elderly aged 60 and above (79%) have high-risk WHR.

Along with obesity and high-risk WHR, elderly persons are also facing the burden of undernutrition, aggravating the risk for development of various NCDs, such as cognitive decline, depression, cancer, bone/joint diseases, CVDs, and functional impairment.

Healthcare Use and Health Financing

Table 5 (p 45) presents the pattern of outpatient and inpatient care utilisation with reference period of last one year among elderly aged 60 and above and older adults aged <60 years across states of India. The inpatient rate among elderly aged 60 and above was 6% compared with 8% among older adults aged <60. In most of the states/union territories, the inpatient rates were higher among elderly aged 60 and above compared with older adults in aged <60 years. The inpatient rate among elderly aged 60 and above is the highest in Himachal Pradesh (14.1%), followed by Daman and Diu (13.6%), and is the lowest in Chhattisgarh (4%). Many poorer states had lower inpatient rates compared with the national average. Twenty-nine percent of elderly aged 60 and above received outpatient care in the last one month prior to the survey. The outpatient rate among elderly aged 60 and above is the highest in Punjab (57%), followed by Kerala (40%) and UP (37%), but is the lowest in Mizoram (4%) and in many of the north-eastern states of India. Both inpatient and outpatient rates were higher among elderly aged 60 and above compared with older adults. The median out-of-pocket expenditure for last hospitalisation shows considerable variations across the states/union territories of India. The median out-of-pocket expenditure

for last hospitalisation is much higher among older adults aged <60 years (₹10,100) than elderly aged 60 and above (₹7,000) in India. The median out-of-pocket expenditure among older adults aged <60 years was higher than the national average in Jharkhand, Maharashtra, Punjab, Tamil Nadu, Rajasthan, Mizoram, Uttarakhand, Lakshadweep, Nagaland, and Karnataka. The median out-of-pocket expenditure among elderly aged 60 and above ranges from as low as ₹350 in Dadra and Nagar Haveli to as high as ₹25,500 in Nagaland.

Family and Social Networks

Living arrangements and life satisfaction: Living arrangements reflect an individual's social support and is an important determinant of overall life satisfaction and quality of life.

Table 5: Percentage of Older Adults Who Utilised Outpatient Care in One Month and Inpatient Care in One Year Prior to Survey and Median Cost of Last Hospitalisation (in ₹) on Inpatient Care across States/Union Territories

States/Union Territories	Outpatient Care**(%)		Inpatient Care***(%)		Median cost of Last Hospitalisation (₹) (annual)	
	Age 45–59*	Age≥60	Age 45–59*	Age≥60	Age 45–59*	Age≥60
India	23.9	28.6	6.3	8.0	10,100	7,000
Bigger states						
Andhra Pradesh	23.1	26.5	7.3	8.4	8,300	6,700
Assam	14.2	17.1	4.1	5.1	8,705	8,005
Bihar	27.3	33.9	3.8	4.4	10,000	7,800
Chhattisgarh	13.1	14.6	2.3	4.2	1,600	6,000
Gujarat	20.7	25.5	5.6	9.6	5,000	5,000
Haryana	22.9	24.3	6.9	10.1	5,000	4,000
Jammu and Kashmir	28.5	29.3	4.8	5.2	6,986	10,000
Jharkhand	15.7	20.6	5.0	5.3	10,200	9,200
Karnataka	23.9	28.2	9.3	7.4	75,000	15,500
Kerala	34.6	40.3	6.2	11.8	7,040	6,500
Madhya Pradesh	16.1	17.4	6.3	9.0	6,100	5,000
Maharashtra	26.2	33.0	6.7	10.9	10,600	10,000
Odisha	19.2	24.5	4.3	5.5	4400	5,200
Punjab	50.6	56.9	7.0	10.4	12,000	13,200
Rajasthan	24.2	28.9	7.2	9.7	12,600	5,100
Tamil Nadu	19.4	22.2	5.5	8.8	12,500	7,600
Telangana	22.3	24.6	7.5	8.9	6,700	6,200
Uttar Pradesh	32.2	37.0	4.5	5.6	5,000	5,261
Uttarakhand	19.7	22.3	5.6	5.8	17,850	5,540
West Bengal	29.3	33.0	6.5	9.8	5,050	4,700
Smaller states/union territories						
Andaman and Nicobar Islands	8.5	12.8	5.6	9.0	1,000	1,000
Arunachal Pradesh	4.1	7.1	8.2	7.5	10,000	7,000
Chandigarh	33.1	32.6	5.9	7.7	8,000	8,700
Dadra and Nagar Haveli	13.4	17.3	7.8	9.6	1,500	350
Daman and Diu	29.3	32.9	6.4	13.6	5,000	2,500
Delhi	12.3	19.2	4.6	6.2	3,000	2,850
Goa	23.3	28.9	7.1	11.2	6,700	5,000
Himachal Pradesh	31.4	33.5	8.5	14.1	6,650	7,200
Lakshadweep	18.2	25.3	4.7	10.9	18300	8,000
Manipur	14.6	14.6	6.4	9.0	8,000	10,210
Meghalaya	7.0	10.8	3.9	6.7	7,000	5,000
Mizoram	2.7	4.2	6.4	5.5	15,000	9,000
Nagaland	3.1	6.1	6.3	7.5	22,000	25,500
Puducherry	22.4	31.0	3.2	5.5	3,500	7,500
Tripura	11.6	14.5	10.2	10.9	4,000	2,500

