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ACCELERATING AGEING IN INDIA: TRENDS AND EXPLANATIONS

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Abstract

In the 21st century population ageing is an exigent factor in the world, and dwindling demographics have become a major concern for many countries. But India with a huge population base still boasts of the demographic dividend. However, the drivers of ageing population in India are interplaying conspicuously for an ageing future. The paper attempts to elucidate the link between demographic transition and population ageing in India, to gain an insight into how the trends in the drivers of population ageing – the fertility and mortality – are carving out ageing India. Further, the size, growth, and sex ratio of the older population in India are discussed to understand their demographic situation. It emerges that the trends in fertility and mortality are declining, and life expectancy is increasing along with the resultant onset of decline in absolute numbers of persons and change in age structure. All the demographic variables in India are in line with the concept of population ageing. Also, the size, share, growth of the older population is witnessing an upward trend.

Keywords: Population Ageing; Demographic Transition; Older Population; India

Introduction

The initiation of global concern for population ageing can be traced back to the various actions undertaken by the United Nations. In 1982, the General Assembly called the first World Assembly on Ageing that brought the issues of aged people at the forefront. It constructed the first-ever global instrument named Vienna International Plan of Action on Ageing that gave 62-point recommendations to function as a foundation for the formulation of policy and programmes for the older people (United Nations, 1982). Later in 1991, the general assembly laid out 18 rights essential to older people by bringing into effect the United Nations Principles for Older Persons (United Nations: General Assembly, 1991). Thereafter, the International Conference on Ageing, 1992, adopted Proclamation on Ageing. Further, the year 1999 was declared as the International Year of Older Persons. The international attention and commitment towards addressing the issues of the elderly continued in 2002 when the Second World Assembly adopted the Political Declaration and the Madrid International Plan of Action on Ageing (United Nations, 2002). The action plan called for a change at levels to recognise and harness the enormous potential of the ageing world. It prioritised three target areas: "older persons and development; advancing health

and well-being into old age; and ensuring enabling and supportive environments (United Nations, Department of Economic and Social Affairs, 2002)."

Ageing is a natural and a universal phenomenon which is inevitable especially for humans during existence. When there is a growth in the number and proportion of older adults in a population, the population is considered to be ageing. Ageing of the population is also known as demographic ageing or population ageing. It is a term which refers to shift in the age distribution of a population towards older ages. The United Nations defines a country as ageing, where the share of people aged '60 and above' in the total population hits the 7 per cent mark (Prakash, 1999). Further, the United Nations refers to it as one of the four "mega-trends" that defines the global population in the 21st century (United Nations Department of Economic and Social Affairs, 2020). The continual strides in social, economic, medical, and public health domains have reduced fertility and mortality and added years to life. Consequently, the relative sizes of different age groups in a population have decreased in favour of older age-cohorts. Hence there are changes in population age-structure. In an instrumental study on the ageing process, Antonio Golini provided a conceptual framework that clearly describes the determinants and consequences of the ageing process (Golini, 2002). In this model, the population ageing is described as a macro-level concept of ageing, which is driven by reductions in fertility and mortality rates, and migration flows. Further, it shows that ageing of the population has consequences on myriad aspects, such as health, economy, policy and international relations.

The scope of the present paper pertains to the macro-level concept of ageing, i.e., population ageing for the country of India. Also, it discusses the course of demographic transition in India by analysing the trends in fertility and mortality during the documented demographic history of the country. Its effect on the life expectancy, the growth of population, and change in the age structure is examined further. The paper culminates with a discussion of select demographic dimensions of the older population in India (their size, growth, and sex composition) to better understand their demographic situation in India.

Data and Method

Scale of Work

The present study is a macro-scale study in terms of the chosen concept and spatial unit. The concept of population ageing is a macro-level concept which deals with the ageing of the entire population. The spatial unit of the study - the country of India - is a macro-scale unit. The study attempts to see the trends in drivers of population ageing and the demographic situation of older adults at the national scale.

Sources of Data

The data for the present study is extracted from Census of India, Sample Registration System, National Sample Survey and various reports and documents from the Office of the Registrar General and Census Commissioner of India, the Central Statistics

Office: Ministry of Statistics and Programme Implementation, Central Bureau of Health Intelligence and international organisations like the United Nations and World Health Organization. Also, the research papers available on the internet are referred for the study. Among various datasets, the World Population Prospects, 2019 by the United Nations is the most relevant data which is found particularly useful. A detailed list of the data tables and reports used for is provided in Table 1.

Moreover, the data relating to the crude birth and death rates, and life expectancy for the years 1901 to 2011 are compiled from multiple sources because the national level survey system responsible for providing data on fertility and mortality indicators, i.e., the Sample Registration System, started providing regular estimates only from the year 1971. So, for the current year (i.e. 2020) the data from the United Nations' projections is utilised. However, future trends for some demographic variables are discussed depending on the purpose and availability of the data.

Results and Discussion

Linking Demographic Transition and Population Ageing

Population ageing is linked to the demographic transition. The demographic transition is a mechanism that drives a society from a demographic system, marked by an initial phase of high fertility rates and mortality rates, to a phase denoted by lower fertility and mortality rates. During this transformation the age structure is put through various influences, and it changes accordingly. The change in age structure, as a society experiences demographic transition, denotes that the population is ageing. Therefore, to have an insight into population ageing in India, it is imperative to first understand the demographic history of the country and then the trends in fertility, mortality and life expectancy, and their effect on its population growth and age structure. These findings would illustrate how India is moving towards an ageing future.

