

## **SOCIO - ECONOMIC CONSEQUENCES OF AGEING POPULATION IN CUDDALORE DISTRICT OF TAMIL NADU**

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### **ABSTRACT**

This study is a preliminary study for UGC major research project and it was conducted during August – December 2013. The main aim of this project is to assess the socio - economic implications of ageing population in the study region of Cuddalore district. The majority of the respondents (76%) are in the age of 60-70 years, another 18 percent of them are in the age of 71-80 years and the remaining 6 percent is above 80 years. Casual labour which is the predominant occupation of the study population (47%), followed by business (35%) and the remaining 18 percent of them are dependent. The estimated cost of mean value for common, acute and chronic diseases in the private health sector is Rs.2087 (SD 1876), Rs. 3687 (SD 2656) and Rs.7876 (SD 5231) respectively, and the range of cost is Rs.1800 - 12346. The estimated mean cost in public health sector for the same is Rs.1547 (SD 821), Rs.3287 (SD 1987) and Rs.4458 (SD 2687) respectively, and the range of cost is Rs.1250 - 6250. The present research contends that alternative livelihood strategies are necessary for aged population and subsidized treatment packages for the senior citizens in private health sector are warranted. Establishment of centre for documentation of ageing (CFDA) for their professional experience may lead for sustainable development. Finally, it is of utmost importance to protect and it may also emphasize that special care for the aged population in the household is needed.

**Keywords:** Aged population, Direct cost, Indirect cost, Acute diseases, Chronic diseases, Social exclusion, saving and Investment.

### **INTRODUCTION**

Ageing is a new socio economic problem and it will have greater socio-economic impact in developing countries. Further, it requires an increasing attention of policy makers and

programme officers in the twenty-first century. In the developed countries, and also in many parts of developing countries the magnitude of aged persons in the population is rising rapidly. Broadly speaking, the ageing of a population has been defined as an increase in the proportion of the aged vis-à-vis a decrease in the proportion of the young. Increasing life expectancy and reduced fertility are the key factors driving the demographic transition. At the global level, life expectancy rose from 47 years in 1950-1955 to 65 years in 2000-2005 and is expected to reach 75 years in 2045-2050. During the period from 1950-55 to 2000-2005 the total fertility rate fell from 5.0 to 2.6 children per woman and it is expected to consider falling to reach 2.0 children per woman in 2045-2050. In several parts of the world and also in many developing countries, the figure for life time fertility is now less than 2 children per woman and is this below the level required for population replacement over the long run (world economic and social survey 2007) over the course of the next fifty years the share of the aged (defined as these aged 65 years and above) is expected to climb from 7 per cent in the total population to 16 per cent.

In the developed countries, this share is expected to climb from 14 per cent to 27 per cent over the same period. The share of the aged is expected to grow even more rapidly in the less developed countries of the world rising from 5 per cent to 14 per cent in 2050 as per UN projections (Mahal and Berman, 2001). The number of people over the age 60 is expected to reach 1 billion by 2020 and almost 2 billion by 2050 (representing 22 per cent of the world's population). The proportion of individuals aged 80 or over (the 80- called oldest-old) is projected to rise from 1 per cent to 4 per cent of the global population by 2050 (Bloom et al., 2008). Population ageing is posing important challenges especially, those related to them financial viability of pension systems the cost of health care systems and social burden. One out of 7 or 90 million total older people live alone worldwide and this ratio have increased in the majority of countries over the past decade. While the average rate of change is rather modest this trend is likely to continue and will have important social consequences especially for older women who are more likely to live alone solitary living which may result in increasing isolation makes care giving by family members is more difficult to arrange and it also increases the need for additional support services so as to enable older persons to remain in their own home. Developing countries may have difficulty in providing such services and these facts emphasize that the ageing is a serious socio-economic burden to any country.