* Including spouses less than 45 years of age.
** Outpatient care is computed for the reference period of 30 days.
*** Inpatient care is computed for the reference period of 365 days.

Living with a family is considered as the most preferred living arrangement, especially for older people. In India, children and families have the prime responsibility of taking care of older adults. However, with declining fertility, increased life expectancy and conventional living arrangements of the elderly in India are undergoing substantial changes with changing family structures and lifestyles. Older people living alone or only with their spouse has increased in recent years, and caregiving is becoming a challenge. The shift in the age composition of the population necessitates the need for reassessing living arrangements, family structure, and social support for older adults.

LASI gathered information on family and supporting social networks, including the multigenerational family structure, intimacy, and relationships, current living arrangements and

Table 6: Percent Distribution of Elderly Aged 60 and Above by Type of Current Living Arrangements and Percentage of Elderly Satisfied with Current Living Arrangements across States/Union Territories

States/Union Territories	Living Alone	Living with Spouse	Living with Spouse and Children	Living with Children (without Spouse)	Living with Others	Satisfied with Current Living Arrangement
India	5.7	20.3	40.6	27.6	5.7	74.9
Bigger states						
Andhra Pradesh	9.0	33.5	28.9	25.0	3.8	69.4
Assam	3.7	9.0	46.7	37.5	3.1	72.9
Bihar	2.9	22.5	48.5	20.0	6.0	80.1
Chhattisgarh	6.8	24.8	36.3	26.3	5.9	80.9
Gujarat	4.6	20.2	41.8	28.9	4.5	87.7
Haryana	2.5	11.2	48.0	32.9	5.4	87.5
Jammu and Kashmir	1.2	6.0	58.8	29.8	4.3	67.1
Jharkhand	3.7	19.3	46.7	26.8	3.6	82.0
Karnataka	5.1	19.2	36.4	35.1	4.3	59.6
Kerala	5.1	24.0	35.7	27.7	7.5	79.8
Madhya Pradesh	6.1	24.0	42.3	21.1	6.5	79.8
Maharashtra	5.0	17.4	44.3	28.2	5.2	85.9
Odisha	5.7	20.5	41.4	26.8	5.6	83.3
Punjab	2.2	12.6	50.0	28.1	7.1	81.7
Rajasthan	4.6	22.7	43.4	24.5	4.9	83.7
Tamil Nadu	15.2	25.4	23.9	25.2	10.4	65.2
Telangana	10.5	31.2	27.5	26.1	4.8	65.1
Uttar Pradesh	4.3	16.4	44.1	28.8	6.3	67.7
Uttarakhand	5.9	22.7	38.1	23.5	9.8	85.6
West Bengal	4.7	19.5	38.1	33.4	4.3	65.7
Smaller states/union territories						
Andaman and Nicobar Islands	3.3	22.3	42.3	27.4	4.7	82.9
Arunachal Pradesh	5.4	18.7	41.1	30.9	4.0	72.3
Chandigarh	2.7	19.1	43.8	30.1	4.3	87.8
Dadra and Nagar Haveli	3.8	20.0	43.4	28.8	4.1	85.4
Daman and Diu	9.0	14.6	43.2	23.9	9.4	88.1
Delhi	1.7	10.3	55.6	28.2	4.3	78.0
Goa	4.2	13.2	44.1	32.0	6.6	85.8
Himachal Pradesh	1.8	14.5	46.2	30.6	6.8	96.9
Lakshadweep	4.7	8.2	49.6	31.9	5.6	95.1
Manipur	2.7	12.6	49.2	29.4	6.1	62.2
Meghalaya	3.5	7.2	43.6	39.6	6.2	80.9
Mizoram	3.6	13.2	48.7	27.1	7.4	94.8
Nagaland	13.0	20.3	44.3	18.6	3.7	85.2
Puducherry	8.8	24.2	30.0	29.4	7.6	87.5
Tripura	5.0	20.0	43.6	27.1	4.4	66.3

satisfaction. Table 6 presents the types of current living arrangements of elderly aged 60 and above by states/union territories. Among the elderly aged 60 and above, living alone was the highest in Tamil Nadu (15%) followed by Nagaland (13%) and Telangana (11%). More than half of the elderly respondents in Delhi, J&K, and Punjab were living with a spouse and children.