Demographic History of India

The demographic background of India as summarised in Table 2 helps in visualising how the fertility rates and mortality rates interplayed through time which aids in understanding the population growth patterns, change in age structure, and how India is transforming demographically. In India we see that both fertility and mortality were initially very high, which nullified each other resulting in a period of low population growth. Later, between 1921 and 1951, the growth was steady as fertility remained high, whereas the mortality rate witnessed a sharp decline. Further, between 1951 and 1981, there was a spurt in the growth as the mortality fell substantially, and fertility experienced just the initial decline. It was between 1981 and 2011, the growth of the population in India witnessed a noticeable decline as mortality was at the lowest and the trend of decline in fertility was established.

Table 1: Sources of population data, India

Agency	Data source	Type of data extracted
Office of the Registrar General and Census Commissioner of India	Demographic Transition in India	Demographic history of India
	Compendium of India's Fertility and Mortality Indicators, 1971 – 2013, Sample Registration System	Crude birth rate and crude death rate (1971-2011)
	SRS based Abridged Life Tables 2013-17	Life expectancy at birth (1970-2015)
	Primary Census Abstract, 2011: A-2 data table - Decadal Variation in Population Since 1901	Decadal population growth in absolute numbers (1901-2011)
	SRS Statistical Report, 2018	Crude birth rate, crude death rate, infant mortality rate, total fertility rate (1971 and 2018)
	C-6 table from Census of India, 1991 and C-14 Tables from Census of India, 2001 and 2011	Age composition of the population (1991, 2000 and 2011)
	Population Projections for India and States 2011-2036	Projection of age composition of the population (year 2036)
	Census of India (1951-2011)	Size, share, decadal growth rate and sex ratio of the older population (1951/61-2011)
Indian Statistical Institute	National Sample Survey, 14th round, July 1958-July 1959, number 48	Crude birth rate and crude death rate (1901-1961)
Central Bureau of Health Intelligence	Health Information of India, 2000-2001	Life expectancy at birth (1901-1961)
Central Statistics Office: Ministry of Statistics and Programme Implementation, India	Elderly in India, 2016	Size, share, decadal growth rate and sex ratio of the older population (1951/61-2011)
United Nations, Department of Economic and Social Affairs, Population Division	World Population Prospects 2019, Volume II: Demographic Profiles	Crude birth rate, crude death rate, life expectancy at birth, total population (2020)

Source: *Prepared by the authors.*

Table 2: Demographic history of India

Till 1921	• High fertility and equally high mortality • Period of low and uncertain population growth
Between 1921 and 1951	• Fertility remained high, and mortality experienced a sharp decline • The steady growth of population
Between 1951 and 1981	• The initial decline in fertility and a substantial fall in mortality • The unprecedented growth of population
Between 1981 and 2011	• Fertility decline got established and mortality at the lowest level • A sharp decline in India's growth rate of population

Source: *Demographic Transition in India: a report by the Census of India (Office of the Registrar General of India, 2014).*

Fertility, Mortality and Life Expectancy: Trends and Effect

A perusal of the trends in birth and death rates reveals that India has witnessed a substantial decrease in crude birth rate and the total fertility rate. Crude birth rate suffered a decline from 49.2 per thousand in 1911 to 21.8 per thousand in 2011 (Figure 1). Also, this trend is likely to be maintained as the projections for 2020 reveal that the birth rates have dropped to a further low of 18 per thousand(United Nations, Department of Economic and Social Affairs, 2019).Similarly, the total fertility rate declined from 5.2 children per woman in 1971 to 2.7 children in 2011. The reduced fertility is attributed to the use of contraceptives, family planning measures, and socio-economic awakening among the people. Initially, the effect of fertility changes on the ageing of the population may not be apparent. But a slow and steady fall in fertility (as reflected in decline in crude birth rate and total fertility rate) is noticeable in the newer birth cohorts, which shrinks as compared to the preceding birth cohorts. Therefore, reduction in fertility narrows the size of the youngest age groups compared to that of the older age groups.

Moreover, a continuous fall in death rate ever since 1921 (Figure 1) because of improving conditions of food supply and medical services led to a substantial increase in the total population of the country. Due to advancement in the medical and socio-economic levels and a substantial decline in mortality, life expectancy has increased. A remarkably low death rate of 7.1 per thousand was recorded in India in 2011, which was less than the death rates of many developed countries like Japan, the United Kingdom, Sweden, Germany, the United States of America (though due to a large proportion of aged population). However, an increasing trend in crude death rate is expected of India as well due to expected rise in ageing of population, as a slight increase in death rate to 7.2 per thousand was projected for the year 2020. In India, the life expectancy took a significant leap from 23.8 years in 1901 to 68.3 years in 2011-2015 (Figure 2) with 23.63 years for males and 23.96 for females in 1901 to 66.9 years for males and 70 years for females in 2011-2015. The latest value of 69.3 years for the year 2020 indicates that the upward trend of life expectancy is likely to continue.

