Building knowledge base on
Population Ageing in India
Working paper: 3

Elderly Health in India

Dimension, Differentials and Determinants

Moneer Alam

Anup Karan

UNFPA

Editor's Note

Dear readers,

In most countries of the world, including India, population ageing is likely to become a serious policy and programmatic issue in the coming decades. UNFPA in collaboration with the Institute of Social and Economic Change, Bangalore and the Institute of Economic Growth, Delhi has launched a major research project to build a knowledge base on population ageing in India (BKPAI). The study focuses on social, economic, health and psychological aspects of elderly. This peer reviewed publication is one in the series of working papers. We are sure that the findings of this publication will help in generating a healthy debate and policy response amongst a wider cross-section of scholars, professionals, policy makers and civil society.

Editorial Team

Citation Advice:

Alam, Moneer and Karan, Anup. 2011. "Elderly Health in India:Dimension, Differentials and Determinants", BKPAI Working Paper No. 3, United Nations Population Fund (UNFPA), New Delhi.

Disclaimer

The study has been supported by the United Nations Population Fund - UNFPA and reviewed by a wider group of demographers and researchers prior to its finalization. The contents, analysis, opinions and recommendations are solely of the author/s, and do not necessarily reflect the views of UNFPA.

Elderly Health in India: Dimension, Differentials and Determinants

Moneer Alam
Anup Karan

Institute for Social and Economic Change, Bangalore
United Nations Population Fund, New Delhi
Institute of Economic Growth, Delhi

December 2011

Elderly Health in India: Dimension, Differentials and Determinants

Abstract

This paper provides a review of old-age health in India and its important dimensions including size, aetiology and the socioeconomic distribution of the sick and disabled (i.e., epidemiology of ageing) to help in evolving health-care policies for the older population (60+) in the country. Drawing largely on data obtained from previous population censuses and the multiple rounds of surveys on health and disabilities conducted by the National Sample Survey Organisation (NSSO), this study analyses the serious morbidity issues with social backwardness, consumption and poverty as the core factors in the health outcomes of the older population. The large concentration of the aged in lower consumption quintiles and among the socially backward appears to pose serious challenges for the country's health care system. Another important value addition of this paper lies with the discussion on the anomalies in health data, particularly those relating to disabilities. The study argues that these anomalies may not only affect research on geriatric health, it may undermine efforts to plan for old age healthcare services in the country as well as its financing mechanism.

1. Introduction

According to the United Nations' projected age structure of population for 2010 (UN, 2008 revision), India is expected to have a total of over 91.6 million persons in 60+ age groups, the second largest population of older adults in the world after China. Growing at a rate of over 3 per cent per annum, this exceeds the annual average growth rate achieved by the younger (0-14 and 15-59) cohorts. UN projections also reveal that India has added a total of about 12.6 million aged persons between 2005 and 2010. This trend is likely to accelerate further in the coming decades for a variety of socio-demographic and health reasons (Dyson, 2004; Visaria, 2004; Guilmoto and Rajan, 2000; Nair and Padmadas, 1999), and points to the need for understanding its various ramifications, particularly those in the realm of health and its delivery mechanism. A review of old age health and its important dimensions including size, aetiology and socioeconomic distribution of the sick and disabled (i.e., epidemiology of ageing), are issues with considerable merit, especially for evolving policies to meet the heath care needs of the growing number of older persons. This analysis focuses largely on several of these issues.

Clearly, the health issues of the ageing are not restricted to a set of diseases caused at times by free radicals[1], abnormalities of motor function, audio-visual degeneration and so on; they also include functional incapacitation due to senescent changes in human organs and frailties. All these diseases, infirmities and frailties may push a large number of older persons, particularly those beyond 75 or 80 years, below the threshold of physical-cognitive-sensory abilities required to be autonomous and perform basic activities of daily living (BADL) without support. To ensure later life welfare and also to meet likely escalations in demand for the management of complex conditions with the growing number of older persons, it may not be implausible for the government to assimilate most of these issues in its health sector strategies, build necessary infrastructure and evolve instruments to cover health/disability risks of ageing. A further justification for some of these considerations may well be drawn from changes in major societal norms. The nuclearisation of families, erosion in intergenerational bonds and reversal in care-giving role played by families may be only a few examples with serious implications for the ageing and later life health.

While many of these issues and societal changes have already started gaining recognition in literature on ageing and old age health in India[2], a large body of this literature still remains non-representative due to smaller (purposive) samples and/or confined to limited areas of more specific concerns like age-related diminution of capabilities, financial cost of diseases/disabilities or care giving burden, etc. Many conceptual and data issues, often responsible for large variations in sicknesses and disabilities over time, have failed to draw sufficient attention. Arguably, improper conceptualisation and

[1] Medically, a large number of old age diseases are caused by the increasing number of oxidised free radicals in the human body. These free radicals destroy genetic material and body cells. They have an unnatural molecular structure and spread in the body because of various pollutants, nicotine intake, firewood or other forms of smoke, radiation, fried food, mental stress, plant pesticides and other toxic material (for further information on this, *see* http://www.all-creatures.org/health/ageand.html: downloaded February, 2011). Given that India is likely to continue with many of these issues for quite some time, old age diseases and the attendant demand for medical care by a growing population of older adults may emerge as a major national concern.

[2] A partial list of these studies may include Siva Raju, 2002, 2000; Sathyanarayana, *et al*., 2010; Alzheimer's and Related Disorders Society of India, 2010; Alam, 2006; Dey, 2003; Gupta, *et. al*. 2001; Reddy, 1996, etc.

inconsistencies in estimates of poor health and disabilities may impede attempts to plan for old age health in the country as shown in the following table.

Table 1.1 shows significant variations in sample frames used by the National Sample Survey Organisation (NSSO) in the preceding three health-morbidity and disability surveys (52nd, 58th and 60th rounds), the only major source for nationally representative data on old age health and disabilities at the household level[3]. This table clearly reveals significant differences in poor old age health and disability between the samples used for the 52nd and 60th rounds, despite major comparability issues between the three NSS rounds, as discussed in Section 3.

Table 1.1. Health-morbidity and disability

NSS Rounds and Sample Size		Sample Households (number)	Sample Population (number)	Estimated Population (000)	Elderly Persons (000)
52nd Round	Rural	71,284	380,885	636,844	36,206
(1995-96)	Urban	49,568	249,003	203,260	10,164
	All	120,942	629,888	840,104	46,370
58th Round	Rural	45,571	259,755	763,493	49,698
(2002)	Urban	24,731	136,021	293,755	17,350
	All	70,302	395,775	1,057,248	67,048
60th Round	Rural	47,302	250,775	714,953	50,256
(2004)	Urban	26,566	132,563	243,787	16,105
	All	73,868	383,338	958,740	66,361

Source: 52nd, 58th and 60th Rounds of National Sample Surveys

Non-conforming samples are not the only issue that make old age health and disabilities a complex issue to examine. There are also some important conceptual issues that need to be considered. For example, conditions that cause disability (heart conditions, cancer, diabetes, etc.) include those that also cause death. Disabilities could also be anatomical, mental or occupationally crippling (Burkhauser, *et. al*. 2002). Many of them even end up as functional dependencies and inhibit people from performing activities of routine personal life (Nagi, 1965, 1976). The latter has started gaining recognition in India only recently (Alam and Mukherjee, 2005; Alam 2009b).The availability of large and representative data collected on the basis of theoretically grounded concepts of functional limitations is still difficult.

The Indian disability law, *Equal Opportunities, Protection of Rights and Full Participation Act, 1995,* treats disability as a civil rights issue and combines it with conditions involving physical/mental impairment and inabilities hampering individuals in performing their normal social roles[4]. Drawing largely upon this approach, the NSSO has emerged as the basic source of data on the incidence of disabilities in both the states and at the all-India level. The NSSO collects disability information both

[3] The National Sample Survey Organisation (NSSO) combines health and disabilities in many of its health surveys. However it conducts special disability surveys as well. The disability estimates from the two surveys differ however because of certain conceptual differences and non-conformities in sample size. A full-length discussion on those issues and conceptual differences is, however, beyond our scope.

[4] For a general discussion on some of these definitional issues, *see* the Policy Brief by Centre for Legislative Research and Advocacy (August 2008). *Also see* a recent study by the World Bank (2009, Chapter 7) that describes the Indian disability laws and provisions at greater length.

through surveys conducted exclusively for this purpose and also as part of its 'morbidity and health care' surveys. The latest disability survey (NSS 58th Round, July-December 2002, Report No. 485) was conducted in 2002 with a focus on five major disability conditions[5]. These are:

- *Mental disability*: Persons who had difficulty in understanding routine instructions or exhibit behaviours like talking to themselves, laughing, crying, staring, violence, fear, suspicion, etc.;
- *Visual disability*: Loss or lack of ability to execute tasks requiring adequate visual acuity;
- *Hearing disability*: This refers to a person's inability to hear properly.
- *Speech disability*: This refers to a person's inability to speak properly;
- *Locomotor disability*: Persons with (a) loss or lack of normal ability to move themselves and an object from place to place, and (b) those with physical deformities in the body (other than limbs) including hunch backs, deformed spine, dwarves, persons with stiff neck of permanent nature who generally did not have difficulty in the normal movement of their body. (*See* NSSO Report Number 485, July-December 2002, pp. 6-7).

A similar conceptual framework was used by the NSSO to define disabilities in *'morbidity and health care'* surveys. Morbidities included conditions arising due to a range of ailments such as gastro-intestinal, cardiovascular and respiratory problems, disorders of joints/bones, diseases of the kidney/urinary system, prostate, neurological and psychiatric disorders, all forms of cancer, eye ailments, diseases of the skin, diabetes, under-nutrition, anorexia, STD, febrile illnesses, diseases of mouth/teeth/gum, tetanus, accident/injury/burns/fractures/poisoning and other diagnosed or undiagnosed diseases. The NSSO also provides a subjective assessment of the health of the elderly by asking respondents to assess their current (i.e., at the time of the interview) and relative (i.e., compared with previous year) health conditions using multiple options ranging from excellent to worst or better to deteriorating health conditions.