Satisfaction with current living arrangements reflects how well older adults have been taken care of and how comfortable they are with whomever and wherever they live. The satisfaction of older adults with their current living arrangements is presented in Table 6. The majority of the respondents, irrespective of gender, was satisfied with their current living arrangements. Overall, dissatisfaction was higher among elderly aged >60 years than older adults aged <60 years.

Financial Support Received/Provided

Social support is closely linked with positive health and psychological well-being, especially in old age, and encompasses more than physical presence and social care. In a country like India, financial support is essential for a positive sense of well-being for the elderly as it directly affects their everyday life and social prestige. Along with the financial support received by the elderly, it is important to understand the contribution made by them in providing financial support to family and friends. Financial help includes providing money, helping to pay bills, and covering the cost of medical care, schooling, and marriages.

Table 7 presents the financial support received and provided by the elderly aged 60+ both from and to their family members and friends during the past 12 months according to their background characteristics. Fifteen percent of the elderly in India received financial help from family members or friends, and 6% provided financial help to others. Receiving financial help was more common among the elderly living alone (28%) compared with only 13% among the elderly living with a spouse and children. Elderly persons without any formal education, and those staying in rural areas, received more financial help in the past 12 months. The richest, those with a higher education, and elderly men provided more financial help than their counterparts.

The statewise differentials on financial support received from or provided to family and friends by elderly persons aged 60+ are presented in Table 7. A substantial proportion of elderly aged 60 years and above in Bihar, Arunachal Pradesh, and Nagaland receives financial support from family and friends, and a relatively higher proportion from J&K, Chhattisgarh, Bihar, Arunachal Pradesh, Meghalaya, and Nagaland provide financial support to family and friends.

Intra-household decision-making: Economic and human development is critically influenced by the ability for decision-making and resource allocation at the household level. Many decisions made at the household level influence the welfare of the individuals living in that household as well as their communities. The intra-household dynamics of decision-making may have significant impact on the welfare outcomes of family members (Angel-Urdinola and Wodon 2010). Within households, many factors such as age, marital status, culture, income level, and education influence the dynamics of decision-making.

Old age is considered as a period of disengagement from major activities in life pertaining to work, earning, and household management related responsibilities, and decision-making shifts to the younger and earning generation. People are living longer and have an increased post-retirement life span, which will be full of loneliness and emptiness if they are not involved in family and social activities in their later years. To understand the role and involvement of elderly persons in decision-making, the respondents were asked about who usually makes the decisions in important household matters such as children's marriage, the buying and selling properties, and the education of family members.

Table 7: Percentage of Elderly Aged 60 and Above Received and Provided Financial Support (during last one year) and by Role in Decision-making in Selected Household Matters by Sex across States/Union Territories

States/Union Territories	Financial Support		No Role in Household Decision-making					
			Marriage of Child (any gender)		Buying and Selling of Property		Education of Family Member	
	Received	Provided	Male	Female	Male	Female	Male	Female
India	15.2	5.9	4.7	11.3	4.5	15.3	10.5	22.0
Major states								
Andhra Pradesh	12.9	7.3	1.9	7.6	2.3	7.8	6.6	12.5
Assam	12.2	6.1	4.4	5.6	2.7	7.6	5.5	13.9
Bihar	30.0	10.1	4.8	9.3	5.1	16.3	12.3	21.9
Chhattisgarh	14.8	11.3	3.7	11.1	2.4	9.6	7.4	16.1
Gujarat	9.8	6.1	2.1	10.9	3.2	16.0	9.2	25.2
Haryana	5.8	6.3	7.4	6.7	7.3	13.0	19.0	24.1
Jammu and Kashmir	24.0	12.9	1.8	8.7	1.9	21.7	9.2	23.6
Jharkhand	14.7	4.7	9.6	20.7	8.3	21.2	15.4	32.4
Karnataka	16.9	8.7	3.8	14.6	5.9	22.3	16.6	40.5
Kerala	19.9	6.3	2.2	4.2	1.0	8.9	2.9	10.1
Madhya Pradesh	8.5	4.4	5.3	7.2	5.2	10.3	10.3	12.1
Maharashtra	23.6	6.4	8.1	24.8	8.1	25.7	15.4	34.4
Odisha	11.9	3.8	2.0	6.8	2.7	11.4	4.9	14.8
Punjab	6.1	3.2	1.0	2.9	1.1	5.9	3.0	6.9
Rajasthan	12.8	6.2	6.8	12.4	6.9	16.7	14.4	23.9
Tamil Nadu	13.0	5.0	2.6	7.2	2.3	7.8	5.5	11.5
Telangana	7.8	2.4	2.1	9.9	1.7	11.6	7.8	18.6
Uttar Pradesh	13.7	4.6	4.4	8.1	5.1	12.8	11.8	19.2
Uttarakhand	4.5	7.1	0.7	5.0	0.5	6.3	6.6	16.4
West Bengal	10.9	3.6	4.7	12.6	1.9	18.2	5.9	23.0
Smaller states/union territories								
Andaman and Nicobar Islands	3.9	2.8	1.4	8.0	1.4	4.1	2.3	11.5
Arunachal Pradesh	35.8	15.3	28.3	45.5	12.3	31.8	14.8	34.1
Chandigarh	3.6	5.6	1.9	2.2	2.8	3.1	3.7	5.3
Dadra and Nagar Haveli	9.1	8.8	15.1	21.6	17.3	30.5	22.9	33.7
Daman and Diu	15.2	4.7	1.9	12.1	2.3	15.4	16.7	28.7
Delhi	4.2	1.7	5.7	5.2	2.6	9.5	6.1	13.6
Goa	6.1	3.3	1.8	8.1	6.8	20.6	10.1	22.3
Himachal Pradesh	14.4	8.7	3.6	9.6	4.0	15.1	8.8	24.6
Lakshadweep	14.2	6.1	0.4	2.2	0.4	4.1	1.7	5.5
Manipur	23.5	8.5	1.2	3.2	1.1	3.6	7.2	12.8
Meghalaya	21.9	14.9	1.7	1.2	1.3	0.6	1.7	3.6
Mizoram	4.1	3.8	1.9	0.3	2.1	1.3	2.4	1.9
Nagaland	33.7	16.6	1.0	2.4	0.7	2.5	0.9	2.5
Puducherry	14.0	3.7	1.0	1.9	1.1	1.5	1.3	3.6
Tripura	6.1	1.4	1.1	3.1	0.6	3.6	1.9	3.2