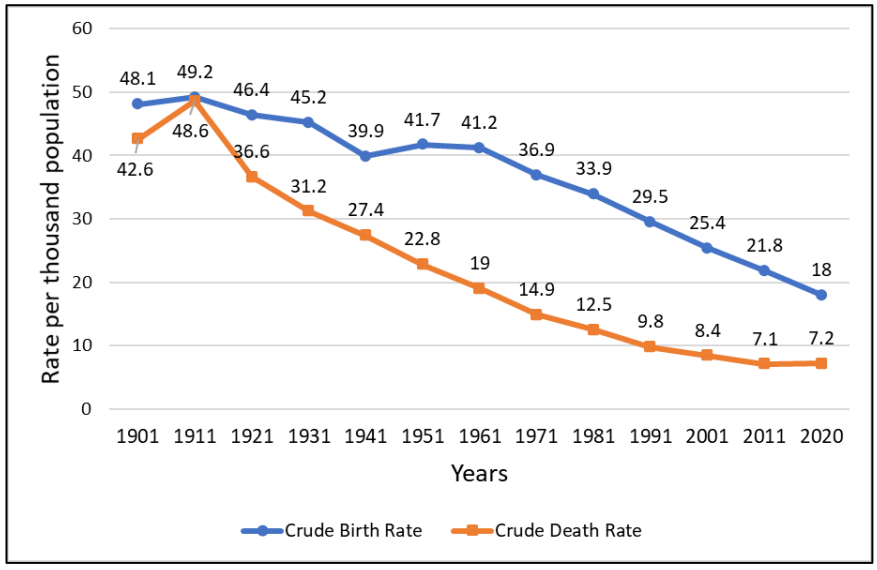

Figure 1: Trends in crude birth rate and crude death rate, India, 1911-2020

Sources*: National Sample Survey, 14th round, July 1958-July 1959, number 48 (Indian Statistical Institute, 1961); Compendium of India's Fertility and Mortality Indicators, 1971 – 2013, Sample Registration System (Office of the Registrar General & Census Commissioner of India, 2013); World Population Prospects 2019, Volume II: Demographic Profiles (United Nations, Department of Economic and Social Affairs, 2019).*

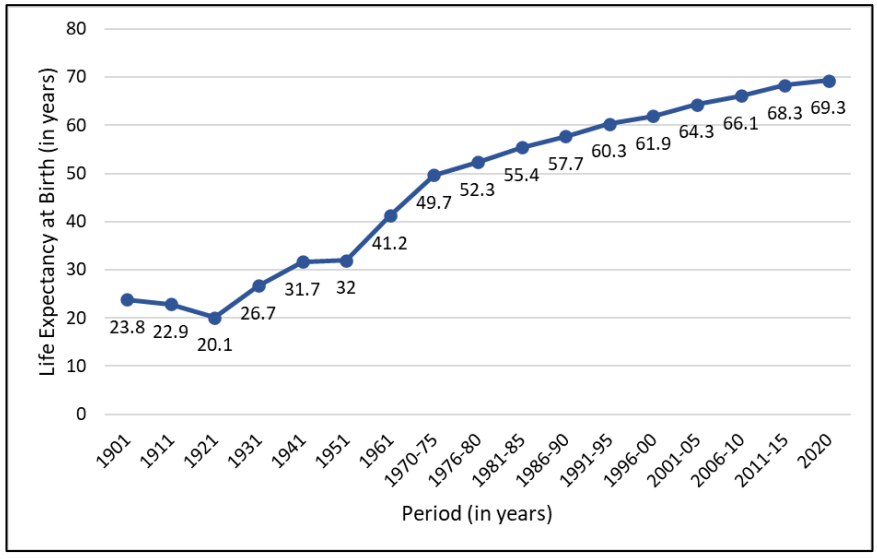

Figure 2: Trends in life expectancy at birth (in years), India, 1901-2020

Sources*: Health Information of India, 2000-2001; SRS based Abridged Life Tables 2013-17 (Central Bureau of Health Intelligence, n.d.; Office of the Registrar General & Census Commissioner of India, 2019); World Population Prospects 2019, Volume II: Demographic Profiles (United Nations, Department of Economic and Social Affairs, 2019).*

A slow decline in fertility, a rapid decline in mortality and an increase in life expectancy led to an enormous growth of population (Figure 3). Given the further expected lower values of mortality rate and an increase in life expectancy in the offing, what India needs today for the full realisation of demographic transformation is further fall in fertility which may lead to accelerated ageing.

It is important to mention here that with a chequered demographic history, trends in fertility, mortality and life expectancy have left a considerable effect on population growth in the country. A huge total of 1.21 billion in 2011 was accumulated in about 110 years as the country started with a population of 238 million in 1901 (Figure 3). In its documented demographic history, each successive census of the country, before the 2011 census (except the decade 1911-1921), registered an increase in absolute numbers – always higher than the increase in the immediately preceding census. In the 2011 census, for the first time in the demographic history of the country, the increase in absolute numbers was smaller than the increase in the immediately preceding census. During 1991-2001 a total of 182.3 million had been added but the decade that followed 2001-2011 –only 181.5 million people were added. The slight decline in absolute numbers in the year 2011 is a welcome change, though the population of India has increased more than 5-folds since the beginning of the 20th century. Additionally, the population of India was expected to reach an ever so big number of 1.38 billion in 2020 as per the United Nations projections.

