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Trends and Pattern of Population Ageing in India and West Bengal: A Comparative Study

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ABSTRACT

Population ageing is a global issue which has multi-dimensional impacts on all economic issues of a nation. It is related to many demographic and vital statistics, economic status, health and social status of population. There is a huge variation of population ageing in India varying over state to state, religion to religion, community to community, locality of residences and sex etc. Remarkable shrinkages of population pyramids on population for India and West Bengal over 2001–2011 indicates a decline in fertility leading to an increase in the proportion of elderly population. Attempts have been made to assess ageing and its related aspects in India and West Bengal. Correlation and regression analysis have been employed to study impacts of % decadal growth rate of elderly in general population and human development index. The present study stands for a strong evidence for the Preston's hypothesis that individuals born in richer countries, on an average, can expect to live longer than those born in poor countries.

Keywords: *Per cent of elderly; Life expectancy; Population Pyramid; Old-age dependency; Economic independence; Economically dependence.*

1.0 Introduction

India is a vast country with tremendous diversities in respect of language, religion, culture, food habits, dresses, caste and creeds etc. According to Census of India, 2011, there were 35 states/union territories in India. Majority of Indians are of two major religions – Hinduism and Islam consisting of 79.8 and 14.2 per cent of population respectively.

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Some other religions are Christianity, Sikhism, Buddhism and Jainism consisting of 2.3, 1.7, 0.7 and 0.4 per cent of population respectively and others; 68.86 per cent of total populations live in rural areas; proportion of Scheduled Caste and Scheduled Tribe populations are 16.6 and 8.6 per cent respectively. West Bengal is one of the states of India having 70.5 per cent Hindus, 27.0 per cent Muslims population; 68.13 per cent population live in rural areas; proportion of Scheduled Caste and Scheduled Tribe populations are 23.5 and 5.8 per cent respectively. Per cent of total Population in India, West Bengal and its Districts according to Census of India, 2011 is provided in Table 1.

Table 1: Percent of Total Population in West Bengal and its Districts

	% of Total Population					
	Hindu	Muslim	Rural	Urban	SC	ST
India	79.8	14.2	68.9	31.1	16.6	8.6
West Bengal	70.5	27.0	68.1	31.9	23.5	5.8
Darjeeling	74.0	5.7	60.6	39.4	17.2	2.1
Jalpaiguri	81.5	11.5	72.6	27.4	37.7	18.9
CoochBehar	74.1	25.5	89.7	10.3	50.2	0.6
Dinajpur (N)	49.3	49.9	88.0	12.0	26.9	5.4
Dinajpur (S)	73.6	24.6	85.9	14.1	28.8	16.4
Malda	48.0	51.3	86.4	13.6	20.9	7.9
Murshidabad	33.2	66.3	80.3	19.7	12.6	1.3
Birbhum	62.3	37.1	87.2	12.8	29.5	6.9
Bardhaman	77.9	20.7	60.1	39.9	27.4	6.3
Nadia	72.2	26.8	72.2	27.8	29.9	2.7
24 Parganas (N)	73.5	25.8	42.7	57.3	21.7	2.6
Hugli	82.9	15.8	61.4	38.6	24.4	4.2
Bankura	84.3	8.1	91.7	8.3	32.7	10.3
Purulliya	81.0	7.8	87.3	12.7	19.4	18.5
Haora	72.9	26.2	36.6	63.4	14.8	0.3
Kolkata	76.5	20.6		100.0	5.4	0.2
24 Parganas (S)	63.2	35.6	74.4	25.6	30.2	1.2
Medinipur (W)	85.5	10.5	87.8	12.2	19.1	14.9
Medinipur (E)	85.2	14.6	88.4	11.6	14.6	0.5

Source: Census of India, 2011

Per cent of elderly varies widely from state to state, religion to religion, community to community. While comparing population ageing according to religions,

two major religions -Hinduism and Muslim will be considered. The states like Kerala, Dadra and Nagar Haveli were with highest (12.55) and lowest (4.04) per cent of elderly respectively. Per cent of elderly of states/union territories having low population size were low. Percentages of children and teenagers in India and all states/union territories were highest in Muslim populations among those in all classifications by locality of residence, religion, caste, sex and are approximately 50 per cent and more; per cent of elderly to total population and sex ratio for elderly persons are generally least among Muslims followed by scheduled tribes. There were marked differences in life spans in populations of different religions and caste groups.

2.0 Data and Methodology

Secondary data relating to population and population from (a) Census of India 1961 – 2011, (b) National Sample Survey Organization (60th Round January – June 2004), (c) Sample Registration System (SRS) Office of the Registrar General and (d) online and government sources. Data have been presented in figures and tables.

3.0 Review of Literature

People's Cultural Centre (PECUC) (2002) provided ageing scenario for India for 1901-2001; those and social security scenario of Orissa for 2001. Dhar Chakraborti (2004) discussed population ageing in the context of Asia. Based on UNO data and Indian census data, indices of demographic and ageing, socio-economic characteristics and workforce participation of elderly, health conditions, national health expenditures and related figures for 1950-2050 for different world regions particularly Asia including India were provided.

Bose and Kapur (2004) presented figures on population ageing and related data of the different states of India consisting (a) growth of 60+ populations, 1951-2016, (b) characteristics of 60+ population, 60+ workers, economic security, living arrangements, disability and chronic illness, 60+ widow and widowers: district wise for states, 1991, (h) micro survey of 60+ persons in a middle class locality in New Delhi, (i) international comparisons: elderly in Canada, (j) global perspectives: UNO projections. Per cent of 60+ population in 1991 in Kerala and West Bengal were 8.8 and 6.1 respectively.

Rajan (2006), based on censuses (1971-2001) and NSSO (52nd round) presented demographic, ageing, socio-economic figures and some projections of India up to 2051. It presented data on health, health services including morbidity for elderly in India.

Devi et al. (2008) pointed that there was an increasing trend in relative change in the economically active elderly in India from 1961-2020. Based on Indian census data, different indices of population ageing state wise were presented. For the elderly in Kerala, based on census, per cent distribution of age and sex composition, work participation, non-workers by activity status, literacy rate, education level, main workers, economic characteristics (based on NSSO, 52nd round), and the number of beneficiaries of various pension schemes were presented. Based on sample survey data on elderly in Kerala, per cent distribution of different characteristics (age, literacy, employment, financial status, health condition, standard of living, involvement in household decision making and work, care giver etc.) of the elderly have been presented. In the study, logistic regression were employed to study influences of determinants (sex wise) of (a) health, (b) involvement in decision making, (c) involvement in household work. The main conclusion of the study is that possessing some asset, especially liquid asset, increases the chances of the elderly being made a part of household creating a feeling of belonging which is of greatest importance of the elderly.