Table 7 shows the extent of decision-making among elderly persons aged 60 and above in selected household matters by sex and across states. Comparatively, a higher proportion of elderly women did not have any role in decision-making in the household. Across India, 11% of elderly women did not have any role in the decision-making for the marriage of their son or daughter, 15% on buying and selling of property, and 22% on matters of education of family members compared to 5%, 5% and 11%, respectively among elderly males. The pattern of decision-making among elderly persons in selected household matters by sex across states reveals large variations. Arunachal Pradesh, Maharashtra, Dadra and Nagar Haveli, Jharkhand, Karnataka, West Bengal, Rajasthan, and Daman and Diu show a comparatively higher percentage of women who did not have any role in the household decision-making.

Economic Well-being of Older Adults in India

The economic well-being of LASI households was assessed using comprehensive information on consumption, income, wealth, and debt. Table 8 presents indicators on economic well-being of LASI households in India. These include monthly per capita consumption expenditure (MPCE), non-food expenditure as a share of MPCE, per capita health expenditure as a share of MPCE, annual per capita income (PCI), share of income by wage and salary, annual PCI from government transfer, percentage of urban households owning a house, percentage of households with any loan and households covered by any health insurance. Data on consumption expenditure were collected using the abridged version of the consumption schedule of the National Sample Survey (NSS) with a set of 11 questions on expenditure on food items and 29 questions on non-food items. Food expenditure data were collected for the reference period of seven days and non-food expenditure data for the reference period of 30 days and 365 days. Data on expenditure on outpatient and inpatient healthcare services were also collected as part of household consumption expenditure. The food and non-food expenditures have been standardised to a 30 days' reference period. The MPCE has been computed as the summary measure of consumption. Both the mean and median of per capita expenditure are presented in view of skewed distribution of consumption expenditure data.

The estimated mean MPCE of India was ₹2,967; ₹2,543 in rural areas and ₹3,944 in urban India. The state variations in MPCE reflect the general pattern of economic development across the states. The MPCE in urban areas was higher than that in rural areas across all the states and union territories. About half of the consumption expenditure in India was spent on non-food items, although this proportion varied from 40% in Bihar to 55% in Punjab. The share of non-food expenditure was higher in the more developed states. Health expenditure accounted 13% of consumption expenditure, which varied from 5% in Daman and Diu to 19% in J&K. The share of