Table 3. Demographic achievements of India (1971 to 2020)

Demographic drivers of population ageing	1971	2020	Trend
Crude birth rate	36.9 per thousand	18 per thousand	Downward
Crude death rate	14.9 per thousand	7.2 per thousand	Downward
Infant mortality rate	129 per 1000 live births	32 per 1000 live births	Downward
Total fertility rate	5.2 children per woman	2.24 children per woman	Downward
Life expectancy	32 years	69.3 years	Upward

Sources: *SRS based Abridged Life Tables 2013-17; SRS Statistical Report, 2018 (Office of the Registrar General and Census Commissioner of India 2019, 2020); World Population Prospects 2019, Volume II: Demographic Profiles (United Nations, Department of Economic and Social Affairs 2019).*

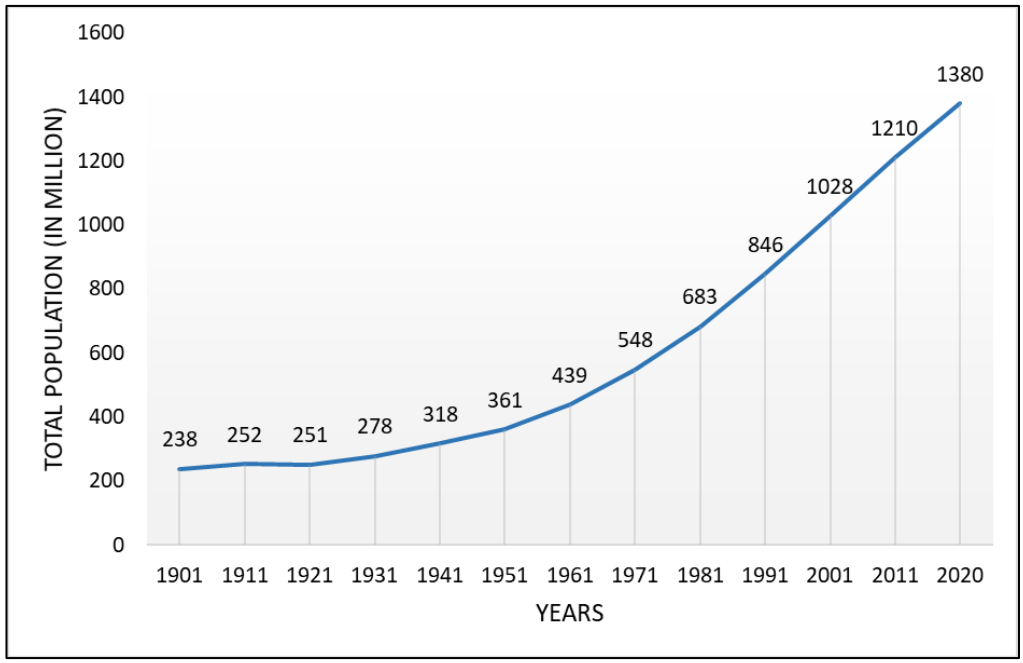

Figure 3: Trends in growth of total population in absolute numbers, India, 1901-2020

Source: *Census of India, 2011 (Office of the Registrar General & Census Commissioner of India, 2011); World Population Prospects 2019, Volume II: Demographic Profiles (United Nations, Department of Economic and Social Affairs, 2019).*

Changing Age Structure: Narrating Population Ageing

India's demographic transition not only resulted in explosive population growth; but also led to a dramatic change in the structure of its population. Such a demographic change reflects a complicated interplay of alterations in mortality and fertility. Firstly, due to considerable improvement in child survival as evident from the substantial decline in infant mortality rate and below five child mortality rate, the size of young cohorts increased. Secondly, large-sized young cohorts moved into adulthood overtime. Thirdly, owing to substantial fertility decline during the second stage of the demographic transition, relative size of young cohorts declined.

It means that the initial large size of age group 0-14, because of high fertility, dominated in India's age structure in 1971-1991. By 2011, the size of the 'less than 15' age group declined because of decline in the crude birth rate and total fertility rate, and thus the share of the reproductive and working-age group (15-59) swelled and constituted a much larger share of the population (Figure 4). The proportion of reproductive and working age-group population attained the largest ever proportion of about 62.7 per cent in 2011 in the demographic history of the country. The percentage is likely to increase to 65.1 per cent in the year 2036. This is rightly termed as "demographic dividend" or "window of demographic

opportunity." The increasing share of older population with time and its implication are, however, not to be overlooked (Figure 4).