Clearly, this entire body of health-morbidity-disability data provided by the NSSO at regular intervals completely misses the classical functional model presented by Nagi in 1965 to distinguish between a clinical and a social approach to disability. The latter brings a more holistic concept of old-age health and activities of daily living (ADL) capabilities[6]. It also helps to draw inferences about the growing problems of functional dependencies and long-term care. Despite these issues, for most of this analysis, data from the health-disability surveys conducted by the NSSO had to be relied upon in the absence a better option.

[5] The previous two surveys on disabilities were conducted during the NSS 36th Round (July-December 1981) and NSS 47th Round (July-December 1991).

[6] Clinical approach to disability invariably relies on the pathologically triggered concept of poor health followed by impairment, functional limitations, disabilities and ultimate end of life. While Nagi (1965) recognises pathology as the ultimate source of impairment and disability, it also tends to make individuals functionally dependent and restricts their social activities. For a detailed discussion on this, *see* Lynch, Brown and Taylor (2009).

Section 2 briefly presents a few specific details about the older population (60 years and above), particularly their economic dependence and habits such as chewing of tobacco and intake of alcoholic products with its likely repercussions on later life health. Section 3 talks about the trends in self-perceived health-morbidity-disability conditions of the older population[7]. Given the diabolical nature of old-age diseases and high treatment costs, one of the questions may be: how do older persons access medical care? Do they mostly go to public facilities? A section is also devoted to examining the socioeconomic correlates of old-age health. Public planning for old-age health, which still remains a nascent issue in India because of the limited understanding about the epidemiology of ageing, is discussed towards the end. The paper ends with a few observations about policy undercurrents.

Barring a few exceptions, most of this study was based on two major data sources, namely Census of India (2001), and the health and disability surveys conducted by the NSSO during 1995-96 (52nd Round), 2002 (58th Round) and 2004 (60th Round).[8] The census data was used to get an idea about the size and composition of the elderly population. Recent UN projections on age-structural changes (World Population Prospects, 2008 revision) have also been used.

2. Number and Composition of Older Persons in India

Population ageing has several far-reaching consequences for families, social organisations, health-care providers, public policy officials and other stakeholders. Physical disabilities and poor health in older people can cause major financial burdens and care-giving responsibilities particularly in low-income households. There is a need to understand in detail the health outcomes of older populations and the disability incidence. This has been attempted in this paper, despite significant constraints on data. Increasing numbers of older persons, feminisation of ageing and decreasing potential support ratios are some of the demographic realities in India, and more particularly in rural areas, that have significant health implications. Almost three-quarters of older persons live in rural areas with inadequate access to health-care services. As women live longer, particularly in very senior ages, the high incidence of widowhood poses major problems of income security (Chen and Dreze, 1995; Gulati 1998; Lamb, 1999). The growing share of both men and women in the higher age brackets – i.e., beyond 70 and 80 years will lead to (i) a growing demand for geriatric health care services; and (ii) income security issues coupled with higher inflationary pressure particularly in the case of the poor and socially deprived.

In addition to the growing visibility of the ageing at the all-India level, several states across the country are ageing much faster than others, as has been pointed out in the demography paper in this series[9]. Another important point to note is the very high concentration of the aged in rural areas where

[7] Despite concerns about self-reporting of perceived health and its inherent subjectivities, it may not be possible to discard the self-reported health data for lack of large-scale hospital statistics (Alam, 2009a).

[8] For conceptual details, method of data collection and sample design, *see* Report Numbers 441 and 507 covering NSS 52nd and 60th Rounds, respectively. The NSS 58th Round was basically used to compare changes in the incidence of disabilities among the elderly. A discussion on the limitations of the NSS data is provided in Section 3.

[9] With a growth in the proportion of the elderly population in many parts of the country including the Southern states, it would be interesting to examine the regional dimensions of old-age health and disabilities. Two issues may be of greater interest, namely, the inter-state variations in old-age health including disabilities, and the health care provisioning for the aged in these states. In particular, how far the southern Indian states are prepared to cope with their ageing population and its health issues? Unfortunately, these issues are beyond the purview of this study.

the health infrastructure for their health care needs is abysmal. Three issues are particularly significant in the case of older women: (i) their very low educational background; (ii) very high economic dependence; and (iii) very high prevalence of widowhood. With rapid changes in the socioeconomic milieu, the breakdown of the traditional family system and the migration of siblings both within and outside the country, the expected increase in the number of widows is particularly challenging. Most of these issues are related to pathology, functional disabilities and the need for providing long-term care.

The vulnerability of older persons in India is also rooted in the fact that over 66 per cent of them are either illiterate or without any formal schooling, with about 80 per cent of women totally illiterate. This degree of educational backwardness is also reflected in the form of poor economic status of the Indian elders and their high levels of (total or partial) dependence. Table 2.1 shows that more than 51 per cent of elders rely on transfers of money to sustain themselves economically. Women obviously outnumber men in economic dependency, both partial and complete. On the lifestyle indicator, Table 2.2 shows that smoking is the most prevalent habit, followed by alcohol consumption. All other intoxicants including *ganja, charas* and opium were consumed by a much smaller fraction of the elderly population. Tobacco and tobacco products were found to be more commonly used by the rural elders.

Table 2.1. Share of economically dependent and independent: NSS 52nd and 60th Rounds

Per cent

Economic Status	60th Round (2004)					52nd Round (1995-96)				
	Persons	Male	Female	Rural	Urban	Persons	Male	Female	Rural	Urban
Independent	34.47	53.60	14.52	33.26	36.62	30.56	49.83	10.83	30.68	30.36
Partially Dependent	13.69	15.26	12.05	14.80	11.73	16.63	19.27	13.94	17.86	14.66
Fully Dependent	51.84	31.14	73.43	51.94	51.65	52.81	30.90	75.23	51.45	54.98
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: NSS 52nd and 60th Rounds (unit level data)

Table 2.2. Lifestyle habits: consumption of tobacco, alcohol and other intoxicants by the elderly 1995-96

Per cent

Tobacco Use	Total	Male	Female	Rural	Urban
Alcohol	4.50	7.16	1.98	5.76	2.27
Tobacco	22.71	27.71	17.97	27.09	14.96
Ganja	0.24	0.37	0.11	0.32	0.09
Charas	0.01	0.02	0.00	0.02	0.00
Opium	0.07	0.11	0.00	0.10	0.02

Source: Calculated on the basis of NSS 52nd Round

3. Morbidity and Disability: Temporal Changes

Using the data from the NSS 52nd and 60th Rounds, this section presents the magnitude and pattern of morbidity and disability among the older population for 1995-96 and 2004. The extent of morbidity has been assessed on the basis of two different recall periods – 15 days for outpatient ailments (both

treated and untreated) and the previous one year for hospitalisation (i.e., inpatient) cases. It is important to note that these two classifications of morbidity burden and utilisation of services are not always mutually exclusive. In 2004, a small proportion (almost 4 per cent) of the elderly population reported both morbidity and the utilisation of health-care services either for the same episode or for different episodes of ailments.

3.1 Magnitude and Pattern of Morbidity

The reporting of ailments among elderly persons doubled between 1995-96 and 2004. In case of short-term outpatient ailments[10], reporting increased from 16 per cent in 1995-96 to 31 per cent in 2004 (Table 3.1). In urban areas, the burden of ailments in the elderly is more than double for both males and females. Hospitalisation also increased from less than four per cent in 1995-96 to more than six per cent in 2004. Hospitalisation among elderly women increased considerably during this period from about three per cent in 1995-96 to 5.5 per cent in 2004.

Table 3.1. Percentage of older persons reporting morbidity (outpatient and hospitalisation), by age, sex and R/U residence, 1995-96 and 2004

Area and Gender	Outpatient		Hospitalisation	
	1995-96	2004	1995-96	2004
Rural + Urban				
Male	16.87	30.85	4.58	6.82
Female	15.80	31.21	2.99	5.46
Persons	16.33	31.03	3.78	6.14
Rural				
Male	17.57	29.25	4.17	5.96
Female	15.65	28.63	2.44	4.74
Persons	16.60	28.94	3.29	5.36
Urban				
Male	14.38	35.99	6.07	9.56
Female	16.32	39.05	4.95	7.65
Persons	15.37	37.55	5.50	8.58

Source: Authors' estimates from NSS 52nd and 60th Rounds

The magnitude of reported ailments in rural areas is lower than that in urban areas (29per cent and 38per cent respectively). The same trend is also true for hospitalisation. In fact, there is a general increase in the reporting of ailments and the utilisation of health care services between the two periods for populations of all ages. However, compared to younger ages, the magnitude and increase of reporting of ailments is considerably higher among older persons (Table 3.2). More than one-third of the total elderly population reported ailments of either short duration (15 days recall) or hospitalisation as against less than one-tenth for the total population. The elderly in the age group 70-79 years registered

[10] This includes approximately two per cent non-treated episodes as well.

the highest increase in morbidity and hospitalisation between 1995-96 and 2004. Further, a 10-year age classification of the elderly population indicates that reporting of ailments and hospitalisation significantly increases after 70 years of age. In 2004, the percentage of out-patients increases by approximately 10 percentage points after 70 years of age i.e., from 27.6 per cent in the age group of 60-69 years to more than 37 in the next age group. Similarly, hospitalisation rates increased by approximately two percentage points in the post-70 years age group as compared to the 60-69 years age group.