Table 8: Economic Well-being of Older Adults across States/Union Territories

States/Union Territories	Monthly per Capita Consumption Expenditure (MPCE) Mean	Monthly per Capita Consumption Expenditure (MPCE) Median	Non-food Expenditure as a Share of MPCE (%)	Health Expenditure as a Share of MPCE (%)	Annual Per Capita Income (₹)	Wage and Salary as a Share of Total Income (%)	Annual per Capita Income from Govt Transfers (₹)	House Ownership in Urban Areas (%)	Households Taken Loan (%)	Households Covered by Any Health Insurance (%)
India	2,967	2,287	49.5	13.0	44,901	44.7	1,513	76.9	31.5	26.2
Bigger states										
Andhra Pradesh	3,517	2,918	50.2	13.5	52,216	55.5	2,341	58.0	44.0	41.8
Assam	2,551	2,065	44.2	12.9	36,349	54.2	1,251	77.0	21.1	64.5
Bihar	2,007	1,724	39.8	14.5	26,628	42.9	698	95.1	41.1	3.2
Chhattisgarh	1,945	1,499	45.9	6.6	43,685	34.4	1,413	86.8	29.4	52.6
Gujarat	3,011	2,553	49.0	9.5	56,802	33.6	599	80.8	20.9	38.5
Haryana	2,952	2,543	51.4	10.4	53,940	47.1	2,757	83.1	17.0	10.2
Jammu and Kashmir	4,411	3,664	46.4	18.6	40,484	51.5	488	98.5	14.8	3.0
Jharkhand	2,475	1,933	44.8	11.0	34,452	44.8	1,679	79.2	22.6	28.4
Karnataka	3,868	2,934	50.0	9.8	54,498	47.6	2,130	60.9	52.5	29.5
Kerala	3,435	2,798	50.9	17.0	57,731	46.7	2,113	83.6	32.9	44.2
Madhya Pradesh	2,835	2,287	49.5	12.2	41,258	37.1	2,077	85.5	34.3	8.9
Maharashtra	3,279	2,349	57.1	14.5	52,508	50.4	1,813	79.4	33.4	11.4
Odisha	2,316	1,841	45.5	13.1	38,697	36.2	2,137	82.8	40.7	62.0
Punjab	4,285	3,294	55.2	13.5	50,373	38.1	1,106	84.7	25.0	8.3
Rajasthan	2,882	2,427	53.2	11.8	49,322	40.7	1,841	91.7	26.8	51.7
Tamil Nadu	3,036	2,557	46.5	9.1	52,824	50.8	2,199	64.3	33.2	48.5
Telangana	3,379	2,663	52.2	14.4	52,219	45.6	3,037	63.2	38.7	51.8
Uttar Pradesh	2,348	1,960	48.3	16.6	28,331	40.2	627	89.1	24.3	2.9
Uttarakhand	3,034	2,401	52.0	12.5	52,899	45.5	862	88.2	25.0	21.4
West Bengal	2,913	2,329	45.1	16.9	48,588	41.3	2,099	84.3	32.1	24.8
Smaller states/union territories										
Andaman and Nicobar Islands	4,418	3,135	49.5	7.0	70,753	63.3	2,173	76.7	8.3	1.2
Arunachal Pradesh	3,557	2,964	47.6	17.0	46,493	51.7	1,090	26.8	5.3	10.4
Chandigarh	5,691	4,639	54.0	9.5	1,04,387	61.2	1,111	-	13.7	21.1
Dadra and Nagar Haveli	3,080	2,249	53.1	6.0	48,672	56.3	1,269	60.3	19.7	55.3
Daman and Diu	3,502	3,097	38.1	5.1	43,703	53.3	1,399	68.0	12.0	18.9
Delhi	3,611	2,885	45.0	9.2	67,432	47.8	849	-	6.9	22.9
Goa	4,713	3,921	52.0	9.0	62,018	52.2	1,600	84.7	29.1	58.5
Himachal Pradesh	3,880	2,951	55.0	14.4	62,784	39.8	1,141	83.1	28.6	21.5
Lakshadweep	2,457	1,910	43.2	9.6	44,432	57.9	383	91.7	2.9	14.4
Manipur	3,990	3,520	51.3	14.4	45,365	66.3	407	91.5	16.6	1.5
Meghalaya	2,562	2,058	44.2	10.7	29,461	61.0	219	66.9	5.3	55.2
Mizoram	3,215	2,292	54.5	9.9	50,481	48.2	499	72.2	9.1	66.0
Nagaland	4,148	3,019	51.1	7.9	42,868	36.3	357	75.4	6.9	1.1
Puducherry	2,814	2,329	48.2	7.2	58,173	60.6	4,285	70.1	26.4	8.7
Tripura	3,074	2,592	43.4	14.2	45,916	57.2	1,987	83.0	34.6	38.7

Figure 3: Catastrophic Health Spending at Various Thresholds

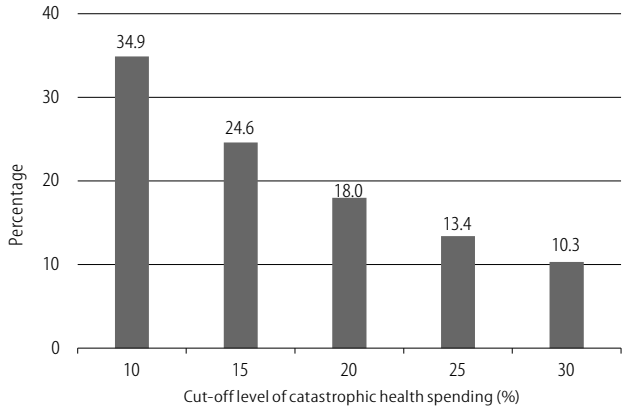


Figure 4: Percentage of Households Incurring Catastrophic Health Expenditure, States/Union Territories