In India, the population of the aged is growing rapidly and is emerging as a serious area of concern for state and the policy makers. The Indian population has increased from 361 million in 1951 to 1211 million in 2011. Simultaneously, the number of aged people has increased from 19 million (4 per cent of total population) to 77 million (8 per cent of the total) during the same time span (Registrar General of India). As per the United Nation's population Division, Department of Economic and Social Affairs projection, during the next five decades the size of the Indian

population will grow by about 50 per cent, but the number of aged people will increase four fold. The proportion of older people in the population will grow at a higher pace than the other groups. Demographic changes have many economic implications of ageing population assumes high significance from a policy perspective. With this backdrop, this paper intends to explore the socio economic consequences of ageing population in Cuddalore district of Tamil Nadu. It is expected that the results of the study will give concrete guidelines to the policy makers to strengthening the population policy and health policy of the state and country. In this context, it is hoped that studying the socio economic impact of ageing population is quite timely for and it will help the policy makers to anticipate the strengths and weakness of the existing health and population policies, in order to make it worthy for better human development.

### **STUDY PROBLEM**

Indian demography will be gradually swinging to a grayer one by the next few decades. It predicts that the median age of the population will increase from 23.4 years in 2000 to 30.3 years in 2005 and finally, to 37.9 years in 2050. Similarly, the old age dependency ration will go up from 13.0 per cent in 2000 to 33 per cent in 2050, while the young dependency ratio is expected to come down from 59 per cent to 31 per cent by that time. Consequently, the index of ageing (aged-child ratio) will increase from 22 per cent to 108 per cent. Therefore, ***every three working Indians may have to take care of one elderly person by 2050 as compared to about eight working Indians at present.*** It has been estimated that an Indian aged 60 years today is expected to survive another 15-25 years. As the average age increases, the declining physical strength and working potential may adversely affect the labour intensive manufacturing and agricultural sector and it may also affect savings, interest rates and capital accumulation (Prakash, 2005). The size of India's elderly population aged 60 and above is expected to increase from 77 million in 2001 to 179 million in 231 and further to 301 million in 2051. The proportion is likely to reach 12 per cent in 2031 and 17 per cent in 2051 and ageing is major economic concern for the planners. Labour is a prime factor of production. With sustained reduction in mortality and fertility rates combined with increased life longevity, the size of the young cohort has reduced while the size of old cohort has increased. As a direct consequence, the process of population ageing has started globally and can be visualized in India too. According to population census of India, the population of belongs to the age of 60 years and above was only 24 million in 1961 and it increased more than thrice in next four decades. Their share the total population also raised from 5.6 per cent in 1961 to 7.5 per cent in 2001 (IrudayaRajan, 2006). The total aged population 60+ is 9.1 per cent in 2001 in Tamilnadu. The projected aged population of Tamilnadu in the year of 2011 is 11.2 per cent and 14.8 per cent in the year of 2021. Many studies by experts have examined the demographic changes of India (Manoj, 2009; Ahila and Ramu, 2009).

Research on socio economic consequences of ageing population has not received proper attention from the economists. Therefore, it is necessary to undertake a study on the economic implications of ageing population in Tamilnadu, and it will provide insights for policy makers for re-structuring the health and population policy. Thus the study on socio economic consequences of ageing population assumes much significance from both academic and policy perspectives.

The total population of Tamilnadu was 721.4 lakhs in 2011. The total aged population of 60 and above was 11 per cent in the same period. The projected aged population of Tamilnadu in the 2021 will be 15 per cent in the year of 2021. It is a rapid increasing trend of demographic structure. Many studies by the experts have analysed the trend of aged population, projection of aged population and social burden (Fogel, 1994; Duraisamy, 2001; Creina and Dowrick, 2004). Therefore, ageing has major effects on social, economic, political and demography. However, limited studies have addressed the issues of economic consequences of aged population in India. It is found that this is a research gap in the area of ageing economics. In this environment, the collection of data on age-related health hazards, cost of treatment, cost of consumption, impact on saving, and cost of old age homes and cost of pension to the aged population have become even more important. This data may enable the policy makers to review the health and population policy. Hence, there is a need to assess the socio economic effect of aged population in India.

## **STUDY AREA**

The district of Cuddalore is one of the important districts of the state of Tamil Nadu and it is located along the eastern coastal region of the state. In 2011, Cuddalore has population of 26.05 lakhs of which male and female were 13.11 lakhs and 12.94 lakhs respectively. The population density is 702 people per square kilometer. Cuddalore has a sex ratio of 984 females for every 1000 males, and a literacy rate of the district is 79.04 per cent. The total aged population (60+) of the district is 13 per cent and it may increase many fold in future. The life expectancy of the district is 72 years in 2011. Crude birth and death rates of Cuddalore are 16.9/1000 and 4.6/1000 population respectively. Infant mortality rate (IMR) is 17.6/1000 population, total fertility rate of the district is 2.5 per woman and maternal mortality rate is 1.8 per 1000 population. Cuddalore and Viruthachalam municipality have been chosen for this study. There are 45 wards in Cuddalore and 37 wards in Viruthachalam municipality. In each municipality, four wards totally eight wards have been selected randomly from the respective municipality. Cuddalore is the headquarters of the Cuddalore district and Viruthachalam located in the western side of Cuddalore district. The total population of the Cuddalore municipality is 75546 and of which 158634 is males and 78234 are females. The total households are 33969. Another study