Table 3.2. Percentage of population reporting short duration ailments (15 days recall) and hospitalisation (365 days recall) by age groups, 1995-96 and 2004

Age group	1995-96		2004	
	Outpatient	Hospitalisation	Outpatient	Hospitalisation
0-4	7.26	1.08	12.31	2.04
5-14	3.61	0.60	5.04	1.02
15-34	3.68	1.22	5.23	2.01
35-59	6.26	1.98	10.74	3.38
60-69	15.17	3.35	27.59	5.33
70-79	17.25	4.25	37.16	7.72
80 +	21.38	5.21	38.45	7.53
60 +	16.33	3.78	31.03	6.14
All ages	5.39	1.37	9.11	2.40

Source: Authors' estimates from NSS 52nd and 60th Rounds

Further, there are significant sex differentials between rural and urban areas in both short and long duration ailments. Important sex differentials have also been noticed in hospitalisation (long duration) and non-hospitalisation (short duration) cases. To be more explicit, approximately 40 per cent of urban elderly females report short duration ailments with 15 days reference while about 10 per cent of the urban elderly males report hospitalisations based on 365 days reference. As against this, the hospitalisation rate among the rural women is less than five per cent during the same period (*Please see* Table I in the Appendix).

3.1.1 Disease Profile

Among the 10 most common health conditions that affect the elderly population circulatory system disorders topped the list in 2004. These diseases include 'ischemic heart conditions', 'heart attack', 'hypertension', and diseases classified as those related to the circulatory system. Approximately six per cent of the older population reported some kind of circulatory disease either on the basis of the short recall period of 15 days or hospitalisation during the previous one year (Table 3.3). After the circulatory problems reported by the ageing comes 'disorders of joints and joint pain'. About five per cent of the total elderly population has reported these orders and difficulties in movement. However, hospitalisation rates in case of disorder of the joints or pain is very low. Only 0.16 per cent and 0.26 per cent of the elderly reported hospitalisation for this condition in the years 1995-96 and 2004, respectively.

Respiratory infections and asthma have been reported by approximately four per cent of the elderly in 2004. Other diseases such as 'febrile illness', 'diabetes', 'eye and ear ailment' and 'gastro-intestinal', come next, which are reported by approximately 10 per cent of the elderly population. It is interesting to note that the pattern of these conditions and diseases are not very different for males and females. In general, reporting of heart diseases, disorders of the joints and diabetes is higher among women (*see* Appendix Table II). However, hospitalisation is not always higher among the older women with these conditions.

Table 3.3. Incidence of diseases among the elderly on the basis of short term (15 days) recall and hospitalisation, 1995-96 and 2004

Diseases	1995-96		2004	
	Outpatient	Inpatient	Outpatient	Inpatient
No reporting of disease	82.09	94.94	65.54	92.76
Diseases of circulatory system[1]	1.45	0.63	5.51	1.00
Disorders of joints & joint pain	2.10	0.16	4.83	0.26
COPD[2]	1.93	0.24	3.81	0.75
Disabilities[3]	1.15	0.15	3.24	0.22
Febrile illness	3.20	0.32	2.54	0.42
Diabetes Mellitus	0.74	0.15	2.51	0.30
Eye and ear ailments	0.90	0.57	2.10	0.87
Gastro-intestinal	0.93	0.43	2.04	0.66
Mental and behavioural	0.33	0.14	1.01	0.31
Other diagnosed diseases	1.13	1.01	2.56	1.57
Other undiagnosed diseases[4]	3.80	1.17	4.30	0.88
Total	100	100	100	100

Notes: [1] includes heart diseases including heart attacks and hypertension; [2] includes upper and lower respiratory disorders and bronchial asthma; [3]reporting of disabilities in this table is based only on the 15 days and one-year reference period and hence does not capture the total stock of all disabilities; [4]the incidence is based on the reporting of episodes rather than individuals.

Source: Authors' estimates from NSS 52nd and 60th Rounds

Further, there is a significant increase between 1995-96 and 2004 in the reporting of heart diseases, diseases of the joints, chronic obstetric pulmonary diseases (COPD) which relates to difficulties in breathing or coughing up of mucus due to flaccid airways, diabetes caused by age-related glucose intolerance, etc. The incidence of these diseases has more than doubled during this period among the 60 plus population. Although most of these conditions are chronic in nature, the rate of hospitalisation is abysmally low. Even in the case of cardiovascular diseases the hospitalisation rate was barely 0.63 per cent in 1995-96 which increased to only one per cent in 2004. The high and increasing incidence of chronic conditions coupled with the low rate of hospitalisation essentially shows that a growing proportion of Indian elders is living in pain with little access to health facilities.

Although the increased reporting of ailments by the elderly may not actually indicate a deteriorating health condition in general, it shows the combined effect of: (i) increased morbidity burden in the country; and (ii) increased health-seeking behaviour of the population in general (Yazbeck and Peters, 2003). Considering the fact that India's population has already started greying quite rapidly, the

demand for geriatric medicines and care is likely to increase significantly, putting pressure on the existing health-care facilities in the country on the one hand and growing care provisioning needs for the elderly population on the other (Sakthivel and Karan, 2009). Planning for old-age health, preventive and therapeutic, is therefore essential without any further delay.

3.2 Disabilities in Physical Mobility

The estimates of disability in general, as well as among older persons, differ across different data sources, including the different rounds of the NSS because of the differences in: (i) sample design; (ii) definition of disability; and (iii) the way disability questions are canvassed at the time of the survey. The 42nd, 52nd and 60th rounds of the NSS collected data on health and morbidity and did not particularly focus on disability. The 47th and 58th rounds of NSS on the other hand, focused exclusively on pathology triggered physical disorders. In the 60th round, the NSS asked questions on disability along with other ailments. The 52nd round collected information on disabilities separately for the elderly population. The 58th round (2002), which was devoted entirely to collecting data on disability, adopted a different approach by asking each family member of every sample household to report on the status of disability, single or multiple. Obviously, these different approaches used cause serious comparability issues in disability data.

The NSS 60th round enquired about the current status of the older population's physical mobility. This gives a fairly good idea about the prevalence of disability among the aged, although the types of disability cannot be identified. The NSS 60th round asked questions about the physical mobility of the aged and their responses have been recorded against: (i) confined to bed; (ii) confined to home; and (iii) physically mobile. Although physical immobility, i.e. confined to bed or home, may arise either because of morbidity or disability, the same may be a good indicator of the elderly population's health and their work-related disabilities. Classifying these responses by sex and age group clearly indicates that physical immobility among the oldest old (80 years and above) is as high as 22 per cent under the 'confined to home' category, with an additional 6.4 per cent bedridden (Table 3.4). These percentages are high for women aged 80 years and above. In other words, data shows that over a quarter of all the oldest old persons and a third of women in this age group are physically immobile. The percentage of immobile among the 70-79 years age group is also a challenge for the family and for the geriatric health care system.

Taking both the types of immobility into consideration – i.e., confined to bed and confined to home – the percentage of physically immobile elderly women is approximately 3.5 percentage points higher than that of men. Physical immobility in later ages may also arise because of age-related senescence or frailties caused by degenerative diseases. Therefore, physical immobility may not be considered as the only factor in old age disabilities. A brief clarification of this argument is provided using data from both the direct questions canvassed by the NSSO in all its health and disability surveys as well as the Census 2001.

Table 3.4. Percentage distribution of the elderly population by status of physical mobility, 2004

Sex and Age Group	Confined to Bed	Confined to Home	Physically Mobile	All
Persons				
60-69	0.57	3.50	95.93	100
70-79	2.08	9.50	88.42	100
80+	6.42	22.05	71.53	100
All Elderly Persons	1.46	6.63	91.91	100
Male				
60-69	0.64	3.10	96.26	100
70-79	1.80	7.26	90.93	100
80 +	5.66	17.97	76.36	100
All Elderly Males	1.38	5.51	93.11	100
Female				
60-69	0.51	3.88	95.61	100
70-79	2.37	11.82	85.81	100
80 +	7.22	26.45	66.33	100
All elderly females	1.53	7.75	90.72	100

Source: Authors' estimates from NSS 60th Round

3.2.2 Rates of Disability

We begin by presenting the size of the disabled population provided by the Census 2001 followed by the three NSSO Health and Disability Surveys conducted between 1995-96 and 2004 (i.e., 52nd round, 58th round and 60th round). Any comparison of these estimates, as was mentioned earlier, needs to be interpreted cautiously.

According to the Census 2001, 2.13 per cent of the total population (21.9 million) was disabled in India. The prevalence of disability among the elderly was about five per cent (Table 3.5). Females appear to suffer lower disability rates than males.

Table 3.5. Rates of disability in India: total and the elderly men and women, 2001

Population Group	Total	Male	Female
All-India			
Total population	2.13	2.37	1.87
Elderly population	5.02	5.31	4.73
Rural India			
Total population	2.21	2.47	1.93
Elderly population	5.35	5.64	5.07
Urban India			
Total population	1.93	2.12	1.71
Elderly population	4.02	4.32	3.73

Source: Estimated from Census 2001

The disability rates among the elderly are higher in rural areas than in urban areas. Approximately 5.4 per cent of the elderly in rural areas reported single or multiple disabilities as against 4.0 per cent in urban areas. Further, reporting of disabilities among the older men is marginally higher than in women both in rural as well as urban areas.

Table 3.6: Sex-wise prevalence rates (per cent) of disabilities NSS (different rounds)

NSS Rounds	Rural	Urban	Combined
47th Round (1991)			
Male	8.9	7.6	8.5
Female	9.5	7.6	9.1
Persons	9.2	7.6	8.8
52nd Round (1995-96)			
Male	38.0	33.3	36.98
Female	42.5	36.7	41.22
Persons	40.2	35.0	39.06
58th Round (2002)			
Male	6.3	5.7	6.20
Female	6.5	5.3	6.20
Persons	6.4	5.5	6.20

Source: NSSO, 1998 and NSSO, 2003.