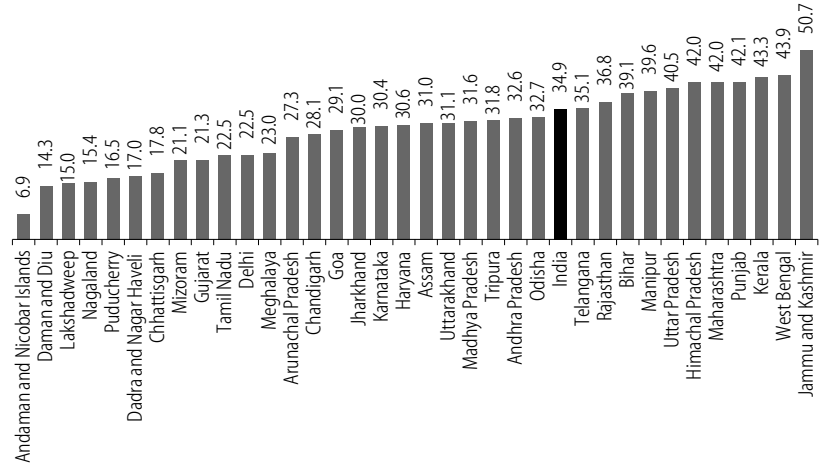
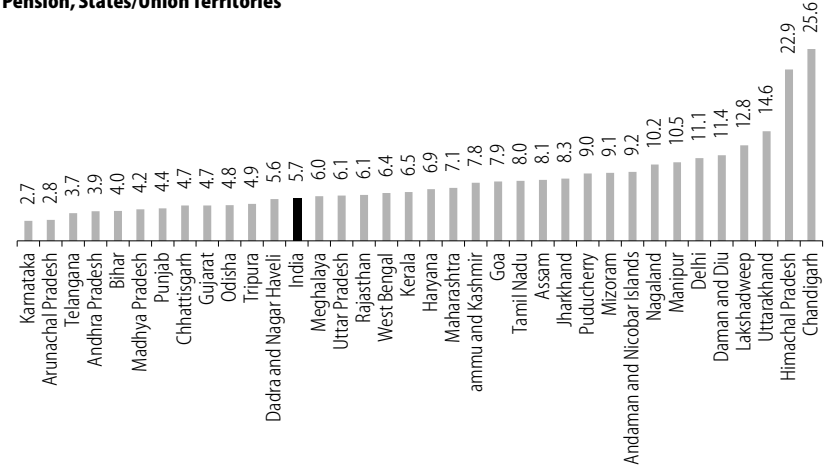


Figure 5: Percentage of Ever Worked Elderly Aged 60 and Above* Who Are Currently Receiving Pension, States/Union Territories



*Based on all elderly aged 60 and above who were officially retired from public or private employment.

health expenditure was over 15% in Kerala, UP, J&K, Arunachal Pradesh, and West Bengal.

The annual PCI for LASI age-eligible households in India was estimated at ₹44,901 ranging from ₹26,628 in Bihar to ₹57,731 in Kerala. The states with a higher level of PCI also had a higher level of MPCE. More than two-fifths of income were earned from wage/salary in the country, with the highest in Manipur (66%) followed by Andaman and Nicobar Islands (63%) and Chandigarh (61%). The income from government transfers was the highest in Puducherry (₹4,285) and the lowest in Meghalaya (₹219). Besides consumption and income, housing is a major issue in urban India and over one-fourth of consumption expenditure was spent on house rent. About 77% of urban households in India own a house with the highest in J&K. Among the major states, about half of the urban households do not own a house. Similarly, about one-third of Indian households had one or more loans which was higher than national average in Odisha, Andhra Pradesh, Karnataka, and Bihar.

In recent years, India's health insurance coverage has been increasing. The state and the central governments are providing health insurance schemes for the poor and disadvantaged. Overall, 26% LASI households were covered by any type of health insurance ranging from 59% in Goa to just 3% in UP. More than half of LASI households were covered by health insurance in Telangana (52%), Chhattisgarh (53%), Dadra and Nagar Haveli (55%), and Goa (59%). Household health insurance coverage was lower than 10% in Bihar, UP and MP.

Figure 3 presents the health expenditure exceeding 10% of consumption expenditure, a commonly used threshold of catastrophic health spending (CHS). At the national level, about 35% households incurred catastrophic health expenditure. The extent of CHS declines with the increasing cut-off point. Eighteen percent of households incurred CHS even at the 20% cut-off level and 10% incurred CHS even at 30% cut-off point. The CHS is the highest in J&K (51%) followed by West Bengal (44%); the lowest is in Andaman and Nicobar (7%) followed by Daman and Diu (14%). The extent of catastrophic health expenditure was higher in the poorer states of UP and Bihar as well as in developed states of Punjab and Kerala (Figure 4). The extent and nature of catastrophic health expenditure depended on the type of health service, income of the household, age of members and type of diseases.