Roy (2013) in his paper aimed to present an emerging scenario of population ageing in West Bengal on the basis of past trends. It was found that the elderly population in West Bengal had been growing in a faster rate than all India average. The current trend of population ageing also revealed the fact that, in future, there would be larger proportion of elderly population in the state, with higher age and majority of them would be women for whom better social security measures would be needed.

Alam et al. (2014) delineated the status of elderly in West Bengal-income and asset holding among elderly, living arrangement and family relations, health status including mental health, morbidity, hospitalization, access to health care and financing, social security in old age etc.

4.0 Trends of Population Ageing in India

Elderly population (aged 60 years and above), % decadal growth rate of elderly in elderly population vis-à-vis that of general population, per cent of elderly and per cent distribution of population by broad age groups in India for the census years 1961 to 2011 are provided in the following tables. Age-sex wise distributions of population in India according to the census 2001 and 2011 are also provided in the form of population pyramid (age-sex pyramid). Elderly population (aged 60 years and above) in India for the census years 1961 – 2011 is provided in Table 2.

Table 2: Elderly Population (Aged 60 years and above) (in Millions) in India

Source	Total			Rural	Urban
	Person	Male	Female		
Census 1961	24.7	12.4	12.4	21.0	3.7
Census 1971	32.7	16.9	15.8	27.3	5.4
Census 1981	43.2	22.0	21.1	34.7	8.5
Census 1991	56.7	29.4	27.3	44.3	12.4
Census 2001	76.6	37.8	38.9	57.4	19.2
Census 2011	103.8	51.1	52.8	73.3	30.6

Source: Census of India

The growth in elderly is due to enhancement of longevity of life because of economic well-being, better medicines and healthcare and reduction in fertility rates.

% Decadal growth rate of elderly in elderly population during the period x – y

$$= \frac{\text{No.of elderly in y} - \text{No.of elderly in x}}{\text{No.of elderly in x}} \times 100$$

% Decadal growth rate of elderly in general population during the period x – y

$$= \frac{\text{No.of elderly in y} - \text{No.of elderly in x}}{\text{Total no.of persons in y} - \text{Total no.of persons in x}} \times 100$$

% Decadal growth rate of elderly in elderly population depends on only growth of elderly over two periods, but % Decadal growth rate of elderly in general population depends on both growths of elderly as well as total number of persons over two periods.

% Decadal growth rates of elderly in elderly and in general population during the periods 1951-61 to 2001-11 in India are provided in Table 3. Table 3 indicates that growth of elderly in population has been happening at a faster rate than growth of total number of persons in population.

Table 3: % Decadal Growth Rate of Elderly Population in India

Period	In elderly population	In general population
1951 - 1961	23.9	21.6
1961 - 1971	33.7	24.8
1971 - 1981	33.0	24.7
1981 - 1991	29.7	23.9
1991 - 2001	25.2	21.5
2001 - 2011	35.5	14.9

Source: Census of India

The percents of elderly to total population according to sex, locality of residence, religion and caste in India for the census years 1961 to 2011 are provided in Table 4. There is an increasing trend in population ageing.

Table 4: Percent of Elderly in India

Source	Person	Male	Female	Rural	Urban
Census 1961	5.6	5.5	5.8	5.8	4.7
Census 1971	6.0	5.9	6.0	6.2	5.0
Census 1981	6.5	6.4	6.6	6.8	5.4
Census 1991	6.8	6.7	6.8	7.1	5.7
Census 2001	7.4	7.1	7.8	7.7	6.7
Census 2011	8.6	8.2	9.0	8.8	8.1

Source: Census of India

It is observed that the difference of per cents of elderly to total population in rural and urban areas is narrowing because of reduction of disparities of population in rural and urban areas regarding social, economic, health care and other aspects. Per cents of elderly to total population in India according to census 2011 are 8.2 and 6.4 for Hindu and Muslim population respectively and those for scheduled caste (SC) and scheduled tribe (ST) population are 7.8 and 6.9 respectively. Per cent of elderly is lowest in case of Muslim population, next lowest is in case of scheduled tribe population because of high fertility and low literacy rate. Reason behind the variations of per cent of elderly to total population over state to state, religion to religion, localities of residence, communities, sex is the different disparities of population.

The percent distribution of population by age groups in India for the census years 1961 – 2011 is provided in Table 5.

Table 5: Percent Distribution of Population by Age Groups in India

Source	Age groups (years)			
	0 - 14	15 - 59	60 -	Total
Census 1961	41.1	53.3	5.6	100
Census 1971	42.0	52.0	6.0	100
Census 1981	39.7	53.9	6.4	100
Census 1991	37.6	55.7	6.7	100
Census 2001	35.5	57.1	7.4	100
Census 2011	31.0	60.4	8.6	100

Source: Census of India

In India, per cent of persons aged 0 – 14 years has been decreasing and that aged 60- years has been increasing, but that aged 15 – 59 years has been fluctuating resulting reduction of labour force.

Per cent distribution of population by age groups in West Bengal for the census years 2001 and 2011 is provided in Table 6. In West Bengal, per cent of persons aged 0 – 14 years has been decreasing, but those for other age groups 15 – 59 and 60- years have been increasing. In West Bengal, rate of reduction of persons aged 0 – 14 years is higher than that in India. Per cent of persons aged 15 – 59 years in West Bengal is higher than that in India implying that position of workforce in West Bengal is better than that in India. Rate of growth of elderly in West Bengal over 2001 – 2011 is higher than that in India.

Table 6: Percent Distribution of Population by Age Groups in West Bengal

Source	Age groups (years)			Total
	0 - 14	15 - 59	60 -	
Census 2001	33.3	59.6	7.1	100
Census 2011	27.2	64.3	8.5	100

According to census 2011, sex ratios for elderly persons living in rural areas were in general higher than those for elderly persons living in urban areas. Most of the states/union territories in India have already achieved targeted replacement fertility rate of 2.1, even for some of them it has become less than 2.1, but the states like Uttar Pradesh and Bihar continue to lag behind with the rates 3.1 and 3.4 respectively. That rate of West Bengal was 1.64 in 2013. Muslims are the fastest growing group in the religious mosaic of India. The data on population by religious communities of Census 2011 show that between 2001 and 2011, Hindu population grew by 16.76 per cent, while that of Muslims by 24.6 per cent. The fertility rate is falling faster in Muslims than in Hindus. Data from the last three National Family Health Surveys (NHFS) show that the gap between Muslim and Hindu fertility rates is narrowing (The Hindu, 2015). But the difference in fertility rates of the two communities is bigger in some states/union territories. Indian mortality rate was 7.35 in 2014, it was 6.23 in 2009.