Comparing disability estimates drawn on the basis of different NSS rounds, a wide margin of differences in disability estimates is observed (*See* Table 3.6).[11]. The prevalence rate of disability for all elderly persons varies from 39 per cent in 1995-96 to 6.2 per cent in 2002. The estimates from the 47th and 58th rounds, however, seem to provide fairly close estimates. Commenting on this, NSSO underscores the following in its report based on the 52nd round of the Health Survey (1998; p. 21):

"...perhaps, the procedures followed, particularly the probing, for identifying persons with disability were not the same. In this round (52nd round), since multiple subjects were integrated in one schedule and the main focus of the survey was on morbidity in general, informants' perception about disability seems to have been recorded without deep probing - the reason why the estimate of prevalence rate of various disabilities among the aged are found inexplicably high."

Although such comparisons are not completely correct, for reasons mentioned earlier, we present below the disabilities mentioned in the NSS 52nd and 58th rounds in order to get an idea about the (i) prevalence and (ii) temporal variations over the periods covered in these two rounds. Since the NSS 60th round collected disability data only with 15 days and one-year reference periods, we do not include those results in this discussion.

[11] Disability estimates also differ widely between the NSS and Census 2001.

3.2.3 Types of Disabilities

Generally, four types of disabilities have been reported by the NSSO in its surveys. These are (i) visual impairment (ii) locomotor problems (iii) hearing loss and (iv) speech disorders. Recently though, mental disabilities have also been included by the NSSO, though this has not been used here, because of comparability issues. Estimates of each of the four disabilities mentioned above have been provided for 1995-96 and 2002 in Table 3.7.

Table 3.7. Percentage of elderly reporting different types of disabilities, 1995-96 and 2002

	Visual	Hearing	Speech	Locomotor	Hearing & Speech
NSSO 52nd Round (1995-96)					
Male	24.38	13.32	3.14	10.08	
Female	28.44	15.07	3.69	11.06	
Persons	26.43	14.20	3.42	10.57	
NSSO 58th Round (2002)					
Male	18.70	1.51	0.23	3.10	0.14
Female	26.25	1.51	0.17	2.60	0.13
Persons	22.40	1.51	0.20	2.80	0.13

Source: NSSO 1998 and 2003.

Among the four disabilities given in Table 3.7, visual disorders appear to be most common and the percentage of visually challenged in the older population is quite high. During 2002, nearly 19 per cent of men and 26 per cent of women were visually challenged. The percentage of elderly with locomotor disability was approximately two to three per cent in 2002. Due to the reasons mentioned earlier, the 52nd round (1995-96) appears to overrate all types of disabilities[12]. However, if the two surveys are compared, it seems that the overestimation is more pronounced in 1995-96, especially in cases of visual and locomotor impairment. In cases of hearing and speech loss, the difference is much less.

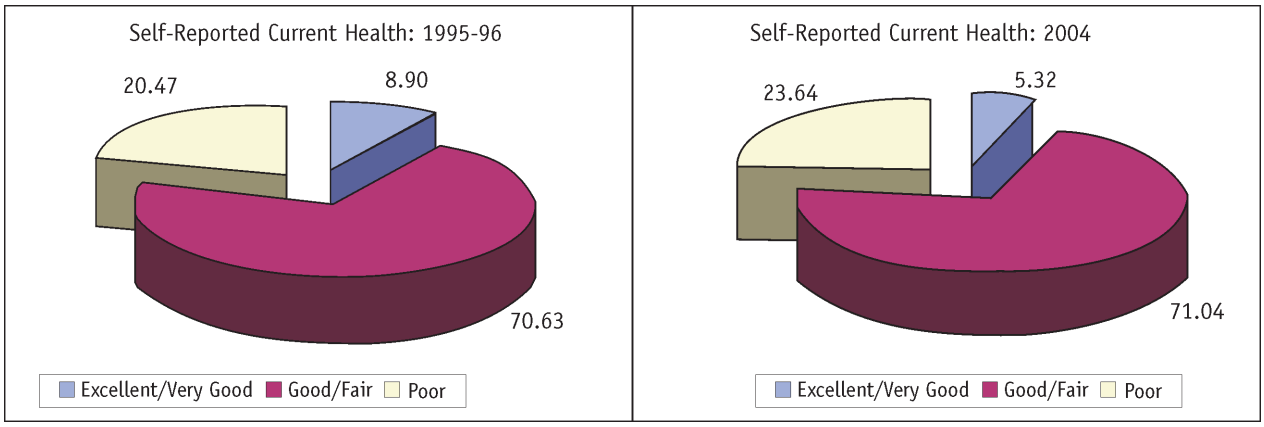
4. Self-Perceived Health and Use of Medical Care by the Aged

4.1 Self-Assessed Health Measures: Current Health Conditions of the Old

One of the commonly used measures of health in the elderly is the self-rated conditions (current or relative) arranged on a hierarchical scale including excellent/very good, good/fair and poor. The 52nd round (1995-96) collected health and disability data on a five-point scale by separating choices into (i) excellent; (ii) very good; (iii) good; (iv) fair; and (v) poor. The 60th round (2004) however, made amendments and used only a three-point scale by combining the first two as 'excellent/very good' and the next two as 'good/fair'.

[12] The observation is also based on comparing the data with the 42nd and 47th Rounds of NSSO. In fact, the 42nd, 47thand 58thRounds provide much closer estimates on different types and overall disability.

Figure: 4.1. Self-perceived health by elderly Indians, 1995-96 and 2004 (per cent)



Source: Based on NSS 52nd and 60th Rounds.

To make these rounds comparable, the data from 1995-96 was converted into the three categories and matched with the 2004 survey. The estimates drawn from two surveys indicate that the percentage of older persons who report 'good/fair' health continued to be roughly 70 per cent. However, it is important to note that elderly persons reporting poor health conditions in 2004 increased by three percentage points. In other words, fewer elderly persons perceived their health as excellent/very good in 2004 (Figure 4.1).

Table 4.1. Percentage distribution of current state of health among the elderly

Current State of Health	Rural				Urban			
	60-69	70-79	80+	All	60-69	70-79	80+	All
1995-96								
Excellent/Very Good	10.34	5.50	3.10	8.32	12.88	10.20	7.07	11.56
Good/Fair	75.44	67.03	51.83	70.92	77.93	70.89	63.94	74.60
Poor	14.23	27.47	45.07	20.77	9.20	18.91	28.98	13.84
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2004								
Excellent/Very Good	5.93	3.03	2.28	4.88	8.49	3.93	2.56	6.68
Good/Fair	76.00	63.39	50.37	70.67	75.55	70.15	55.92	72.19
Poor	18.07	33.58	47.35	24.45	15.96	25.92	41.52	21.13
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: NSS 52nd and 60th Rounds

Roughly about one-fourth of the total elderly population reported 'poor' health status while only five and eight per cent of them claimed excellent (or very good) health in 2004 and 1995-96, respectively. It is also evident from these details that in 2004 the share of respondents reporting excellent health conditions was significantly smaller across all the major age groups of the old. This to some extent may also be a reflection on the growing consciousness about personal health.

The incidence of declining health conditions is significantly higher in rural areas than in urban areas. In 1995-96 approximately three per cent of the rural elderly, aged 80 years and above reported excellent health as against more than seven per cent in 2004 (Table 4.1). In 2004, however, only 2.5 per cent of the same age group reported excellent health in urban areas.

Yet another indicator of elderly health is their perception about 'over time' (i.e., over the past one year) changes in their health conditions. Self-assessment of relative health by the elderly in 2004 shows that relative to the previous year, over two-thirds of the rural elderly reported their health status as nearly the same, while close to one-fifths felt they had 'somewhat worsened'.

Table 4.2. Percentage distribution of relative state of health among the elderly

Relative State of Health	Rural				Urban			
	60-69	70-79	80 Above	All	60-69	70-79	80 Above	All
1995-96								
Much Better	1.72	0.84	0.33	1.34	1.86	1.63	1.56	1.77
Somewhat Better	5.12	4.30	3.40	4.73	7.42	7.27	6.10	7.25
Nearly the Same	71.37	62.20	47.65	66.63	74.70	67.10	57.93	70.94
Somewhat Worse	19.37	27.36	35.27	23.07	14.28	20.27	26.91	17.19
Worse	2.42	5.31	13.35	4.23	1.74	3.72	7.50	2.85
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2004								
Much Better	3.50	1.94		2.95	3.68	2.50	1.15	3.12
Somewhat Better	10.70	9.32	7.48	10.08	11.23	10.44	8.13	10.72
Nearly the Same	69.00	60.73	53.42	65.60	69.69	64.73	61.38	67.55
Somewhat Worse	15.41	24.24	30.01	18.88	13.84	19.58	23.58	16.33
Worse	1.39	3.77	7.40	2.49	1.56	2.75	5.76	2.29
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: NSS 52nd and 60th Rounds

An almost similar picture emerges about the urban elderly as well. It is interesting to note that while 69 per cent of the elderly population in the age group 60-69 years reported their relative health to be the same as compared to the previous year, only 53 per cent appear to have responded similarly in the age group 80 years and above. Apparently, the self-perception of the younger elderly about their relative health status remained similar over the years, indicating the same burden of ill-health over the last decade. At the same time, 'worse' health appears to be a more frequent perception among the elderly aged 80 years and above. From the point of view of policy this suggests that people over 80 years need more health care.

In general, the self-perceived health conditions of the elderly, whether current or relative, did not seem to have changed much over the years although reporting about poor health conditions marginally increased in 2004. However, the deteriorating health conditions with increase in age and high proportion of poor health conditions in rural areas are evident from both the surveys under consideration.

4.3 Use of Health Services by the Aged: Share of Public Providers

Issues related to the utilisation of medical services by the elderly have been examined in the emerging literature from many different perspectives. An important issue, for example, relates to the utilisation of emergency care — especially by the older groups among the elderly population — and its determinants (Shah, *et al.* 2003; Strange, *et al*. 1992). Some other perspectives involve the age-sex effects on morbidity and medical care utilisation (Johnson, *et. al.* 1990) or costs of the care utilisation incurred by institutions, individuals or families (Barer, *et. al*. 1987) to treat several conditions and disabilities. Without focusing entirely on the aged, a recent study has also tried to examine the health care utilisation in the context of immigration (Anton and de Bustillo, 2010). Unlike most of these studies, this paper presents a very brief analysis for examining the role of public facilities in delivering medical care to older persons with an explicit recognition that old age diseases are mostly degenerative, involve complex management procedures and are likely to cost heavily if paid out of pocket. It may also result in heavy expenditure and severe poverty. Given this, the question is: where do most elders (or even non-elders) go for treatment? Do they largely go to public hospitals or facilities? If not, does it mirror a mismatch between public sector facilities and the growing demand for the treatment of degenerative and long-lasting conditions during later life years? It also poses questions about the overall understanding among planners about the dynamics of age structural changes and its effects on health sector planning and financing.