Table 9 (p 49) presents the percentage of older adults who were working at the time of the survey according to sex by states/ union territories. The proportion of currently working elderly men aged 60 and above was 51% compared with 22% of elderly female. Among older adults aged <60, male work participation was higher in Karnataka (82%), Odisha (78%), Andhra Pradesh (77%), Assam (77%), and Chhattisgarh (76%). Work participation rate among female older adults aged 45 years and above was the highest in the Dadra and Nagar Haveli (58%) followed by Himachal Pradesh (51%). Among elderly persons aged 75 years and

above, 28% of men and 9% of women were working at the time of the survey.

Only 6% officially retired elderly persons aged 60 and above were receiving a pension (Figure 5, p 48). The proportion of elderly persons who were receiving pension was the highest in Chandigarh (26%) followed by Himachal Pradesh (23%), Uttarakhand (15%), and Lakshadweep (13%), whereas the lowest is in Karnataka (3%), Arunachal Pradesh (3%), and Telangana (4%).

Table 9: Percentage of Older Adults and Elderly Currently Working According to Sex, States/Union Territories

States/Union Territories	Male			Female		
	Age 45–59*	Age 60+	Total	Age 45–59*	Age 60+	Total
India	91.5	50.9	70.4	44.2	22.0	35.0
Bigger states						
Andhra Pradesh	92.7	60.4	76.6	52.5	30.9	44.7
Assam	94.4	51.2	76.8	35.3	12.5	27.9
Bihar	92.9	54.9	69.2	35.0	16.2	26.1
Chhattisgarh	93.8	52.5	76.1	59.5	24.2	47.2
Gujarat	87.3	49.8	69.1	52.5	26.8	41.6
Haryana	88.8	37.4	63.7	24.3	5.8	15.6
Jammu and Kashmir	74.9	30.2	49.6	4.4	0.2	2.6
Jharkhand	94.5	50.3	69.4	42.1	24.2	34.5
Karnataka	95.8	66.1	81.9	57.6	26.1	46.3
Kerala	82.7	46.9	62.6	23.3	9.9	16.8
Madhya Pradesh	89.7	46.3	67.3	44.7	23.9	35.5
Maharashtra	93.5	50.2	69.8	58.8	33.6	47.5
Odisha	95.4	59.8	78.0	39.1	16.6	30.0
Punjab	83.4	33.7	56.1	13.4	5.0	9.9
Rajasthan	89.7	46.8	66.9	46.2	19.6	33.6
Tamil Nadu	92.3	52.1	71.7	50.7	29.1	41.5
Telangana	92.0	55.1	72.8	60.8	32.8	49.7
Uttar Pradesh	88.9	48.6	66.4	33.7	16.3	26.0
Uttarakhand	91.9	40.3	62.5	34.9	20.3	28.5
West Bengal	91.7	46.4	70.2	35.5	19.6	29.8
Smaller states/union territories						
Andaman and Nicobar Islands	77.3	27.2	53.3	15.9	4.1	11.8
Arunachal Pradesh	76.2	48.8	68.4	52.2	30.1	47.6
Chandigarh	87.5	24.6	59.7	22.6	13.4	19.3
Dadra and Nagar Haveli	93.4	61.6	81.2	62.9	49.0	57.5
Daman and Diu	77.1	29.9	54.0	43.4	18.4	31.8
Delhi	92.1	36.5	68.1	17.6	6.0	13.7
Goa	77.8	33.7	55.0	16.6	4.9	11.7
Himachal Pradesh	91.9	50.4	67.7	64.7	30.8	51.2
Lakshadweep	87.6	21.6	48.8	7.1	1.0	4.6
Manipur	88.8	46.5	68.7	68.2	31.8	51.4
Meghalaya	89.6	42.9	69.4	63.2	30.4	49.6
Mizoram	86.4	40.4	62.8	56.0	23.0	42.9
Nagaland	82.6	46.8	62.0	47.8	40.6	44.7
Puducherry	94.1	50.1	71.4	35.3	14.3	26.0
Tripura	91.9	51.2	72.6	41.4	21.8	34.8

*Including spouse less than 45 years of age.

Conclusions

Findings from LASI Wave 1, the first nationwide population-based study of older adults aged 45 and above by far offer comprehensive new insights on the health, social and economic well-being of the older adult population of all the states and union territories.

First, results from self-reports of chronic diseases with diagnosis highlight the high prevalence rates of CVDs, diabetes, lung diseases, musculoskeletal diseases, vision impairments, hearing problems, and mental health disorders among the older adult population in India. These results confirm the estimates from the Global Burden of Disease Study (ISDBS 2017), several regionally focused studies (Mote 2016) and the rising burden of NCDs in India. The LASI results also support the findings of previous studies that India's escalating burden of NCD are contributed by the large burden of behavioural, metabolic, biological, and environmental risk factors (WHO 2021; ISDBS 2017). These are preventable and modifiable risk factors that include physical inactivity, tobacco and alcohol use, high risk BMI, high-risk waist–hip ratio, raised blood pressure and high cholesterol in addition to indoor and ambient air pollution (WHO 2021).