Age-sex distributions of total population in India are provided through the following population pyramids (Figures 1-3). The change from a very broad base in 2001 to a shrunken base in 2011 indicates a decline in fertility leading to an increase in the proportion of elderly population.

Figure 1: Population Pyramids for India (Total) for 2001 and 2011

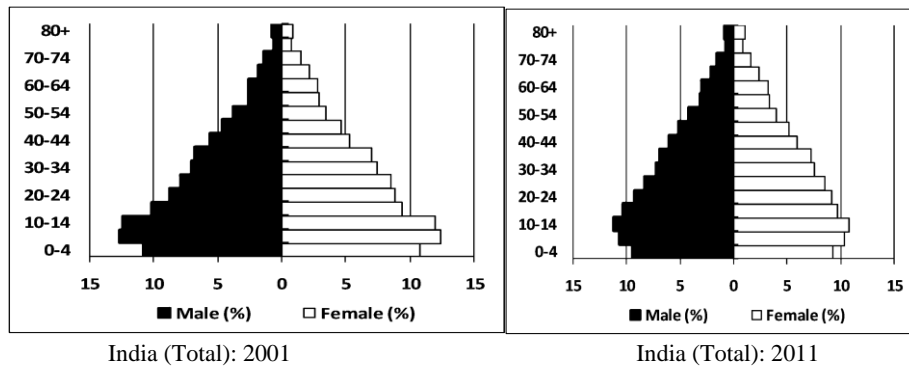


Figure 2: Population Pyramids for India (Rural) for 2001 and 2011

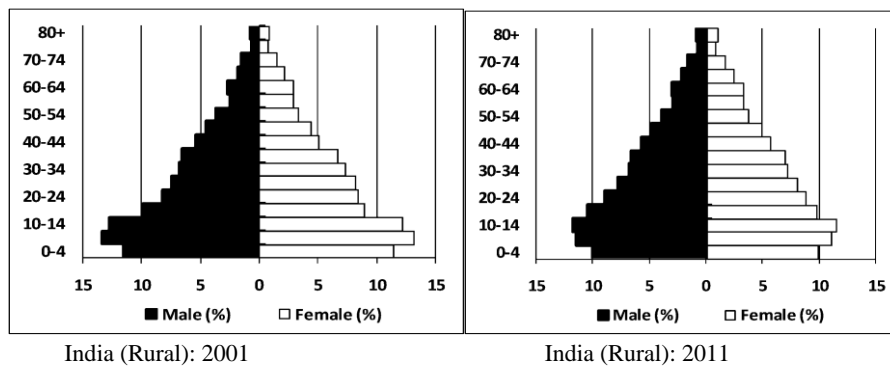
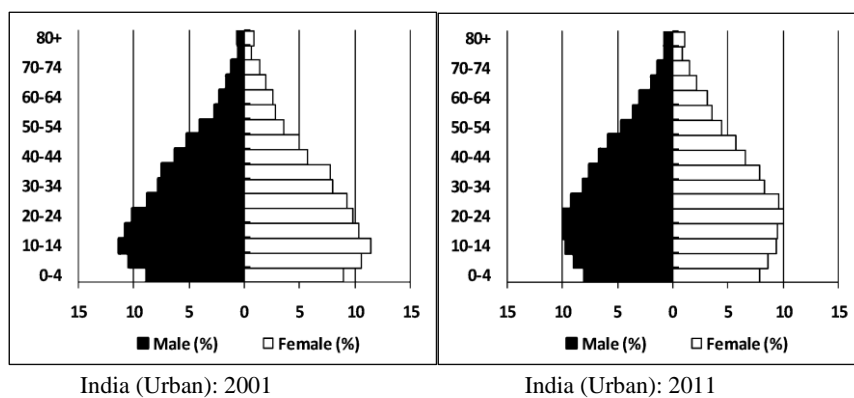


Figure 3: Population Pyramids for India (Urban) for 2001 and 2011



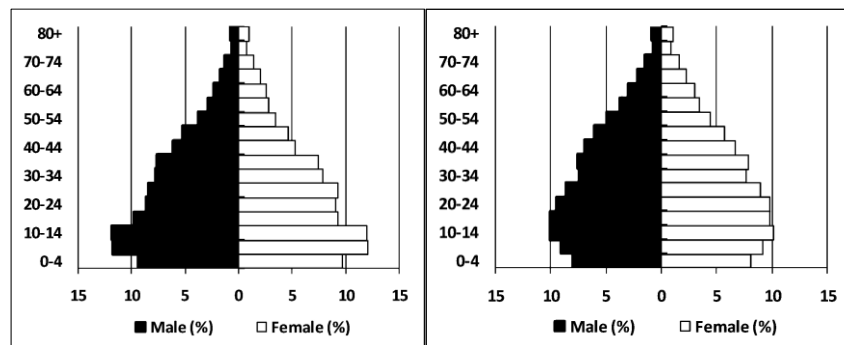
Shapes of population pyramids in case of Hindu and Muslim populations are shrunken base and broad base respectively which indicates that the rate of ageing in Hindu population is more than that in Muslim. Again the rate of shrinking of population pyramid from 2001 to 2011 in case of urban population is lesser than that in case of rural population which indicates that the rate of increase of ageing in case of urban population is lesser than that in rural population.

5.0 Population Ageing in West Bengal Compared to India

Age-sex distributions of total population in West Bengal are provided through the following population pyramids (Figures 4-6). West Bengal having 19 districts – classified two sub-states namely North Bengal consisting of 6 districts and South Bengal consisting of 13 districts (according to Census of India 2011). First 6 districts mentioned in Table 7 belong to North Bengal and the rests belong to South Bengal. Districts of North Bengal on an average are less developed, less industrialized etc as compared with those of South Bengal. Dinajpur (S) of North Bengal was having lowest population and 24 Parganas (N) of South Bengal was having highest population. Three districts of West Bengal, namely, Murshidabad, Malda and Dinajpur (N) are having top most Muslim-majority population with 66.3, 51.3 and 49.9 per cent respectively Muslims of total population; respective per cent of elderly are 6.3, 5.6 and 5.4 and respective per cent decadal growth rates of elderly in elderly population 51.0, 47.6 and 50.7 which are top most three growth rates among those for districts of West Bengal. The per cent of elderly for the districts of West Bengal along with West Bengal and India are presented in Figure 7. Top most 5 districts with high per cent of elderly of West Bengal are Kolkata, 24 Parganas (N), Hugli, Nadia, Bankura - all of them belong to South Bengal while bottom most 5 districts with low per cent of elderly are Dinajpur (N), Malda, Jalpaiguri, Murshidabad, Birbhum. Dinajpur (N), Malda and Jalpaiguri belong to North Bengal and the districts Murshidabad, Malda and Dinajpur (N) are having Muslim-majority population. Top most three districts with respect to Scheduled Tribe populations are Jalpaiguri, Purullia and Dinajpur (S) having 18.9, 18.5 and 16.4 per cent Scheduled Tribe populations respectively with respective per cent decadal growth rates of elderly in elderly population 29.3, 38.9 and 38.7 having very low HDI compared to India, West Bengal and most of the districts of West Bengal.