Based on the NSS 60th round (January-June 2004), Table 4.3 presents the utilisation of public and private medical services by the aged and non-aged residing in rural and urban areas. The table shows a heavy dependence on private medical facilities both for the hospitalisation (inpatient) and non-hospitalisation (outpatient) care, for all the age categories of people including aged and non-aged (Table 4.3, Panels A and B).

A large proportion of the elderly population in India appear to be quite vulnerable and face the risks of consumption catastrophe, given the complex nature of old-age diseases and rising cost of treatment, dependence on private facilities and very high old age poverty (Alam, 2009a).[13] We observe from Table 4.3 (Panel A) that 60 per cent of the total elderly population requiring hospitalisation have accessed private medical care. This share is even higher in urban areas. Among the oldest old (80 years and above), over 66 per cent went to private providers for hospital care and over 85 per cent for outpatient care.

[13] For a detailed study on various poverty implications of out-of-pocket expenditure on medical services and drugs, *see*Alam and Tyagi (2009).

Table 4.3. Health care utilisation by elders and non-elders: public and private providers, 2004

(Per cent)

Age Groups	Rural		Urban		Combined	
	Public	Private	Public	Private	Public	Private
Panel A: Inpatient						
0 - 4	35.2	64.8	35.6	64.4	35.3	64.7
5 - 14	47.7	52.3	39.4	60.6	45.3	54.7
15 - 29	43.3	56.7	39.9	60.1	42.3	57.7
30 - 44	42.1	57.9	37.9	62.1	40.8	59.2
45 - 59	41.7	58.3	40.0	60.0	41.2	58.8
60+	40.2	59.8	36.0	64.0	38.8	61.2
Total	41.8	58.2	38.3	61.7	40.7	59.3
Elderly by Age Groups						
60 - 64	40.0	60.0	38.9	61.1	39.6	60.4
65 - 69	42.6	57.4	31.9	68.1	38.8	61.2
70 - 74	41.3	58.7	40.6	59.4	41.0	59.0
75 - 79	37.7	62.3	38.6	61.5	38.0	62.0
80 +	35.9	64.2	29.4	70.6	33.8	66.2
Total	40.2	59.8	36.0	64.0	38.8	61.2
Panel B: Outpatient						
0 - 4	15.0	85.0	13.3	86.7	14.6	85.4
5 - 14	17.5	82.5	13.6	86.4	16.6	83.4
15 - 29	17.9	82.1	15.6	84.4	17.2	82.8
30 - 44	19.4	80.6	19.8	80.2	19.5	80.5
45 - 59	20.4	79.6	19.1	80.9	20.0	80.0
60+	19.0	81.0	17.7	82.3	18.6	81.4
Total	18.4	81.6	17.1	82.9	18.0	82.0
Elderly by Age Groups						
60 - 64	20.0	80.1	20.3	79.7	20.1	79.9
65 - 69	21.1	78.9	16.8	83.2	19.8	80.2
70 - 74	18.3	81.7	18.4	81.6	18.3	81.7
75 - 79	17.8	82.2	15.2	84.8	16.8	83.2
80 +	15.0	85.0	15.0	85.0	15.0	85.0
Total	19.0	81.0	17.7	82.3	18.6	81.4

Source: Calculated from NSS 60th Round (January–June 2004).

Several important issues arise from these results. One of the more significant issues relates to the future of public health services for older persons. With the increasing number of older persons, together with poverty and high disease burden, where would the elders go for medical care? Will the government be able to generate additional facilities, defuse age induced demand-supply mismatch and control price escalations in the health sector? What will happen to the aged in the coming years with growing pressure on drug prices due to product patent obligations under the TRIPS regime? These issues need to be examined separately and in greater depth.

5 Socio-Economic Determinants of Elderly Health and Disability

In general, health is considered to be strongly associated with the socioeconomic condition of the population. A detailed study on the Indian health system conducted by Mahal *et al.* (2002) indicates that the poor have less access to health facilities in general, and public health facilities in particular, leading to their poor health conditions on the one hand and very high financial burden of health care utilisation on the other. Similarly, a World Bank study (World Bank, 2001) indicated that incidence of disability is significantly higher among the elderly people in lower income social groups. This section therefore discusses some socio-economic correlates of the self-perceived health among the elderly population and disability. For socioeconomic correlates an array of socio-economic variables related to poverty, social groups, education, place of residence, etc. have been used. Most of these variables are widely used in the literature on health and morbidity. However, we begin with a few summary statistics of self-rated health across social groups and consumption expenditure quintiles of population.

The self-rated current health status of the elderly population clearly indicates that the poor have a relatively worse health status as compared to the economically better-off. In 1995-96 only seven per cent of the elderly persons from the poorest quintile group reported excellent health as against more than 12 per cent from the richest quintile. Similarly, as high as 27 per cent of the poorest among the elderly population have been reporting inadequate health conditions as against 17 per cent of the richest (Table 5.1).

Table 5.1. Percentage distribution of self-perceived current health status of elderly across consumption expenditure quintile groups, 1995-96 and 2004

Current Health Status	Quintile Groups of Households				
	Poorest	Second Poorest	Middle	Second Richest	Richest
1995-96					
Excellent/Very good	7.29	6.76	8.70	9.76	12.11
Good/fair	65.34	71.97	72.32	72.31	70.78
Poor	27.37	21.27	18.98	17.93	17.12
2004					
Excellent/Very good	4.09	4.59	5.05	5.03	7.72
Good/fair	67.57	69.99	71.13	74.03	72.87
Poor	28.34	25.42	23.82	20.94	19.41

Source: Computed on the basis of NSSO's unit level data from 52nd and 60th Rounds

Comparing the two periods under consideration, the three middle quintile groups of the elderly population reported the highest increase in poor health conditions in 2004 as compared to 1995-96. The increase in responses about poor health conditions in the three middle quintile groups is approximately four percentage points as against one to two percentage points in the case of the poorest and the richest quintile groups.

There is not much difference in the perception of relative health conditions across the quintile groups of the elderly population during the two reference periods. However, some differences exist across the quintile groups in the case of reporting about 'somewhat better', with a marginally higher response from the higher quintile groups during both the years in question. The reporting of worsening health conditions is also marginally lower among the higher quintile groups as compared to the lower quintile groups (Table 5.2).

Table 5.2. Percentage distribution of self-perceived relative health status of elderly across consumption expenditure quintile groups, 1995-96 and 2004

Relative Health	Quintile Groups of Households				
	Poorest	Second Poorest	Middle	Second Richest	Richest
1995-96					
Much Better	1.12	1.39	1.68	1.53	1.40
Somewhat Better	4.98	4.54	5.09	6.20	5.63
Nearly the Same	65.54	68.05	67.34	67.41	69.53
Somewhat Worse	24.39	21.29	21.85	21.48	19.97
Worse	3.96	4.73	4.04	3.37	3.47
2004					
Much Better	2.54	2.75	3.42	2.58	3.52
Somewhat Better	9.42	9.63	8.99	11.10	12.21
Nearly the Same	66.86	66.15	65.84	65.92	65.65
Somewhat Worse	18.12	18.69	19.26	18.62	16.60
Worse	3.06	2.77	2.49	1.78	2.02

Comparing the results from the two years, it is interesting to note that the reporting of 'much better' health conditions in 2004 was higher than in 1995-96 across all the quintile groups. Similarly, considering the first two options together i.e. 'much better' and 'somewhat better', a significant proportion of the elderly reported better health conditions as compared to the previous year i.e., in 2004 rather than in 1995-96 across all the quintile groups.

Juxtaposing the results from the 'current health status' and 'relative health status' of the elderly indicates that despite a higher proportion of elderly reporting better health conditions in 2004 than in 1995-96 as compared to previous recall years of the respective surveys (Table 5.2), a higher proportion of elderly also reported 'poor health' conditions in 2004 as compared to 1995-96 (Table 5.1). This may be a reflection of the increased health awareness among the elderly coupled with increasing life expectancy in recent years. In both the situations i.e. 'current health' and 'relative health' conditions, the economic status of households, measured in terms of expenditure quintiles, play a positive role. For a more specific assessment of socio-economic factors affecting the health of the elderly, presented below is an exercise based on a 'multinomial logit[14] model.

[14] Multinomial logit model is a discrete choice model which estimates the roles of independent variables in case of more than one discrete alternative variable. An important assumption of this model is that the ratio of the probabilities of the two alternatives, say 'j' and 'k' depends only on alternatives 'j' and 'k' and not on the presence of any other alternatives. This is known as the independence of irrelevance alternatives (IIA) property.

The multinomial logit (or simply mlogit) was chosen for this analysis mainly because the information on the current self-rated health status of elderly in the NSSO data base is mostly available in discrete form (i.e. Excellent/very good – 1; Good/fair –2; and poor – 3). The poor health condition is taken as the base category to compare the determinants of the other two options. A set of socioeconomic variables and personal attributes of elderly persons has been taken to determine the relative role of different factors in self-perceived elderly health status as mentioned above. A list and the summary statistics of the independent variables are presented in Appendix Table III.