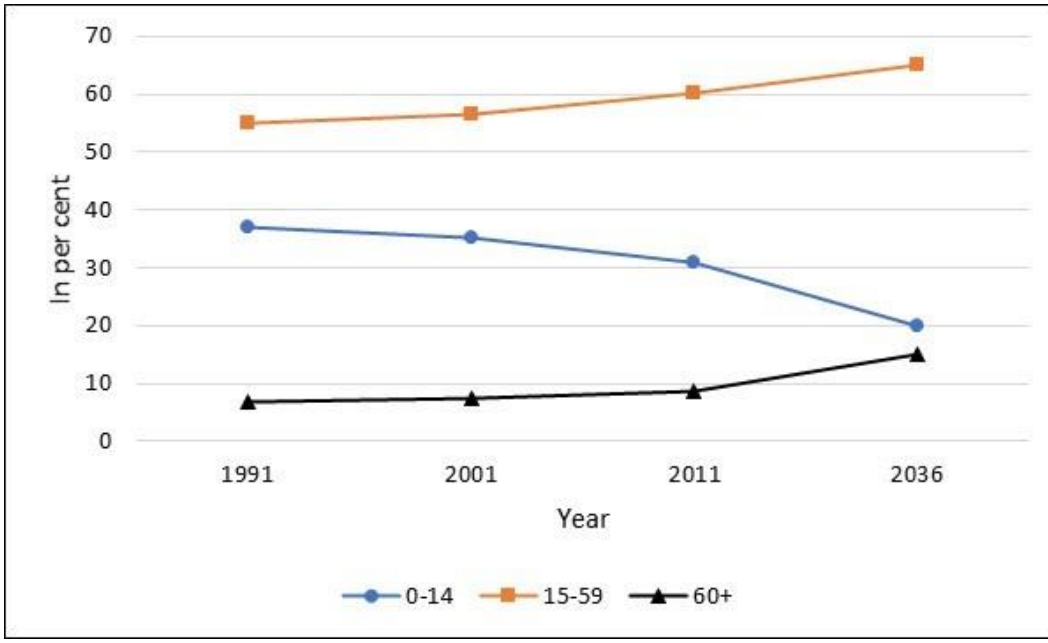

Figure 4: Trends in age-specific population, India, 1991-2036

Sources**:** *Census of India, 1991, 2001, 2011 (C6 and C14 Tables); Population Projections for India and States 2011 – 2036 (Technical Group on Population Projections: Census of India 2011, 2019).*

To further elucidate the age-sex structure of population, a graphical method of population pyramids can be effective, wherein younger populations are represented by a pyramid with a broad base and narrow peak. On the other hand, older populations are shown by a 'pillar/column-like' shape representing a more or less even distribution of population in all the age groups. When the shift from pyramids to pillars/columns occurs, the ratio of older age groups to the preceding younger cohorts rises, so the population shifts from a youthful to an older one. As the trends in fertility and mortality unfolded through the demographic history of India, the population pyramids transitioned from pyramid-like in the 1960s (with a broad base of children and a peak of older people) to the one with bulge at the middle in 2011 (with a shrunk base and a bulging middle). Due to fall in fertility and a subsequent decline in relative size of young cohorts make the cohorts shift into adulthood which results in bulging at the middle. Moreover, the transformation from pyramids to pole-like is predicted by the mid of the 21st century, when the population pyramid would get flattened at the top (Figure 5). By the turn of the next century, it is likely to acquire the form of inverted pyramids. So there would be very little population growth at the bottom of the pyramid and rapid growth of the aged population at the top. Graphically, it is evident that the age structure has started shifting towards older age cohorts (Figure 5).

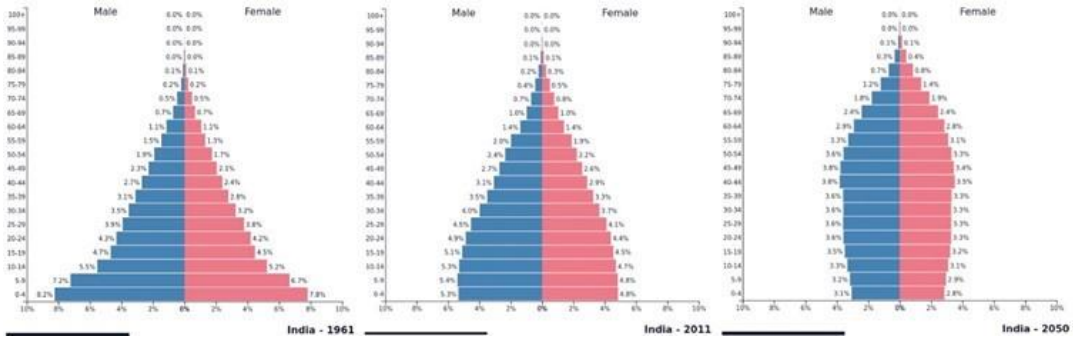

Figure 5: Population pyramids, India (years - 1961, 2011, 2050)

Source*: Population Pyramid.net (Population Pyramids of the World from 1950 to 2100, 2019).*

Therefore, India's population is ageing in two ways. F Firstly, as a result of reduced fertility (5.2 children per woman in 1971 which declined to 2.7 children in 2011) the proportion of 0-4 age group population declined which led to slower growth at the base of population pyramid. Secondly, reduced mortality and enhanced life expectancy increased the size of population pyramid at the top**.** The overall result of the demographic transition and related demographic achievements is that India supported more than 100 million people aged '60 and above' as of 2011, which formed more than 8 per cent of the total population. Indeed, the demographic transition in India indicates an ageing demographic future as we see how the trends in fertility, mortality have been declining, and life expectancy has been increasing – all demographic variables in place to drive population ageing. The resultant onset of decline in absolute numbers of persons and change in age structure from pyramids to columns are also in line with the concept of population ageing. This is exactly how the demographic statistics become drivers of ageing population.

At this conjuncture, it becomes crucial to look closely at the ageing population in India. For this, the paper proposes to study select demographic dimensions of the elderly to better understand their demographic situation..