In 2004, Human Development Indices (HDI) of Kolkata and Malda were highest (0.78) and lowest (0.44) respectively among the districts of West Bengal (www.wbplan.gov.in). All the three Muslim dominated districts had very low HDI compared to India, West Bengal and all other districts of West Bengal except Birbhum.

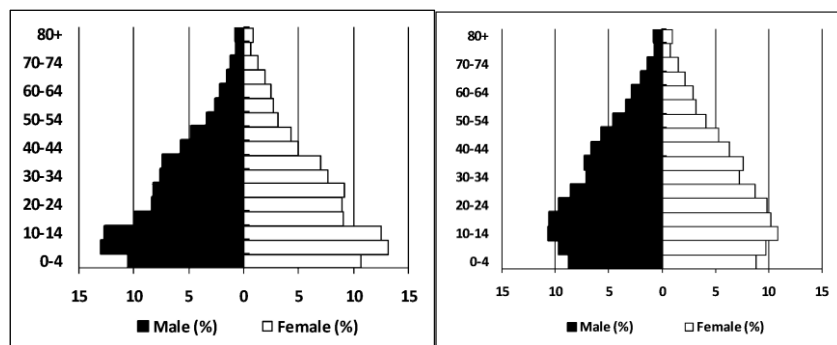
Figure 4: Population Pyramids for West Bengal (Total) for 2001 and 2011



West Bengal (Total): 2001

West Bengal (Total): 2011

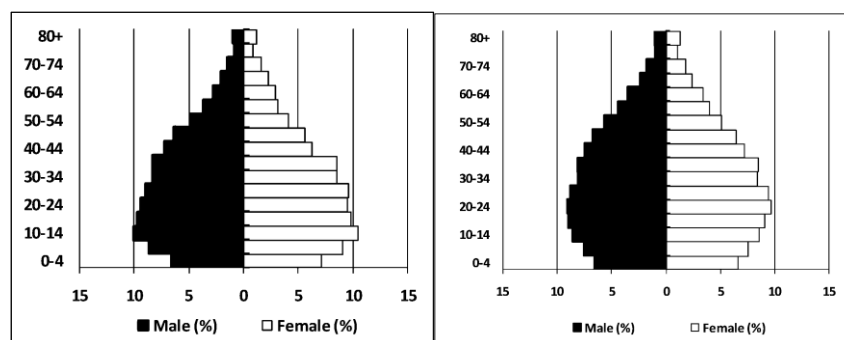
Figure 5: Population Pyramids for West Bengal (Rural) for 2001 and 2011



West Bengal (Rural): 2001

West Bengal (Rural): 2011

Figure 6: Population Pyramids for West Bengal (Urban) for 2001 and 2011



West Bengal (Urban): 2001

West Bengal (Urban): 2011

Table 7: Per Cent of Elderly of India, West Bengal and Districts of West Bengal

	Person 2001	Person 2011	% Decadal growth of elderly in general population 2001-11	% Decadal growth of elderly in elderly population 2001-11	2011							
					Male	Female	Hindu person	Muslim person	Rural person	Urban person	SC person	ST person
India	7.4	8.6	14.9	35.5	8.2	9.0	8.9	6.4	8.8	8.1	7.8	6.9
West Bengal	7.1	8.5	18.4	35.8	8.2	8.8	9.4	6.1	7.9	9.8	7.6	7.0
District of West Bengal												
Darjeeling	6.6	7.7	14.9	33.4	7.9	7.4	7.7	4.5	7.4	8.1	6.4	7.6
Jalpaiguri	6.1	6.9	12.8	29.3	6.9	6.8	7.2	5.3	6.4	8.1	7.1	4.8
CoochBehar	6.9	7.7	13.4	26.6	7.5	7.9	8.1	6.3	7.4	10.0	7.5	6.9
Dinajpur (N)	5.1	6.3	11.2	50.7	6.3	6.3	7.2	5.4	6.1	7.5	6.8	6.0
Dinajpur (S)	6.4	8.0	21.6	38.7	7.8	8.2	8.6	6.3	7.5	10.9	7.5	7.3
Malda	5.2	6.4	11.8	47.6	6.2	6.6	7.2	5.6	6.3	6.9	6.9	6.3
Murshidabad	5.6	7.0	13.6	51.0	6.6	7.5	8.6	6.3	7.1	6.8	7.3	6.1
Birbhum	5.5	7.3	19.0	56.1	6.9	7.8	8.1	6.1	7.2	8.5	6.3	6.9
Bardhaman	6.5	8.1	21.6	39.7	7.7	8.5	8.6	6.5	8.1	8.2	6.5	5.7
Nadia	8.3	9.4	18.6	27.4	8.9	10.0	10.2	7.2	8.9	10.8	9.1	7.0
24 Parganas (N)	8.2	9.9	24.1	35.3	9.9	10.0	11.2	6.5	8.2	11.3	9.0	7.9
Hugli	8.0	9.8	29.3	34.8	9.6	10.1	10.4	7.1	9.0	11.1	7.5	6.4
Bankura	7.3	9.3	25.3	44.1	8.4	10.2	9.5	6.2	9.2	10.4	7.7	9.0
Purulliya	7.2	8.7	18.1	38.9	8.2	9.3	9.0	5.9	8.8	8.2	7.5	8.4
Haora	7.7	8.8	17.4	30.7	8.6	9.0	10.0	5.5	8.6	8.9	7.7	5.3
Kolkata	9.9	11.8	-100.3 ^a	16.9	11.7	11.8	13.3	6.1		11.8	7.7	7.2
24 Parganas (S)	6.8	7.9	13.7	36.7	7.7	8.1	9.2	5.5	7.6	8.7	8.3	7.4
Medinipur (W)	7.3	8.6	18.2 ^b	36.3	8.2	9.0	8.9	5.9	8.5	9.4	7.6	7.7
Medinipur (E)		8.7			8.6	8.8	9.1	6.1	8.8	7.8	8.0	6.0