The result of the model has been presented in Table 5.3 separately for the two discrete alternatives on health status i.e. (i) Excellent/very good health status; and (ii) Good/fair health status as compared to the base category of 'poor health'. Along with the coefficients and the standard errors, the results on the marginal effects of the independent variables are also presented. Since multinomial logit is a discrete choice model based on alternative choices, the coefficients of the independent variables do not show the magnitude of the impact of independent variables. The marginal effects, however, exactly give the extent of variations in dependent variables as a result of percentage change in independent variables. It was therefore decided to present the results on the marginal effects of the independent variables along with their coefficients and the standard errors.

The impact of household consumption expenditure and its effect on elderly health is not only positive but also profound. A one per cent increase in household consumption expenditure leads to approximately two per cent increase in the excellent/very good health category and approximately five per cent increase in the good/fair category. The increase in household size, however, has a small but negative impact on the elderly population's health. This may be because it is likely that in larger families elderly care may be given less attention. As indicated in the earlier sections, reporting of excellent or good health decreases as age increases e: the coefficient of age has a negative sign with approximately one per cent impact on the excellent/very good health of elderly. Similarly, reporting of excellent or good health is lower in rural areas and also in the case of older women. Living with spouse (i.e. if the elderly person is not a widow/widower) has a positive impact on the reporting of excellent and good health. Higher levels of education also show a small, but positive impact on elderly health outcomes. One of the most important variables impacting elderly population's health is economic independence. A one per cent increase in reporting of economic independence leads to approximately three per cent increase in the reporting of excellent/very good health and a four per cent increase in the reporting of good/fair health. Living alone, without a spouse or children, has a surprisingly strong positive impact on health of the elderly. This may be because elderly persons living alone are financially dependent and cannot access better health care for themselves through an old age care centre. Low caste affiliations of the elderly (i.e., ST/SC) show a marginally positive to small negative impact on the reporting of better health while a minority status has a very small negative impact on the reporting of excellent/very good health status and strong negative impact on the reporting of good/fair health status. Self-employed and labour household status turns out to be insignificant in the case of excellent/very good reporting, but has a small positive impact on the reporting of good/fair health status of the elderly.

Table 5.3. Multinomial logit results: Determinants of self-rated elderly health

Dependent Variable = Current Health Status								
	Excellent/Very Good Health Status				Good/Fair Health Status			
Independent Variables	Coeff.	Std. Error	Significance Level	Marginal effects	Coeff.	Std. Error	Significance Level	Marginal effects
Log monthly household expenditure	0.62	0.062	***	0.015	0.34	0.030	***	0.053
Log household size	-0.15	0.068	**	0.000	-0.22	0.034	***	-0.041
Age	-0.38	0.063	***	-0.013	-0.06	0.024	**	-0.002
Sector	-0.05	0.073	*	0.000	-0.08	0.036	**	-0.014
Female	-0.23	0.068	**	-0.008	-0.05	0.031	*	-0.003
Marital status	0.02	0.067	—	-0.001	0.07	0.030	**	0.014
Years of education	0.05	0.008	***	0.002	0.01	0.005	**	0.001
Economic independence	-1.05	0.064	***	-0.035	-0.38	0.032	***	-0.042
Living alone	0.67	0.148	***	0.024	0.24	0.072	***	0.024
SC/ST	0.01	0.068	—	0.003	-0.07	0.031	**	-0.016
Minority	-0.34	0.073	***	-0.003	-0.39	0.034	***	-0.075
Main source of earnings is from self employment	0.01	0.073	—	-0.001	0.07	0.035	**	0.014
Main source of earnings is from casual labour	0.02	0.092	—	-0.002	0.08	0.041	**	0.017
Constant	10.99	2.272	***		3.06	0.911	***	

Notes: Base category "poor health status"; Significance levels: *** is significant at 99per cent, ** is significant at 95per cent, * is significant at 90per cent, and — is not significant.Pseudo R^2 = 0.0535; Number of obs. = 34789; Log likelihood = -25183.404

In general, the socioeconomic determinants of health in the elderly indicate that the elderly who have better living conditions and are economically independent have better health outcomes while those belonging to lower income/consumption groups, widows and those who are economically dependent, report poor health status. Education plays a marginally positive role, but living with a spouse has a strong positive impact on elderly health. A negative impact on health is also associated with elderly women and an increase in age.

6. Planning for Old Age Health Care Services in India: Basic Issues

With age structural changes and rapid ageing, India is likely to face a significant increase in its elderly population in the coming years. A considerable proportion of this population, particularly the poor and socially backward, may encounter serious health risks as may be noticed from the discussion in the preceding sections. Clinicians and medical gerontologists foresee the following chain of health outcomes being faced by many of them.

Pathology ➔ Impairment ⟶ Functional Limitation ⟶ Disability

Cited in Lynch, Brown and Taylor (2009, p. 568).

This sequence of events considers pathology (e.g., chronic disease) as the ultimate source of disability that progresses to further complications and eventually turns into functional dependence, curtailing physical autonomy in the performance of daily activities. A situation like this warrants the creation of a public-funded geriatric health-care system, especially in the demographically more advanced states. In addition, services from voluntary and community-based organisations may also be used to complement the public health-care system. All this may however need a large data base, preferably longitudinal, with considerable understanding about geriatric health; in particular, how it moves from one stage to another and under what circumstances.

Two concerns have often been expressed in the debate on planning for old-age health in India and other developing countries. These are:

- Life course management, behavioural improvement and supportive socio-economic environment to ensure healthy ageing; and

- Creation of physical, financial and human infrastructure to meet the health-related needs of older persons.

The former signifies the public health viewpoint (Albert, 2004) and may help in postponing diseases (or disabilities), while the latter focuses on the creation of a chain of medical infrastructure to treat old age diseases, meet rehabilitation requirements and bring financial institutions to cover the risks of palliative and long-term care. Given below is a brief discussion on both these concerns.

6.1 Epidemiology of Ageing: Problems in Measurement

Epidemiology, in general, studies the distribution of a particular health condition and examines factors that influence this distribution (Grundy, 1998). Epidemiology distinguishes itself from other health sciences in two respects: one, it largely deals with the population rather than an individual, and two, it essentially requires studying the distribution of a disease (or diseases) across different population groups and sub-groups, often taking into consideration their socioeconomic attributes. Grundy (1998) therefore suggests focusing on the following broad issues to understand the epidemiology of ageing.

- Risk factors affecting the health outcomes of the aged;

- Prevention of diseases, therapeutic interventions and their evaluation in elderly populations;

- Studies on self-perceived or objectively assessed general health status of the old;

- Studies on age-related changes in indicators of health status, both general and disease specific

- Despite attempts in recent years to examine the health status and health risks of the elderly in India (Sathyanarayana *et al*., 2010; Alam, 2006, 2009; Siva Raju, 2002, 2000; Gupta *et al*. 2001), it may be noticed from the earlier discussion that studying the aetiology of major old age diseases or disabilities

remains an uphill task in India. Besides the lack of proper understanding about several dynamic factors in population sub-groups, including physiological, environmental and behavioural changes, there are major conceptual and data limitations (*see* Sections 1 and 3). Non-conforming data does not allow the comparison of diseases or disabilities over time (Mitra and Sambamoorthi, 2006). It also hampers the attempts to plan for institutional care infrastructure. The other problem stems from the inadequate definition of various health conditions. Disabilities, as defined by the NSSO, do not include functional disabilities or lack of autonomy in activities of daily living (Nagi, 1965, 1976; Alam, 2009b; World Bank, 2009). There are other conceptual and data issues as well, which may be better resolved by holding detailed longitudinal health surveys.[15]

6.2. Prevention of Diseases and Disabilities: Role of Public Health

How can public health help in delaying the onset of old age diseases or altering the pathways of poor old age health? This question was examined at length in a study by Albert (2004). The study *inter alia* identifies a set of public health goals for four categories of older persons: (i) robust; (ii) demented; (iii) senescent or very old; and (iv) most vulnerable or frailest. Table 6.1 summarises each of those goals and underlines the need for preventing frailties among the robust and making improvements in the living conditions of the sick or frail to help to retain their physiological abilities for a longer latent period.

The study by Albert (2004) strongly suggests changing the pathways of ageing by sensitising people to improve their post-50 lifespan through behavioural changes. This, *inter alia*, requires individuals to take up enhanced habits of cognitive engagement, physical exercise, a balanced diet, not smoking and either not or drinking in moderation, etc. Frequent health screenings were also suggested along with recommendations that primary health centres provide mineral supplements to the old to forestall deterioration in bone mass. As a public health measure, older persons in rural and urban areas may also be provided with prophylactic medicines to reduce the risk of sudden death.

Table 6.1. Ageing experiences and goals of public health strategies

Type of Older Persons	Goals of Public Health
Robust (i.e. in good health)	Prevention of frailty and disability
Demented	Prevention of excess morbidity through better custodial care
Late stage of life	Reduction of isolation, maximisation of choices
Frailest old	Environmental modification to reduce task demand; rehabilitation to increas capacity by developing abilities

Source: Albert (2004).

The pathway to poor health in old age due to an unsupportive family environment is another critical factor and needs serious consideration. Understanding the social context of ageing may therefore prove helpful in devising ways to creating a more positive environment for the old.

[15] An edited volume by Tallis, Fillit and Brocklehurst (1998) provides some useful insights on these issues.

7. Concluding Observations and Some Policy Choices

The study, as mentioned earlier, analyses trends in different aspects of old age health and disabilities, which is an important emerging concern in the country, needing a mix of strategies directed to meet the health care needs of the old. The paper also revisits the definition of disabilities to include frail and ADL disabled older persons. More precisely, the following three issues were examined explicitly:

- temporal changes in the magnitude of poor old age health and disabilities cross-classified by social groups and consumption quintiles;
- socioeconomic correlates of later life health; and
- issues in planning for geriatric health in the country, including data limitations for evidence-based planning.

Using decennial population censuses and health-morbidity-disability data from earlier rounds of the National Sample Survey (52nd Round, 58th Round and 60th Round), this analysis shows that ageing is an important emerging challenge in the country, particularly among the poor with no or very limited stock of human capital. A large majority of them are also economically dependent. Older women are found to be mostly deprived due to many socio-economic disadvantages, including those arising due to widowhood. Tobacco consumption is also significant among the aged, particularly in rural areas. In this scenario, health implications of population ageing are clearly emerging as a major challenge for the planners and providers of health services in the country.