Large Size of Aged Population

India has the second largest aged population in the world next to China. In 2011, there were 103.8 million people whose age was 60 years or above. Moreover, India's aged population is increasing both in absolute numbers as well as in terms of proportion to the total population. Looking at the older population in India in terms of absolute numbers: at the beginning of the twentieth century, there were 12 million older people; this figure rose to 24.7 million by the year 1961; it further climbed to 77 million in 2001. The population statistics released by the 2011 census revealed that the country had nearly 104 million older population. There has been a gradual rise in number of the older population through the decades, and it is expected to reach 319 million by 2050(International Institute for Population Sciences (IIPS) et al., 2020). There is also a stark difference in the rural-urban distribution of the older population in India – about 73 million aged people were living in

rural areas as compared to 30.6 million in urban areas in 2011. Moreover, there were more elderly females than elderly males in 2011; however, it has not always been like this. The entire previous census recorded a greater number of males than females except for the year 2001 when this trend reversed.

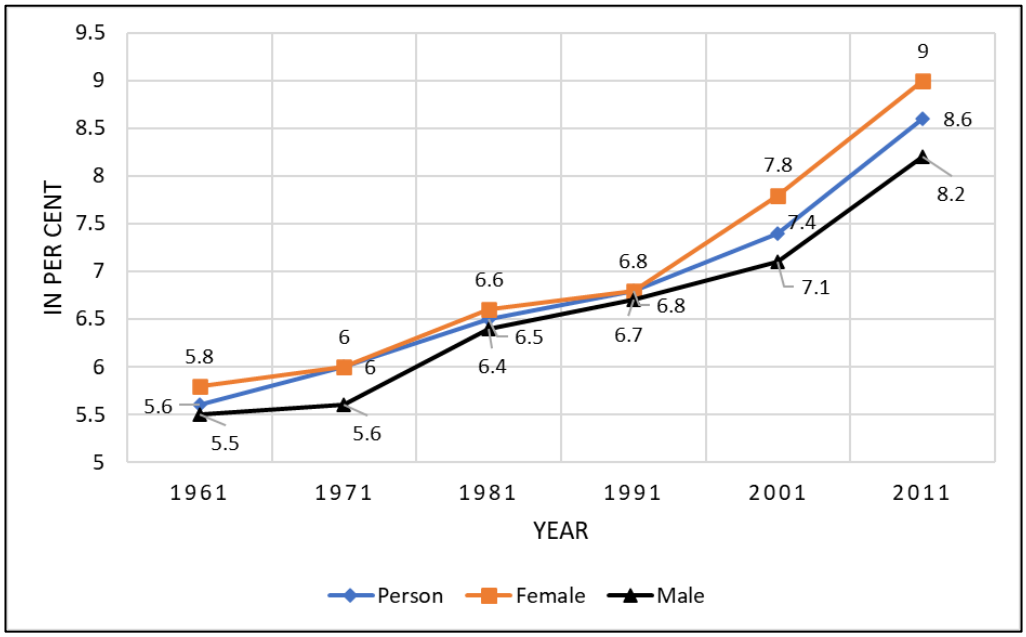

Figure 6: Share of older population by sex in total population (in per cent), India, 1961-2011

Sources: *Census of India (1951-1961); Central Statistics Office: Ministry of Statistics and Programme Implementation, India, 2016.*

Besides the increase in absolute number, the per cent share of older people in the total population has also witnessed an upward trend since 1961 (Figure 6). Their proportion to the total population has increased from 5.6 per cent in 1961 to 8.6 per cent in 2011, and it is projected to rise 11.4 per cent in 2025 and 19.5 per cent in 2050 (International Institute for Population Sciences (IIPS) et al., 2020).The proportion of aged females was higher (9 per cent) as compared to their male (8.2 per cent) counterparts in 2011. Also, in 2011, the proportion of the aged population in rural areas was higher (8.8 per cent) than urban areas (8.1 per cent), attributable to a general trend of out-migration of young population from rural areas which introduces age-structure imbalances (Kundu & Saraswati, 2012). Further, the gap in the proportion of older females to the total population and proportion of older males to the total population is widening (Figure 6). Whereas, the difference between per cent share of the older population of the urban in total population and per cent share of the older population of the rural in the total population is narrowing (Figure 7). Certainly, population ageing has emerged as a phenomenal issue in India.

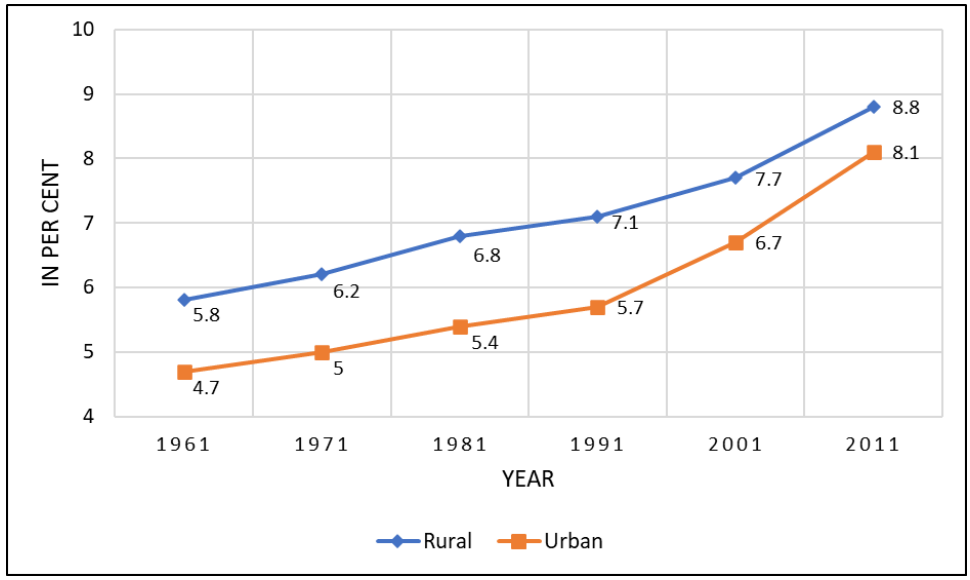

Figure 7: Share of older population by residence in total population (in per cent), India, 1961-2011