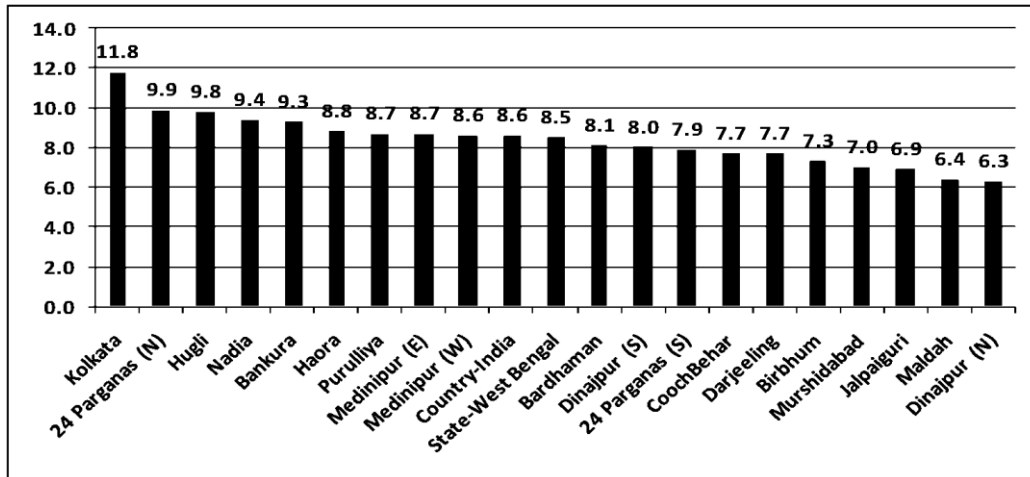
Source: Census of India, 2001 and 2011

^aFor district Kolkata like the state Nagaland, over 2001 to 2011, number of elderly persons increased, but number of total persons decreased.

^bDistrict Medinipur was bifurcated into two districts Medinipur (E) and Medinipur (W) after census 2001

It may be mentioned that per cents of elderly to total population of the districts of North Bengal are lower than those of India and West Bengal. All districts shown on higher side in respect of per cents of elderly of India and West Bengal in Figure 7 belong to South Bengal.

Figure 7: Per cent of Elderly for Districts of West Bengal Along with West Bengal and India in 2011



Source: Census of India

According to Census of India, 2011, among all districts of West Bengal, coefficients of correlation of per cent of elderly with per cent decadal growth rate of elderly in general population and HDI are -0.864 and 0.708 respectively. Regression equations of per cent of elderly of districts of West Bengal with indicators like per cent decadal growth rate of elderly in general population and HDI are presented below. The regression equation of per cent of elderly of districts of West Bengal on per cent decadal growth rate of elderly in general population is as below:

Per cent of elderly = $11.476 - 0.223 * \text{per cent Decadal growth rate of elderly in general}$

S.E. (0.474) (0.032) population

(P-value <0.001) $R^2 = 0.746$

The above regression equation of per cent of elderly of districts of West Bengal on per cent decadal growth rate of elderly in general population explains 74.6 per cent of total variation of per cent of elderly of districts of West Bengal.

The regression equation of per cent of elderly of districts of West Bengal on HDI is as below:

Per cent of elderly = $2.348 + 10.455 * \text{HDI}$ $R^2 = 0.500$

S.E. (1.465) (2.532) (p-value <0.001)

The above regression equation of per cent of elderly of districts of West Bengal on HDI explains 50.0 per cent of total variation of per cent of elderly of districts of West Bengal.

Sex ratio of elderly and general population in India and West Bengal is provided in Table 8. Generally sex ratios of elderly are higher than those of general population with some exceptions like in Darjeeling district. Sex ratios of elderly and of general population are very close in case of (a) Muslim population of both India and West Bengal and (b) urban population of West Bengal.

Table 8: Sex Ratio of Elderly and General Population in India and West Bengal

	Total	Hindu	Muslim	Rural	Urban	SC	ST
India	1033 (943)	1035 (939)	995 (951)	1036 (949)	1027 (929)	1043 (945)	1120 (990)
West Bengal	1010 (950)	1015 (948)	979 (951)	1048 (953)	949 (944)	1074 (951)	1130 (999)

Note: Figures outside and inside brackets provide sex ratios of elderly, general population respectively
Source: Census of India, 2011

Per cent of elderly, sex ratio among elderly according to locality of residence and age-group in India and West Bengal are provided in Table 9. Oldest-old group (aged 80- years) grows faster than the other elderly age groups and having higher sex ratio than other elderly age groups. By 2025, India is expected to reach 12.6 per cent of elderly in its total population (Source: shodhanga.inflibnet.ac.in).

Per cent distribution of households by the number of elderly members in India and West Bengal are provided in Table 10. More than 65 per cent of households in India and West Bengal do not have any elderly members. Nearly 22 and 8 per cent of households in India and West Bengal are having one and two elderly members respectively. Reasons behind the majority of households not having any elderly members are (a) present trend of households being nuclear family, (b) elderly members like to reside separately from their sons, daughters to stay with dignity and independently, to avoid accommodation problem and/or adjustment problems with other family members etc.

Life expectancy in India has increased in rural and urban areas. At birth, in rural areas, it has increased from 48 years in 1970-75 to 67.1 years in 2011-15; while in urban areas, it has increased from 58.9 years to 71.9 years. Kerala has got the highest life expectancy at birth followed by Maharashtra and Punjab. The life expectancies at birth in Kerala are 72.2 years and 78.2 years for males and females respectively; those at age

60 years in Kerala are 18.2 years and 22.1 years for males and females respectively as per the SRS Report 2011-15. Life expectancy at birth and at 60 years in the period 2011-15 in India and West Bengal are provided in Table 11.