The veracity of old age health as an issue for serious public concern draws further justification from the analyses presented in Sections 3 to 5 including a discussion on self-perceived health by older persons cross-classified by social groups (i.e., Scheduled Castes, Scheduled Tribes and others) and consumption quintiles (poorest, richest and in between), both of which were found to be quite decisive in health outcomes of the elderly population. The number of sick older persons was found to be highest in lower consumption quintiles representing poorer groups. The fact that most of the older patients rely on private medical facilities for treatment is a serious challenge for public health care services, besides being a potential source of economic catastrophe for older persons and their families.

Using the multinomial logit exercise, this paper also examines the role of socio-economic factors in later life health. These results mostly conform to the observations that socio-economic factors do have a role in shaping old age health. In particular, gender, economic status (measured in terms of consumption expenditure), living arrangements, caste, and income security are likely to contribute significantly to health outcomes. Growing age, widowhood, low educational levels and economic dependence do not augur well and bring significant health risks to people in later ages.

The paper clearly brings out various shortcomings in the availability and effective use of data on the health of older persons in general and more particularly on disabilities that seriously limits further research on this subject; as well as the use of secondary data for planning and financing mechanisms.

The paper also brings out the need for health planners to recognise the special health care needs of older persons. Many of these factors coupled with high levels of illiteracy and economic dependence will provide more challenges to both the supply and demand of geriatric health care. Providing long-term care to dysfunctional old persons and/or the terminally ill is another significant issue to be addressed. In particular, financing of these services needs serious thinking.

It is suggested that a scheme on the lines of the Rashtriya Swastha Bima Yojana (RSBY) may exclusively be designed for men and women covered under the National Old Age Pension Scheme. Currently, the RSBY is available to the entire BPL family irrespective of age. This may in many cases invite age-related biases. Following the RSBY health card, an 'old age health card' may also be considered by the State, especially for the poor and underprivileged elderly.

The country may soon be reaching a situation where a universal old age health security scheme would be essential. Such a scheme may be financed by generating revenue from various fiscal sources, including a special tax/cess on a range of goods and services causing health risks. An illustrative list may include alcoholic beverages, *paan masala*, tobacco and tobacco products, junk food, aerated drinks, all major pollutants, disposal of toxic waste, etc. Most of them are likely to increase oxidised free radicals in the human body and cause chronic diseases.

Finally, there is a clear need to support research and data collection, preferably longitudinal, on ageing and its attendant health issues including the epidemiology of ageing. The NSSO needs to resolve the data comparability issues and follow a more comprehensive definition of disabilities, including functional and cognitive incapacitations. This will facilitate policy formulation and creation of risk averting financial tools to meet the demand for long-term care by the disabled and terminally ill older persons.

References

Alam, M., 2006. '*Ageing in India: Socioeconomic and Health Dimensions*', Academic Foundation, New Delhi.

Alam, M., 2009a. '*Ageing, Socio-Economic Disparities and Health Outcomes: Some Evidence from Rural India*', *Indian Journal for Human Development*. January – June 2009, 3(1), pp. 47-76.

Alam, M., 2009b. '*Gender Differences in Functional Health of Older Adults: An Exploration based on Self-Reported and Observed Measures of Physical Strength*', paper presented at the 13th Siciliano Forum Meeting on Global Ageing in the 21st Century: Challenges, Opportunities and Implications for the US 28-29 October 2009. Mimeo, University of Utah, Salt Lake City.

Alam, M. and M. Mukta, 2005. '*Ageing, Activities of Daily Living Disabilities and Need for Public Health Initiatives:Some Evidence from a Household Survey in Delhi*', *Asia-Pacific Population Journal*. 20 (2), pp. 47-76.

Alam, M. and R.P. Tyagi, 2009. *'A Study of Out-of-Pocket Expenditure on Medical Services and Drugs: An Exploratory Analysis of U.P., Rajasthan and Delhi',* October 2009. A study submitted to the Health Division of the Planning Commission, Government of India, New Delhi.
Available at: http://planningcommission.gov.in/reports/sereport/ser/ser_drug2910.pdf

Albert, S. M. (2004). *'Public Health and Ageing: an Introduction to Maximizing Function and Well-Being*'. Springer Publishing Company, New York.

Antón, José-Ignasio, and Rafael M. de-Bustillo2010. '*Health Care Utilization and Immigration in Spain*', *European Journal of Health Economics*. 11(5), pp. 487-98.

Alzheimer's and Related Disorders Society of India, 2010. *'The Dementia India Report 2010: Prevalence, Impact, Costs and Services for Dementia*'.

Barer, Morris L., Robert G. Evans, C. Hertzman and Jonathan L., 1987. '*Ageing and Health Care Utilization: New Evidence and Old Fallacies*', *Social Science and Medicine*. 24(10), pp. 851-62.

Burkhauser, R.V., M.C Daly., A.J Houtenville. and N. Nargis, 2002. '*Self-Reported Work-Limitation Data: what they can and cannot tell us*', *Demography*. 39(3), pp. 541-55.

Centre for Legislative Research and Advocacy, 2008. '*Indian Disability Laws – an obsolete picture*'. CLRA Policy Brief No. 5, August 2008.

Chen, M. A. and Jean Dreze. 1995.*'Widowhood and Well-Being in Rural North India' in Women's Health in India*. Dasgupta, Monica, Lincoln C. Chen and T. N. Krishnan (eds), Oxford University Press, New Delhi, pp. 245-87.

Dey, A.B., 2003. (ed). '*Ageing in India: situation analysis and planning for future*'. published by A.B. Dey for the Ministry of Health and Family Welfare (Government of India) and World Health Organization.

Dey, A.B., 2010. '*Health Care for Older People: a blueprint for India and other countries*'. Moneer Alam and Armando Barrientos (eds.), Demographics, employment and old age security: emerging trends in South Asia, Macmillan, New Delhi.

Dyson, T., 2004. '*India's Population-The Past*', in Tim Dyson, Robert Cassen and Leela Visarai, (eds.), *Twenty-First Century India — population, economy, human development, and the environment*, Oxford University Press, New York, pp. 15-31.

Grundy, E., 1998. '*The Epidemiology of Ageing*' in Raymond Tallis, Howard Fillit and J.C. Brocklehurst (eds.), *Geriatric Medicine and Gerontology*, Fifth Edition, Churchill Livingstone, London.

Guilmoto, C.Z. and S. Irudaya Rajan , 2000. *'Geographic Patterns in Fertility Change*', in K. Srinivasan and M. Velassoff, (eds.), *Population-Development Nexus in India, Challenges for the New Millennium*, Tata McGraw-Hill, New Delhi, pp. 88-109.

Gulati, L., 1998. '*Widowhood and Aging in India'*, in Martha Alter Chen (ed.) *Widows in India: social neglect and public action*, Sage Publications, New Delhi, pp. 189 – 208,

Gupta, I., P. Dasgupta and M. Sawhney, 2001. '*Health Status of Elderly in India: some aspects of vulnerability*', *BOLD, Quarterly Journal of the International Institute of Aging*, United Nations – Malta, 11(3), May.

Johnson, R.E., John, P.M., and Merwyn, R.G. 1990. '*Morbidity and Medical Care Utilization of Old and Very Old Persons*', *Health Services Research*, October, 25(4), pp. 639-65

Lamb, S., 1999. '*Aging, Gender and Widowhood: perspectives from rural West Bengal'*, *Contributions to Indian Sociology*, 33 (3), pp. 541-70

Lynch, S.M., J. S. Brown and M.G. Taylor, 2009. *'Demography of Disability'*, in P. Uhlenberg (ed.), *International Handbook of Population Ageing*, Springer Science + Business Media B.V., pp. 567-82.

Mahal, A., et. al., 2002. '*Who Benefits from Public Sector Spending in India*?' National Council of Applied Economic Research, New Delhi.

Mitra, S and U. Sambamoorthi, 2006. '*Disability Estimates in India: what the census and NSS tell us*. *Economic & Political Weekly*, 41 (38), pp. 4022-26.

Nagi, S.Z., 1965. '*Some Conceptual Issues in Disability and Rehabilitation'*, in M.B. Sussman (ed.) *Sociology and Rehabilitation*. American Sociological Association, Washington, DC, pp. 100-113

Nagi, S.Z., 1976. *'An Epidemiology of Disability among Adults in the United States'*, *The Milbank Memorial Fund Quarterly, Health and Society,* 54(4); pp. 439-67.

Nair, S.B. and Sabu S. Padmadas, 1999. '*Fertility Decline in India: a futuristic perspective*', *Journal of Health and Population in Developing Countries*. 2(2) pp. 48-61.

National Sample Survey Organisation (NSSO), 1998. '*The Aged in India: a socio-economic profile': NSS 52nd Round (July1995–June 1996),* Report No. 446 (52/25.0/3), National Sample Survey Organisation, Department of Statistics, Ministry of Planning and Plan Implementation, Government of India.

National Sample Survey Organisation (NSSO), 2003. *'Disabled Persons in India: NSS 58th Round (July–December 2002)'*, Report No. 485 (58/26/1), National Sample Survey Organisation, Ministry of Statistics and Plan Implementation, Government of India.

Reddy, P.H., 1996. '*The Health of the Aged in India*', *Health Transition Review*, 6, pp. 233-44.

Sakthivel S. and K. Anup, 2009. '*Deepening Health Insecurity in India: evidence from National Sample Survey since 1980s'*, *Economic and Political Weekly*, 44 (40), pp. 55-60.

Sathyanarayana Rao T.S., B. Praveena, K.S. Jagannatha Rao, 2010. '*Geriatric Mental Health: recent trend in Molecular Neuroscience'*, *Indian Journal of Psychiatry*, 52(1), pp. 3-5.
Accessed on 8 October:www.indianpsychiatry.org/text.asp?2010/52/1/3/58886.