municipality Viruthachalam has 121458 as total population of which 68786 are males and 52672 are females. The total households of the Viruthachalam are 34702. Business and Agriculture are the major occupation of the both Municipalities. The literacy rates of the municipality are 78 per cent (Cuddalore) and 72 per cent (Viruthachalam) respectively. Both study municipalities have GHs each, which is providing secondary health care services to the community (Government of TamilNadu, 2013).

There are 45 administrative wards in the Cuddalore and 37 wards in Viruthachalam town (table 1 and 2). The wards have been divided into four zones viz. South, North, West and East for the research purpose. Based on the wards classification, one ward has been selected from each zone randomly. In each ward, 35 households have been selected using purposive sampling technique (1<sup>st</sup> house and next 5<sup>th</sup> house in the street has been interviewed). The criteria for selection of the household are that sample household should have 60+ aged people. The total sample size is 280 households (table1 and 2).

**Table 1: Study Ward and Sample Population of Cuddalore Municipality**

<b>ZONE</b>	<b>SELECTED WARD NUMBER</b>	<b>TOTAL NO. OF HOUSEHOLDS</b>	<b>SAMPLE SIZE</b>
East	16	623	35 (5.6)
West	23	586	35 (5.9)
South	39	557	35 (6.2)
North	9	525	35 (6.6)
Total	-	2291	140 (6.1)

*Source: Cuddalore Municipality, 2013, Parentheses denote percentages*

**Table 2: Study Ward and Sample Population of Viruthachalam Muinicipality**

<b>ZONE</b>	<b>SELECTED WARD NUMBER</b>	<b>TOTAL NO. OF HOUSEHOLDS</b>	<b>SAMPLE SIZE</b>
East	14	525	35 (6.7)
West	22	680	35 (5.1)

South	34	450	35 (7.7)
North	7	445	35 (7.8)
Total	-	2100	140 (6.7)

*Source: Viruthachalam Municipality, 2013, Parentheses denote percentages*

## **DATA AND METHODOLOGY**

The study was carried out in Cuddalore district during August – December, 2013. The study has the following four objectives; the main aim of this project is to assess the socio- economic implications of ageing population in the study region of Cuddalore district. The study objectives are, (i) to portray the socio-economic status of the ageing population (60+) in the study area, (ii) to study the different diseases of common, acute and chronic diseases of the ageing population, (iii) to estimate the health care direct and indirect costs of the diseases of common, acute and chronic of ageing population, and (iv) to assess the impact on employment, consumption, saving and investment of ageing population in study area, and (v) to study the degree of social exclusion of the ageing population in the study district. The study has made use of primary and secondary data. The secondary data have been collected from the office of Cuddalore municipality, District statistical handbook, and Census Reports 2011. After having had a perusal of the earlier studies by health economics experts (Naryana, 2003; Deepa and Kathuria, 2003; Ramu et al., 2007; Hammer, 2007). The interview schedule has been prepared. The selected households have been interviewed with well structured pre tested interview schedule for quantitative and qualitative data on socio economic status, health care facilities, treatment seeking behaviour for common, acute and chronic diseases, cost incurred for age related different health problems and socio economic impact of ageing.

Direct cost includes cost incurred on transport, food, medicines, lab fees and bribes and tips. These data were collected from those who went for public health care sector and cost on transport, food, consultation fees, medicine, lab test fee, surgery cost, room rent, for patients who went to private health sector. The data related to the cost incurred for aged population and care taker was also recorded. The costs were compiled by recall method and examining prescriptions and medical bills wherever available.