Table 9: Per cent of Elderly, Sex Ratio among Elderly According to Locality of Residence and Age-Group in India and West Bengal

	Age group	Total				Rural				Urban			
		Percent of elderly			Sex ratio	Percent of elderly			Sex ratio	Percent of elderly			Sex ratio
		Person	Male	Female		Person	Male	Female		Person	Male	Female	
India	60-64	3.1	3.0	3.2	1014	3.2	3.0	3.3	1033	3.0	3.0	3.1	971
	65-69	2.2	2.1	2.3	1044	2.3	2.2	2.4	1054	2.0	1.9	2.1	1018
	70-74	1.6	1.6	1.6	990	1.7	1.6	1.7	979	1.4	1.4	1.5	1020
	75-79	0.8	0.7	0.8	1056	0.8	0.7	0.8	1050	0.8	0.7	0.8	1069
	80-	0.9	0.9	1.0	1137	1.0	0.9	1.0	1096	0.9	0.8	1.0	1236
	60-	8.6	8.2	9.0	1033	8.8	8.4	9.2	1036	8.1	7.7	8.5	1027
	All ages				943				949				929
West Bengal	60-64	3.0	3.0	3.0	952	2.8	2.8	2.9	981	3.4	3.5	3.4	903
	65-69	2.2	2.1	2.2	1000	2.1	2.0	2.2	1046	2.4	2.4	2.4	923
	70-74	1.5	1.5	1.6	1025	1.4	1.3	1.5	1080	1.8	1.8	1.8	937
	75-79	0.8	0.8	0.9	1054	0.7	0.7	0.8	1101	1.0	1.0	1.0	982
	80-	1.0	0.9	1.1	1173	0.9	0.8	1.0	1189	1.2	1.1	1.3	1150
	60-	8.5	8.2	8.8	1010	7.9	7.5	8.3	1048	9.8	9.8	9.8	949
	All ages				950				953				944

Source: Census of India, 2011

Table 10: Per cent Distribution of Households by Number of Elderly Members in India and West Bengal

No. of elderly members in household	India			West Bengal		
	Total	Rural	Urban	Total	Rural	Urban
None	68.7	67.5	71.2	69.6	71.2	66.2
1	21.6	22.1	20.5	23.3	22.4	25.3
2	9.3	9.9	7.9	6.8	6.2	7.9
3	0.3	0.4	0.3	0.2	0.2	0.5
4 or more	0.1	0.1	0.1	0.1	0.0	0.1

Source: Census of India, 2011

Table 11: Life Expectancy at Birth and at 60 Years in Period 2011-15 in India and West Bengal

	At age (years)	Total	Male	Female
India	0	68.3	66.9	70.0
	60	18.0	17.1	18.9
West Bengal	0	70.5	69.4	71.8
	60	17.9	17.3	18.7

Source: Sample Registration System (SRS) Office of the Registrar General

For 2015, the age-specific death rate per 1000 population for age-group 60-64 years was 23.7 for rural areas and 13.6 for urban areas. Altogether it was 20.3 for the age-group 60-64 years. As regards to sex, it was 22.0 for males and 18.4 for females. Age-specific death rate per 1000 of elderly according to sex and locality of residence in India and West Bengal is provided in Table 12.

Table 12: Age-Specific Death Rate per 1000 of Elderly in India and West Bengal (Sex and Location Specific)

	Age-group (years)					
	60-64	65-69	70-74	75-79	80-84	85 -
India (Total)	20.3	28.6	41.1	65.2	116.2	209.5
India (Male)	22.0	31.0	44.7	69.8	123.5	238.1
India (Female)	18.4	26.1	37.6	60.8	109.4	186.9
India (Rural)	23.7	31.1	43.4	65.3	119.7	203.6
India (Urban)	13.6	23.4	36.1	64.8	109.1	222.9
West Bengal (Total)	18.9	26.3	41.8	66.8	108.7	166.1

Source: Sample Registration System (SRS) Office of the Registrar General

Some of the economic indicators for the elderly are old-age dependency ratio, headship of household, state of economic independence, economically dependence, economically independence by number of dependents, working status etc. The old-age dependency ratio has an increasing trend and the ratio has increased from 10.9 per cent in 1961 to 14.2 per cent in 2011. The gap between female and male old-age dependency ratio also has an increasing trend and those two ratios are 14.9 and 13.6 respectively in 2011. There has been considerable gap in all the period of that ratio for rural and urban areas, because of a relatively higher concentration of working age population in urban areas. The ratios are 15.1 and 12.4 for rural and urban areas respectively.

Among the major states the overall old-age dependency ratio varied from 10.4 per cent in Delhi to 19.6 per cent in Kerala. The old-age dependency ratio of 2011 in India and West Bengal by sex and locality of residence is provided in Table 13.

Table 13: Old-Age Dependency Ratio of 2011 in India and West Bengal

	Total	Male	Female	Rural	Urban
India	14.2	13.6	14.9	15.1	12.4
West Bengal	13.2	12.7	13.7	12.5	14.5

Source: Office of the Registrar General, India

Per cent distribution of households having elderly head by locality of residence and sex in India and West Bengal according to census 2011 is provided in Table 14. Since elderly females are expected to live more years than elderly males, per cent of elderly female heads is almost twice of that of elderly male heads. Per cent of elderly female head in West Bengal is more than that of India. Nearly 20 per cent of households in India and West Bengal are having elderly heads.

Table 14: Per cent Distribution of Households having Elderly Head by Locality of Residence and Sex in India and West Bengal

	Locality of residence	Sex of elderly head		
		Person	Male	Female
India	Total	22.4	19.9	38.4
	Rural	23.0	20.7	38.8
	Urban	21.1	18.4	37.7
West Bengal	Total	21.5	18.7	40.5
	Rural	19.3	16.9	38.0
	Urban	26.2	22.7	44.1

Source: Census of India, 2011

National Sample Survey Office (NSSO) in 2004 mentioned that 65 per cent of the elderly in India had to depend on others for their day-to-day maintenance. About 86 and 83 per cent of elderly in rural and urban areas were dependent on others either partially or fully. The elderly males were much better off as majority of them (51 and 56 per cent of them in rural and urban areas respectively) did not depend on others for their livelihood. State-wise data on economic independence mentioned that in rural areas, the

per cent of elderly males who were fully dependent on others is highest in Kerala (43) and is lowest in Jammu and Kashmir (21) whereas for females the figure is highest in Assam (81) and lowest in Haryana (44). In urban areas, highest per cent of fully dependent elderly males is 38 in Bihar and lowest is 20 in Himachal Pradesh. The elderly female in urban areas with highest per cent of fully dependent elderly is 83 in Jammu and Kashmir and lowest is 50 in Haryana. Per cent distribution of elderly by their state of economic independence in India and West Bengal is provided in Table 15.