Shah, M.N., et al., 2003. '*Predictors of Emergency Medical Services Utilization by Elders*', *Academic Emergency Medicine*, 10, pp. 52-58.

Siva Raju, S. ,2000. '*Ageing in India: an overview*', in Murli Desai and Siva Raju (eds.), *Gerontological Social Work in India*, B.R. Publishing Company, Delhi.

Siva Raju, S., 2002. *'Health Status of the Urban Elderly: a medico-social study',* B.R. Publishing Company, Delhi.

Strange, G.R., E.H. Chen, and E.B. Sanders, 1992. '*Use of Emergency Departments by Elderly Patients: projections from a multicenter database*', *Annals of Emergency Medicine*, 21, pp. 819-24.

Tallis, R. Howard Fillit and J.C. Brocklehurst (eds.), 1998. *Geriatric Medicine and Gerontology*, Fifth Edition, Churchill Livingstone, London.

United Nations Department of Economic and Social Affairs (UNDESA), Population Division, 2008. '*World Population Prospects (2008 Revision)'*;
Accessed on February 2010: *http://esa.un.org/unpp/p2k0data.asp*

Visaria, L., 2004. *'Mortality Trends and the Health Transition'*, in Tim Dyson, Robert Cassen, and Leela Visaria (eds.), *Twenty-First Century India: Population, economy, human development, and the environment*, Oxford University Press, New York, pp. 32-56.

World Bank, 2001. *'A Vision of India's Health System'*, The World Bank, Health, Nutrition and Population Sector Unit, South Asian Region, Washington, DC.

World Bank, 2009. *'People with Disabilities in India: from commitments to outcomes'*, The World Bank, July, Human Development Unit, South Asia Region.

Yazbeck A.S, D.H. Peters 2003. *Health Policy Research in South Asia: building capacity for reform*, Human Development Network, Health, Nutrition and Population Series, The World Bank, Washington DC.

Appendices

Table I. Persons reporting short-term outpatient ailment (15 days recall) and hospitalisation during past one year, by sex, age groups and sector, 2004

Per cent

Ailments with or without hospitalisation	Age Groups								
	0-4	5-14	15-34	35-59	60-69	70-79	80+	60+	All ages
Outpatient									
Combined (R+U)									
Male	12.99	5.40	4.37	9.20	27.34	36.83	38.27	30.85	8.56
Female	11.59	4.65	6.10	12.34	27.84	37.50	38.65	31.21	9.69
Persons	12.31	5.04	5.23	10.74	27.59	37.16	38.45	31.03	9.11
Rural									
Male	12.75	5.20	4.28	8.90	25.80	35.12	37.15	29.25	8.36
Female	11.27	4.52	6.10	11.82	25.44	35.07	34.89	28.63	9.30
Persons	12.02	4.88	5.20	10.33	25.62	35.09	36.11	28.94	8.82
Urban									
Male	13.90	6.07	4.59	9.98	32.46	42.00	41.64	35.99	9.11
Female	12.96	5.09	6.11	13.73	35.44	44.75	47.26	39.05	10.86
Persons	13.46	5.61	5.31	11.79	33.99	43.36	44.60	37.55	9.95
Hospitalisation									
Combined (R+U)									
Male	2.54	1.15	1.77	3.38	5.75	8.91	8.27	6.82	2.44
Female	1.51	0.88	2.25	3.38	4.91	6.48	6.71	5.46	2.36
Persons	2.04	1.02	2.01	3.38	5.33	7.72	7.53	6.14	2.40
Rural									
Male	2.27	1.05	1.76	3.12	4.92	8.06	7.42	5.96	2.25
Female	1.28	0.75	2.14	3.23	4.25	5.58	6.28	4.74	2.15
Persons	1.78	0.91	1.95	3.17	4.58	6.85	6.89	5.36	2.20
Urban									
Male	3.55	1.50	1.78	4.06	8.52	11.46	10.81	9.56	2.97
Female	2.50	1.33	2.54	3.78	7.02	9.18	7.72	7.65	2.98
Persons	3.06	1.42	2.14	3.93	7.74	10.34	9.18	8.58	2.97

Source: NSS, 60th Round

Table II. Incidence of major diseases among older men and women (age 60 years and above) on the basis of short term (15 days recall) and hospitaliszation, 19995-96 and 2004.

Per cent

Types of Diseases	1995-96				2004			
	Outpatient		Hospitalisation		Outpatient		Hospitalisation	
	Male	Female	Male	Female	Male	Female	Male	Female
Diseases of circulatory system	1.42	1.48	0.8	0.45	5.31	5.7	1.1	0.89
Disorders of joints	1.8	2.4	0.15	0.16	4.06	5.61	0.25	0.28
COPD	1.98	1.87	0.31	0.17	4.55	3.08	0.94	0.56
Disabilities	0.96	1.35	0.22	0.07	3.13	3.34	0.25	0.19
Febrile illness	3.17	3.23	0.35	0.3	2.37	2.72	0.5	0.35
Diabetes mellitus	0.72	0.76	0.14	0.16	2.62	2.4	0.34	0.27
Eye ailments	0.73	1.08	0.63	0.53	1.94	2.26	0.76	0.98
Gastro-intestinal	1.19	0.68	0.55	0.31	2.13	1.94	0.61	0.71
Mental and behavioural issues	0.38	0.27	0.2	0.09	0.98	1.04	0.39	0.25
Other diagnosed diseases	1.31	0.95	1.31	0.69	2.85	2.29	1.97	1.17
Other undiagnosed diseases	4.27	3.34	1.45	0.88	4.28	4.32	0.95	0.8
No ailment	81.77	82.41	93.71	96.16	65.79	65.3	91.95	93.57
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table III. Descriptive explanation and summary statistics of variables used in the multinomial logit

Variable	Explanation of variables	Weight	Mean	Std. Dev.
Health Status	Current health status discrete variable 1=Excellent/very good health 2=Good/fair health 3=Poor health	66317071	1.42	0.880381
Loghhexp	Log of monthly household expenditure	66304840	7.85	0.755608
Loghhsz	Log of household size	66317071	1.53	0.639329
Age	Age in complete years	66317071	67.48	6.898152
Sec	Sector: dummy rural=1; 0 otherwise	66317071	0.76	0.428791
Female	Sex: female=1; 0 other wise	66317071	0.50	0.500007
Marital	Marital status: married=1; 0 otherwise	66317071	0.59	0.491471
Yrsedu	Years of education	66317071	2.20	3.687141
Ecodep	Economically independent: dependent=1; 0 otherwise	66317071	0.65	0.476636
Alone	Living alone: alone=1; 0 otherwise	66317071	0.05	0.220635
SC/ST	Social group: SC/ST=1; 0 otherwise	66317071	0.24	0.427205
Minority	Religion: minority=1; 0 other wise	66317071	0.16	0.363529
Self_emphh	Main source of earnings: Self employed=1; 0 otherwise	66317071	0.54	0.498727
Labhh	Main source of earnings: casual labour=1; 0 otherwise	66317071	0.23	0.423395

No. of observations: 34,814

About the Project

The United Nations Population Fund - UNFPA supported project BUILDING KNOWLEDGE BASE ON POPULATION AGEING IN INDIA (IND7P41G) aims at contributing and further expanding the existing knowledge base on the emerging population dynamics in India which are resulting in significant shifts in the age structure towards higher proportions of older persons aged 60 years and above. The project supports the preparation of a series of thematic studies using existing secondary data sources as well as the collection and analysis of new primary data. Dissemination of the findings to various stakeholders is a key objective of the project to help enhance the overall understanding of the situation of elderly in the country for further research and policy analysis on the growing numbers of India's senior citizens. The project is a partnership between the Institute for Social and Economic Change (ISEC), Bangalore, the Institute of Economic Growth (IEG), New Delhi and UNFPA, Delhi.

More information on the project can be obtained from http://www.isec.ac.in/prc.html or www.iegindia.org or www.indiaunfpa.org

The first phase of the project includes several commissioned papers prepared by experts using existing secondary data sources such as the National Sample Survey Organisation and the National Family Health Surveys. The second phase of the project involves an updated situation analysis through the collection of primary data from seven states in India which have relatively higher proportions of elderly. These are Himachal Pradesh, Kerala, Maharashtra, Orissa, Punjab, Tamil Nadu and West Bengal. The survey data includes socio-economic characteristics, family dynamics, living arrangements, health and awareness of social security programmes of the elderly.

The papers prepared by experts in India under the project are listed on the back cover of the series of working papers. The project invites the readers to provide feedback and help finalise the papers for publication.

About the Author

Moneer Alam is a Professor of Economics at the Institute of Economic Growth, Delhi. His research interests include manpower educational planning and forecasting, labour market issues, health financing and economic and health issues of ageing in India and South Asia. He has published several articles in reputed national and international journals and has also edited several books.

Anup K Karan is a Research Scholar at the Public Health Foundation of India. Currently he is pursuing his D. Phil. at the University of Oxford under the 'Future Faculty Programme'. He has been engaged in teaching and research in 'equity in health care financing'. He was a Takemi Fellow at the Harvard School of Public Health, Harvard University, USA, during 2006-07.

BKPAI Working Paper Series

1. Demographics of Population Ageing in India
   Lekha Subaiya and Dhananjay W Bansod
2. Studies on Ageing in India: A Review
   S Siva Raju
3. Elderly Health in India: Dimension, Differentials and Determinants
   Moneer Alam and Anup Karan
4. Elderly Workforce Participation, Wage Differentials and Contribution to Household Income
   Sakthivel Selvaraj, Anup Karan and S Madheswaran
5. The National Policy for Older Persons: Critical Issues in Implementation
   S Irudaya Rajan and U S Mishra
6. Policy Initiatives on Population Ageing in Select Asian Countries and Their Relevance to the Indian Context
   Mala Kapur Shankardass