Indirect costs were estimated for aged population and caretaker (at the time of treatment). This includes time lost (man-days lost) and income foregone (opportunity cost). The time lost cost was estimated with the prevailing market wage rates. Both cost of direct and indirect are presented in the current price of 2013. The data on direct and indirect costs were collected uniformly for both private and public health sector, using the standard interview schedule. Based

on the direct and indirect cost assessment, the economic cost of the age related diseases was calculated. They have no proper records of their treatment and others. However, efforts were taken to collect proper cost information in this context monthly recall method has been use. (Gumber, 1997; Ramaiah et al., 1998; Krishnamoorthy et al., 2000). To classify the cost, mean  $\pm$  SD has been used, percentage and frequency distribution have been used for social impact and social exclusion analysis.

## **RESULTS AND DISCUSSION**

In view of socio economic impact of ageing population objectives, analysis of socio economic status, age related health problems, economic cost of health problems, treatment seeking behaviour for different health problems and socio economic impact of ageing have been carried out. The socio-economic profile comprises seven indicators such as age, sex, education, occupation, community, wealth status and annual income. Each of these indicators has conceptual and decision making significance in examining the issues of socio economic impact of ageing population. The vast majority of the respondents (76%) are in the age of 60-70 years, another 18 percent of them are in the age group of 71-80 years and the remaining 6 percent is above 80 years. Out of 280 respondents, 52 per cent of them are males and the rest (48%) are females. The total literacy rate of the study area is 82 per cent. It is important to note that, it is higher than India's literacy rate (67%). Casual labour is the predominant occupation of the study population (47%), followed by business (35%) and the remaining 18 percent of them are dependent. Most backward community represents the highest share (47%) and at the next level SC occupies 30 per cent followed by BC (23%). The estimated per capita income (PCI) of the study region is Rs.21871 at prevailing market price of 2012 - 13, and it is lower than the India's PCI, Rs 37,851 in 2012 (Statistical outline of India, 2011). The major disease prevalence of aged population in the study area is ADD, TB, Asthma, Diabetics, BP, Heart ailments, Dental problems, arthritis and eye related diseases. Majority of them (35%) have stated that due to their ageing they changed their occupation from heavy work to low burden work. It is important to observe that another 34 percent of the study respondents opined that they are not able to work one full man day (8 hours) and more than 18 per cent of them are stopped their economic activities (table 3). Therefore, one may introduce from the results that age has significant impact on daily economic activities.

**Table 3: Economic Impact of Ageing on Economic Activities**

<b>Impact of Ageing</b>	<b>Frequencies</b>
Stopped work	51 (18.2)
Changed occupation	98 (35)
Fewer working hours	95 ((34)
No Change	36 (12.8)
Total	280 (100)

*Source: computed, Parentheses denote percentages*

**Table 4: Impact of Ageing on Social Exclusion**

<b>Types of social Exclusion</b>	<b>Family environment</b>	<b>Society environment</b>
Discrimination from family members/social function	48 (17.0)	68 (24.0)
Separation from family / social function	47 (16.7)	52 ((18.5)
Verbal harassment	45 (16.0)	61 (21.7)
Physical harassment	46 (16.4)	15 (5.3)
Poor respect from youngsters / social gathering	24 (8.5)	48 (17.1)
Avoidance from decision making	34 (12.1)	22 (7.8)
Not reported	36 (12.8)	14 (5.0)
Total	280 (100)	280 (100)

*Source: computed, Parentheses denote percentages*

Assessment of social exclusion is one the major objectives of this study. The degree of social exclusion within family and society is 93 percent (i.e. 93 percent of them are stated that they are discriminated from family and society). Further, 87 per cent of them have spontaneously reported that the following remarks such as, discrimination from family (17%), separated from family (16.7), verbal harassment (16%), physical harassment (16.4%), poor respect from youngsters (8.5%) and avoidance from decision making (12%) within the family. And another 95 per cent of them have expressed that, discrimination in the social function (24%), verbal



harassment (21%), separation from social function (19%) and poor respect in social gathering (17%). Therefore, based on the qualitative statements, it is concluded that age has significant amount of social exclusion (table 4). Thus, ageing is a major social problem in the modern society. It is observed that the 87 percent of them have expressed that there is significant impact on employment, another 78 percent of the study respondents stated that consumption expenditure increases owing to ageing and majority of them (92%) opined that saving and investment after 60 years of age is less.