The rising burden of CVDs, diabetes, respiratory diseases among the older adult population in India represents some of the world's largest health losses, with enormous policy implications for their effective prevention and control and to address the long-term healthcare and economic burden. The Ministry of Health and Family Welfare launched the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCCDS) in 2010 (MoHFW 2010), and the National Programme for Health Care of Elderly launched in 2011 (MoHFW 2011). However, India is yet to establish policies and intervention strategies for universal screening and treatment to prevent and control NCDs and to be on track for addressing the Sustainable Development Goals.

Second, although the rise in the NCD burden is a global phenomenon, what is more striking of India is the cross-cutting pattern of subnational differences. The self-reported diagnosed conditions revealed predictably much higher prevalence rates of chronic diseases in the demographically advanced south, western and other states/union territories with low fertility and a larger share of the elderly population. Whereas the prevalence rates of chronic diseases based on biomarkers (direct health examination)—blood pressure, lung disease, vision acuity, metabolic risk, and functional abilities and the prevalence of symptom-based conditions, such as angina and depression disorders—were as much higher in the demographically laggard states, indicating a much higher prevalence of undiagnosed chronic health conditions. Low literacy among the elderly, poor awareness, and lack of access to healthcare are major reasons for this. While these results confirm that the NCD burden is escalating even in the demographically laggard states, the heavier burden of diabetes and bone and joint diseases in the south Indian states/union territories suggest significant regional variations in NCD risk factor epidemiology highlighting the need for state-specific community intervention models.

Third, results reveal an overall age-associated rise in the prevalence of chronic health conditions which is consistent and more pronounced for cardiovascular and lung diseases and with an increased risk of experiencing more than one (multiple) chronic health conditions at the same time. While the results reveal much higher prevalence of NCDs among the elderly aged 60+, they also confirm the rising burden of NCDs among adults aged 45–59 with the premature onset of NCDs from 45 years of age in India (Arokiasamy 2018). Likewise, healthcare needs and demand for health services increase with age with a strong age gradient of hospitalisation and outpatient visits among elderly aged 60 years and above. In

addition, the state variations in the use of inpatient and outpatient care from public health centres are substantial. Over four-fifths of older adults aged 45 years and above used a public health facility for inpatient care in Tripura, Andaman and Nicobar Islands, and J&K and less than one-fifth in Jharkhand followed by Maharashtra and Karnataka, indicating a more effective public healthcare system. The pattern was similar for outpatient care.

In addition, results on access to diagnosis and treatment of chronic health conditions indicated the vulnerability of the poor, illiterate, rural, and female widowed elderly. The outpatient rate was higher in rural than in urban areas, among women than men, among the widowed than those who are currently married, and those living alone. Also, the use of public health facility was higher among the poor elderly, Scheduled Tribe, and those in rural areas. Less than one-fifth of elderly aged 60 and above have insurance coverage compared with one-fourth among adults aged 45–59.

Fourth, LASI findings also shed important insights on neglected domains in the ageing literature such as how elderly living arrangements are changing, whether elderly provide or receive financial support and the level of awareness and coverage of social security benefits. While the common types of living arrangement among the elderly were living with spouse and children, followed by living with only children and living with spouse only, those living alone are increasing. More elderly women than men experienced ill-treatment, where caregivers, more often their closely related family members, were the primary abusers. This, naturally, worsens the victim's sense of helplessness and make them reluctant to report such incidents. The awareness and coverage of social security benefits among eligible poor households is still low in India calling for better campaign strategies to create and raise awareness on these issues. Only about a third of the rural elderly from below poverty line (BPL) households received benefits from old age pension. Among the elderly widows belonging to BPL households, only a quarter benefited from widow pension. The awareness and utilisation among the rural elderly about various concessions provided by the government for senior citizens is rather limited.

Lastly, economic well-being of households is the key determinant of health and well-being of elderly persons. LASI households with an elderly member had lower PCI, but higher consumption expenditure with high health expenditure compared with households without any elderly member. Elderly households in India are economically vulnerable and prone to financial shocks. About a third of LASI households incurred CHS. The proportion of households incurring catastrophic health spending is higher in both economically developed states of Kerala and Punjab as well as poorer states of Bihar and UP. With only a quarter of households in India covered by any form of health insurance, healthcare expenses were the single largest cause of indebtedness in urban and the third largest in rural India. India's elderly population continues to work beyond aged 60 (36% are currently working) to support themselves and their families given India's predominantly informal labour force structure with only 6% receiving retirement pension.

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