Table 15: Per cent Distribution of Elderly by State of Economic in Dependence in India and West Bengal

		Male			Female		
		Not dependent on others	Partially dependent on others	Fully dependent on others	Not dependent on others	Partially dependent on others	Fully dependent on others
India	Rural	51	15	32	14	12	72
	Urban	56	13	30	17	10	72
West Bengal	Rural	46	18	33	6	8	82
	Urban	66	10	23	18	8	72

Source: NSSO, 60th Round, (January – June 2004)

Per cent distribution of economically dependent aged persons by category of persons supporting the elderly in India is provided in Table 16. In all cases, about 70 – 85 per cent of dependent elderly are supported by their own children; 2 – 3 per cent by grandchildren; about 6 per cent by others. In case of supporting by spouse, 16 – 19 per cent elderly females are supported by their male spouse, whereas 6 – 7 per cent of elderly males are supported by their female spouse.

Table 16: Per cent Distribution of Economically Dependent Elderly by Category of Persons Supporting Elderly in India

		Category of persons supporting			
		Spouse	Own children	Grandchildren	Others
Rural	Person	13	78	3	6
	Male	7	85	2	6
	Female	16	75	3	6
Urban	Person	15	76	3	6
	Male	6	87	2	6
	Female	19	71	3	7

Source: NSSO, 60th Round, (January – June 2004)

Of the economically independent elderly men, more than 90 per cent reported to be living with one or more dependents, while among economically independent elderly women, about 65 per cent were having one or more dependents. Elderly females were having lesser number of dependents than elderly males in both rural and urban areas. Per cent distribution of economically independent elderly by number of dependents in India is provided in Table 17.

Table 17: Per cent Distribution of Economically in Dependent Elderly by Number of Dependents in India

		Number of dependents					Total
		0 (Nil)	1	2	3 to 5	6 or more	
Rural	Person	12	29	26	22	11	100
	Male	7	32	23	25	13	100
	Female	32	18	37	10	4	100
Urban	Person	15	34	30	18	5	100
	Male	8	40	26	21	6	100
	Female	34	15	42	8	2	100

Source: NSSO, 60th Round, (January – June 2004)

As per census 2011, 66.4 per cent of elderly males, 28.4 per cent of elderly females in rural area engaged in economic activity in the capacity of main or marginal worker (occasional worker). In urban areas it was only 46.1 per cent of elderly males and 11.3 per cent of elderly females engaged in economic activity. The proportions increased in 2011 for both elderly males and women as compared to census 2001 in both rural and urban areas. But the proportions increased from census 2001 to 2011 in case of elderly women are relatively higher than the proportions increased from census 2001 to 2011 in case of elderly males. Proportions of elderly engaged as main workers increased from census 2001 to 2011, but proportions of elderly males in rural areas decreased from census 2001 to 2011. Proportion of elderly non-workers in urban areas was remarkably higher than that in rural areas. About 50 per cent of elderly males of age-group 60-69 years in both rural and urban areas remained in engaged in working condition.

Alam and Yadav (2014) in their study pointed out that most surveys conducted in India and elsewhere deliberately avoided gathering information on personal income. They conducted a survey (the United Nations Population Fund (NNFPA, India) along with the Institute of Economic Growth (Delhi), Institute of Social and Economic Change (Bangalore) and Tata Institute of Social Sciences (Mumbai) in a major research project to study ageing issues in this country, including socio-economic and health conditions of

the elderly, in the states of Odisha, West Bengal, Maharashtra, Himachal Pradesh, Punjab, Tamil Nadu and Kerala which revealed that 74 per cent of elderly males and about 41 per cent of elderly females reported receiving some personal income and about 43 per cent of all elderly receiving no income.

Per cent of elderly working in India and West Bengal according to census 2011 is provided in Table 18.

Table 18: Per cent of Elderly Working in India and West Bengal

	Age-group (years)	Main worker			Marginal worker			Main worker + Marginal worker			
		Person	Male	Female	Person	Male	Female	Person	Male	Female	
India	Total	60 – 69	37.3	57.6	17.3	11.8	12.2	11.6	49.1	69.8	28.9
		70 – 79	24.3	39.3	9.5	8.1	9.7	6.5	32.4	49.0	16.0
		80 -	16.4	27.7	6.5	5.7	7.2	4.4	22.1	34.9	10.9
		60 -	31.4	49.4	14.0	10.2	11.0	9.4	41.6	60.4	23.4
	Rural	60 – 69	40.5	61.6	20.2	15.0	15.1	14.9	55.5	76.7	35.1
		70 – 79	27.0	43.0	11.1	10.1	11.8	8.3	37.1	54.8	19.4
		80 -	17.4	28.5	7.3	7.0	8.6	5.5	24.4	37.1	12.8
		60 -	34.3	53.0	16.3	12.8	13.4	12.1	47.1	66.4	28.4
	Urban	60 – 69	29.2	48.1	10.2	4.6	5.6	3.5	33.8	53.7	13.7
		70 – 79	17.7	30.1	5.7	3.3	4.3	2.3	21.0	34.4	8.0
		80 -	14.0	25.6	4.7	2.9	3.9	2.0	16.9	29.5	6.7
		60 -	24.4	41.0	8.3	4.1	5.1	3.0	28.5	46.1	11.3
West Bengal	Total	60 – 69	29.6	50.9	7.6	8.8	10.8	6.8	38.4	61.7	14.4
		70 – 79	16.5	29.5	3.9	5.1	7.1	3.2	21.6	36.6	4.1
		80 -	13.1	24.1	3.7	4.2	5.5	3.0	17.3	29.6	6.7
		60 -	24.1	42.2	6.1	7.2	9.3	5.3	31.3	51.5	11.4
	Rural	60 – 69	31.1	55.0	7.3	11.6	14.6	8.8	42.7	69.6	16.1
		70 – 79	17.7	32.9	3.7	6.5	9.5	3.8	24.2	42.4	7.5
		80 -	12.7	24.0	3.2	5.1	6.9	3.6	17.6	30.9	6.8
		60 -	25.4	45.9	5.8	9.6	12.4	6.9	35.0	58.3	12.7
	Urban	60 – 69	26.9	43.9	8.2	3.7	4.5	3.0	30.6	48.4	11.2
		70 – 79	14.6	24.3	4.4	2.6	3.2	1.9	17.2	27.5	6.3
		80 -	13.6	24.2	4.4	2.8	3.4	2.2	16.4	27.6	6.6
		60 -	21.8	36.3	6.6	3.3	4.0	2.6	25.1	40.3	9.2

Source: Census of India, 2011

Health and social status of elderly in India and West Bengal are presented in the subsequent tables. Literacy levels among elderly of (a) rural and urban areas, (b) males and females have improved tremendously over 2001 to 2011. There are huge gaps of

literacy rates of elderly between (a) rural and urban areas and (b) males and females. Literacy rates for elderly in West Bengal are better than those in India. Per cent of literacy among elderly in India and West Bengal for the censuses 2001 and 2011 is provided in Table 19.