Sources: *Census of India (1951-1961); Central Statistics Office: Ministry of Statistics and Programme Implementation, India, 2016.*

A distinctive feature of India's aged population is a higher degree of unevenness in its distribution in different states. Amongst various Indian states, Uttar Pradesh had the largest chunk of the aged population (14.9 per cent to total aged population) in the country. Maharashtra, Andhra Pradesh, West Bengal, Bihar, Tamil Nadu, Karnataka, Madhya Pradesh, Rajasthan, Gujarat, Kerala, Odisha, and Punjab altogether contributed about three-fourths (72 per cent) of the aged population in the country. A large number of small states, such as Goa, Meghalaya, Nagaland, Mizoram, Arunachal Pradesh, Sikkim, and all the union territories contributed less than 2 per cent of the aged population.By comparison, all the union territories, except Puducherry, had a lower proportion of the aged population than the national average. As per the 2011 Census, all these centrally governed territories were generally highly urbanized territories, and urban areas attracted migrants of working age-group at a large scale.

Growth of Aged Population

The rapid growth of the aged population was observed for the decade 2001-2011 when their growth rate escalated to 35.5 per cent from 25.2 per cent in the previous decade of 1991-2001. While for the total population, the decadal growth rate declined from 21.5 per cent to 17.7 per cent for the same period. Also, the decade 2001-11 saw a huge leap when compared to the growth rate of older people in the previous three decades (1971-1981,

1981-1991, 1991-2001) as the growth rate experienced a downward trend during these years (Figure 8).

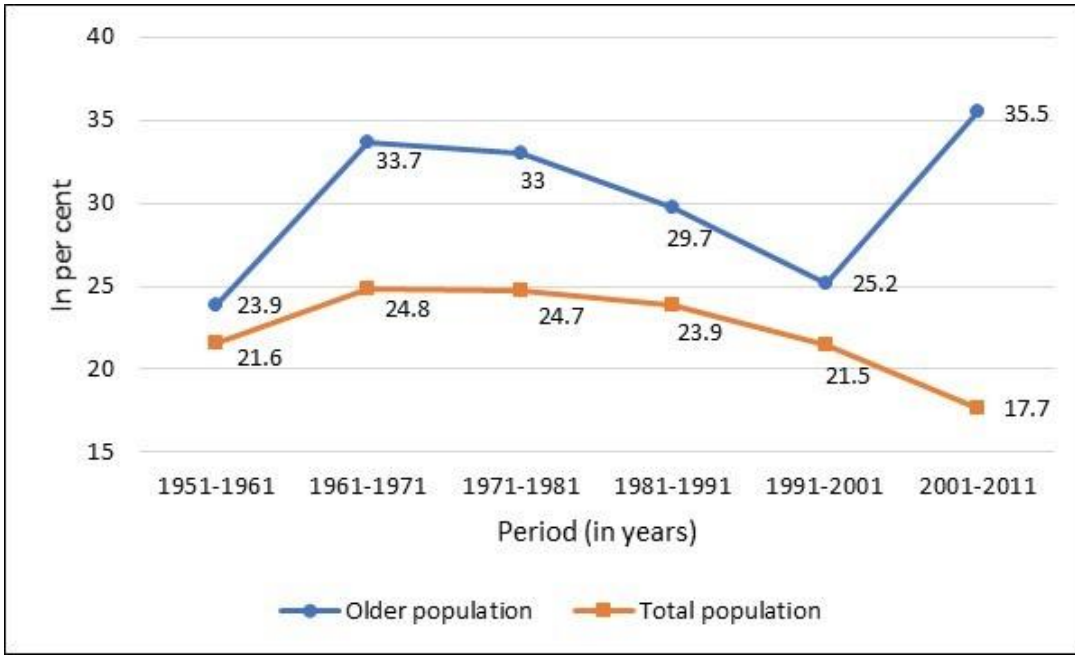

Figure 8: Decadal growth rate of older population and total population (in per cent), India, 1951-2011

Sources: *Census of India (1951-1961); Central Statistics Office: Ministry of Statistics and Programme Implementation, India, 2016*.

The reason for such a huge trend-reversal jump in the growth of the older population as opposed to the declining growth of the total population during the decade 2001-11 seems to correspond with the trends in fertility and mortality of the total population. As discussed in the demographic history of India (Table 2), between 1981 and 2011, declining trend in fertility was established and the mortality reached the lowest level,; so India's growth rate of population witnessed a sharp decline. Consequently, the fall in fertility shrunk the size of the youngest age group and increased the proportion of the older age group. The reduced mortality increased the life expectancy. Hence the growth of the older population experienced a spurt during 2001-11, whereas the growth of general population declined.