Table 19: Per cent of Literacy among Elderly in India and West Bengal for Censuses 2001 and 2011

	Census	Total			Rural			Urban		
		Person	Male	Female	Person	Male	Female	Person	Male	Female
India	2001	36.3	52.8	20.3	29.0	45.5	13.0	58.1	75.0	41.8
	2011	43.5	59.1	28.5	34.2	50.5	18.4	66.0	79.6	52.7
	% Decadal growth	63.9	76.9	51.4	52.8	69.2	37.6	79.2	87.3	71.3
West Bengal	2001	48.8	68.8	29.7	38.5	61.2	17.9	69.3	82.8	55.2
	2011	53.5	70.0	37.1	42.2	61.5	23.7	72.9	83.9	61.2
	% Decadal growth	66.6	73.3	59.2	55.0	62.4	46.6	79.8	86.1	73.2

Source: Census 2001 and 2011

It is observed that despite illness higher proportion of elderly men seemed to be feeling better health condition than elderly women. More elderly men and women in urban areas felt to have good/fair health as compared to elderly in rural areas. Per cent distribution of elderly with illness or otherwise by their perception about current state of health in India and West Bengal is provided in Table 20.

Table 20: Per cent of Elderly with Illness or Otherwise by their Perception about Current State of Health in India and West Bengal

		Elderly with illness own perception about current state of health			Elderly without illness own perception about current state of health		
		Excellent	Good/ fair	Poor	Excellent	Good/ fair	Poor
		India	Male	2	59	37	8
	Female	2	54	42	5	74	17
West Bengal	Male	3	49	47	8	64	17
	Female	1	48	47	2	60	27

Source: NSSO, 60th Round, (January – June 2004)

Per cent distribution of elderly by state of physical mobility in India is provided in Table 21. In both rural and urban areas, elderly men are more mobile than elderly women.

Table 21: Per cent Distribution of Elderly by State of Physically Mobility in India

	Male			Female		
	Mobile	Confined to bed	Confined to home	Mobile	Confined to bed	Confined to home
Rural	91.2	1.2	5.5	89.1	1.4	7.4
Urban	91.7	1.7	5.1	88.5	1.7	8.3

Source: NSSO, 60th Round, (January – June 2004)

Census data of 2011 pointed out that locomotor and visual disability are the most prevalent disabilities among elderly in both the areas. Distribution of number of disabled persons per 1000 elderly in India and West Bengal is provided in Table 22. Prevalence of disabilities is higher in rural areas than that in urban areas.

Table 22: Distribution of Number of Disabled Persons Per 1000 Elderly in India and West Bengal

		Disability type								
		Total disabilities	In seeing	In hearing	In speech	In movement	Mental retardation	Mental illness	Any other	Multiple disabilities
India	Total	52	13	10	2	13	1	1	6	6
	Rural	73	19	14	3	19	1	1	8	9
	Urban	42	9	8	2	10	1	1	6	4
West Bengal	Total	47	13	8	2	10	1	1	6	7
	Rural	52	15	9	1	11	1	1	6	8
	Urban	39	10	7	2	8	1	1	6	4

Source: Census of India, 2011

Census of India 2011 pointed out that per cent of currently married elderly women was lower than the per cent of currently married elderly men. After age of 70 years, more than 60 per cent of women become widows. Per cent distribution of marital status of elderly in India and West Bengal is provided in Table 23.

Table 23: Per cent Distribution of Marital Status of Elderly in India and West Bengal

		Never married		Currently married		Widowed		Separated		Divorced	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
India	Total	2.9	2.0	82.1	49.6	14.6	47.8	0.3	0.4	0.2	0.2
	Rural	2.7	1.7	81.5	50.4	15.4	47.4	0.3	0.4	0.1	0.1
	Urban	3.3	2.9	83.6	47.7	12.7	48.8	0.3	0.5	0.2	0.2
West Bengal	Total	3.1	2.2	85.7	39.9	10.8	57.2	0.4	0.5	0.2	0.2
	Rural	2.2	1.5	86.5	38.7	10.9	59.0	0.4	0.5	0.2	0.2
	Urban	4.6	3.3	84.3	42.1	10.6	54.0	0.4	0.4	0.2	0.2

Source: Census of India, 2011

Living arrangement of elderly is very important indicator of social status and well-being. More than 56 per cent of elderly live with their spouse and 32 per cent of elderly live with their children. About 5 per cent of elderly live alone and 4 per cent live with other relations and non-relations. Per cent distribution of elderly by their living arrangements in India and West Bengal is provided in Table 24.

Table 24: Per cent Distribution of Elderly by their Living Arrangements in India and West Bengal

	Type of living arrangement				
	Alone	With spouse only	With spouse and other members	With children	With other relations and non-relations
India	5.2	12.0	44.8	32.1	4.4
West Bengal	3.4	7.8	44.4	35.6	5.7

Source: NSSO, 60th Round, (January – June 2004)

6.0 Concluding Observations

India is a vast country with tremendous diversities in many respects. In the present paper, we have studied population ageing, its trend and related issues like sex ratio; per cent households having elderly members; life expectancy of elderly at birth and at age 60 years; age-specific death rates of elderly; economic status of elderly including

old-age dependency, per cent of elderly by state of economic independence, economic dependence, per cent of workers; health and social status of elderly including literacy rate, perception of health, physical mobility, disabilities, marital status and living arrangement in India and West Bengal through secondary data mostly from censuses of India and NSSO rigorously. Strongly significant correlations between (a) per cent of elderly and per cent decadal growth rate of elderly in general population (negative) and (b) per cent of elderly and human development index (positive) have been observed and two regression equations of (a) per cent of elderly on per cent decadal growth rate of elderly in general population and (b) per cent of elderly on human development index have been developed. There is a huge variation of population ageing among the districts of West Bengal. Kolkata and Dinajpur (N) are having highest (11.77) and lowest (6.28) per cent of elderly respectively. District with Muslim-dominated districts are having low per cent of elderly, but their per cent decadal growth rates of elderly in general population are higher than those of other districts. Low per cent of elderly have been noticed among ST population. Reasons behind the variations of population ageing have been studied. From the data on elderly of West Bengal, it may be inferred that the present socio-economic-physical conditions of elderly of West Bengal may not be very good, but not worse and have improved than earlier. The present study stands for a strong evidence for the Preston's hypothesis (Preston, 1975) that individuals born in richer countries, on average, can expect to live longer than those born in poor countries.

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