The annual growth rate of the aged population was also higher (3 per cent) as compared to the growth rate of the total population (1.9 per cent) in 2011. And the fastest-growing group is the "oldest old" (above 80 years of age) as their number is increasing at an unprecedented higher rate of 4.2 per cent per annum. The population projections show that by 2050, the elderly population in India will surpass the population of children below 14 years.

One significant feature of India's growth of the aged population was that there continued to be a contrast between the growth of the older population in urban and rural areas. While there was an increase in the growth rate of the aged population in urban areas from 54.6 per cent in 1991-2001 to 59.3 per cent during 2001-2011, the corresponding figure for rural areas declined to 27.6 per cent from 29.7 per cent. It was because of the age-selective out-migration from rural areas and significant improvement in health facilities which led to increased life expectancy, particularly in urban areas.

The rapidly increasing size of the aged population will not only affect the age structure of India's population by the next few decades but also cause strain on the resources and environment. Hence, adequate savings and infrastructure is needed to have a decent lifestyle for the aged people.

Sex Composition of Aged Population

Although the Indian population, like that of other developing countries, continued to suffer from a considerable paucity of females in general, yet the number of aged females remained higher as against their male counterparts throughout the first half of the 20th century. However, in the second half of the 20th century until the 1991 census, the number of aged females was lower than their male counterparts. It was during the inter-censual period of 1991-2001 that the number of aged females, as compared to their male counterparts, started to increase again.

According to the recent census of 2011, the sex ratio of the aged population of the country, as a whole, was recorded as 1033 females per 1000 males. It was the result of a higher life expectancy of females (63.9 years) than males (62.7 years). Moreover, the sex ratio of the aged population was relatively higher than the general population (Figure 9). The figure was 933 for the general population.

The sex ratio of elderly population in favour of females can be attributed to the higher life expectancy of females at birth as well as at the age of 60 years. However, viewed in its regional perspective, the sex ratio of India's aged population varied from one part of the country to the other. Among the states, Kerala was on the top with a sex ratio of 1226 females for every 1000 males in the country, At the other end of the scale, Sikkim recorded the lowest sex ratio of only 813 aged females per 1000 males. As far as the union territories were concerned, Daman and Diu was characterised with a sex ratio of 1331 females per 1000 males, which was the highest among the centrally administered territories and the states. However, Andaman and Nicobar Islands, recorded the lowest.

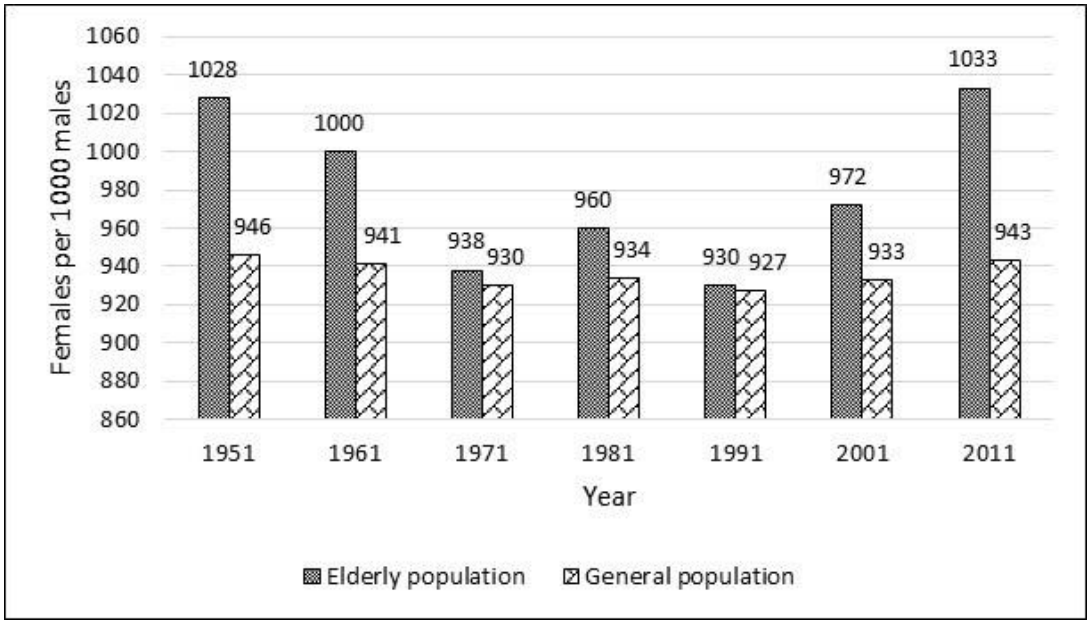

Figure 9: Trends in sex ratio for the elderly and general population, India, 1951-2011

Sources: *Census of India (1951-1961); Central Statistics Office: Ministry of Statistics and Programme Implementation, India, 2016.*

Conclusion

By tracing the declining trends in fertility and mortality in India along with their effects on population growth and change in age-structure, it is evident that the demographic future of India is ageing. The window of demographic opportunity in terms of demographic dividend is now wide open to be harnessed, but over the time, the current bulge in the working and reproductive age group is likely to shift upwards towards older age cohorts which then would pose serious challenges. Moreover, the size, share, and growth of older population in India is already following an upward trend. Considering all these in unison, it is apparent that the population ageing is an emerging as well as a pressing issue in India which needs an immediate attention. Also, preparing socially, economically, and medically for an ageing future must become a priority of the political, social and scientific institutions in the country.

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