In view of cost estimation objective, the cost analysis has been carried out for age related common, acute and chronic diseases. The total sample size is 280, all respondents are allopathic users. Treatment seeking behaviour for age related diseases shows that 49 percent of them had treatment in the private health sector and another major portion of respondents (51%) had health care services in the private health sector. The mean cost for age related common, acute and chronic diseases in the private health sector is Rs.2087 (SD 1876), Rs. 3687 (SD 2656) and Rs.7876 (SD 5231) respectively, and the range of cost is Rs.1800 - 12346. The total cost of age related diseases of common is Rs.285919, Rs.619416 for acute diseases and Rs.1165648 for chronic diseases in private health sector. The mean cost in public health sector for the same is Rs.1547 (SD 821), Rs.3287 (SD 1987) and Rs.4458 (SD 2687) respectively, and the range of cost is Rs.1250 – 6250 (table 5). The total cost of the same in public health sector is Rs.2, 21,221 for common, Rs.3, 68,144 for acute and Rs. 5, 88,456 for chronic diseases. The SD is smaller than mean value and it represents the high degree of uniformity of the respondents’ opinion and homogeneity of the present data. Therefore this study warrants that considerable amount money is diverted for health care services due to ageing.

**Table 5: Cost of Common, Acute and Chronic Diseases in Public and Private Health Sector / Visit (in Rs.)**

Disease category	Public health sector		Private health sector	
	A. Cost (AC)	T. Cost (TC)	A. Cost (AC)	T. Cost (TC)
Common Diseases	(N= 143)		(N= 137)	
	1547 (SD 821)	221221	2087.00 (SD 1876)	285919
Acute Diseases	(N=112)		(N=168)	
	3287.00	368144	3687.00	619416

	(1987)		(2656)	
	(N=132)		(N=148)	
<b>Chronic Diseases</b>	4458.00	588456	7876.00	1165648
	(2687)		(5231)	
	Range Rs. 1250 - 12346		Range Rs. 1800-12346	

Source: Computed Note: AC= Average cost, TC= Total cost

Cost difference between both sectors (private and public) is 25 per cent for common diseases, 11 per cent for acute diseases and 43 percent for chronic diseases. The average cost difference between public and private is 26 percent. Treatment or hospitalization in private health sector for chronic illness often means the liquidation of meagre assets, even permanent indebtedness. One episode of hospitalization is enough to wipe out all the assets of the family (Misra et al., 2003). In the context of a public health system, the benefits do not trickle down to the targeted groups (aged population) as expected by the government due to poor quality of services provided by the public health care system. Hence, the role of private sector has grown and emerged as the main health care provider of curative health care. It currently dominates both outpatient and inpatient care. It is not surprising then that the poor are forced into a situation where they have to pay for private health care which they cannot afford. A recent analysis of the World Bank (*India: Raising the Sights – Better Health Systems for India’s Poor, May 2001*) concludes that the hospitalized Indian spends more than half of his total annual expenditure on buying health care; more than 40 percent of hospitalized people borrow money or sell their assets to cover expenses and 35 per cent fall below the poverty line. The study also suggests that out-of-pocket medical costs alone may push 2.2 per cent of the population below the poverty line in one year. Majority of the aged population gave preference to private health sector for their acute and chronic diseases (168/n280 and 148/n280 respectively).

National level studies (NSSO and NCAER 1992) have revealed that the role of private sector is increasing faster than the public health care services. Studies confirm that the quality of public health services is diminishing. Due to this reduction in quality of health care services, the affordable group of the population moves towards availing high quality health services offered by the private hospitals (Mathiyazhagan, 1998; Duraisamy, 2002; Mangal, 2004). At this juncture, a thorough revamping of public health system is an essential task. Many studies conducted in different parts of the country show that the cost of private health care is escalating and also they emphasise that the cost and quality control mechanism for private health sector is highly necessary in the present scenario. Recently the government of Tamilnadu has constituted a committee for checking fee structure in private school education; the same may be done for the

private health sector also. The present research contends that alternative livelihood strategies are necessary for aged population and subsidized treatment packages for the senior citizens in private health sector should be implemented. Social security programmes for aged population to be strengthened. It is highly important to establish a Centre for documentation of Ageing (CFDA) for traditional knowledge or experience of aged population may lead for sustainable development. Finally, it is of utmost importance to protect and special care for the aged population in the household is needed.

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### **REFERENCES**

- Ajay, Mahal, Peter Berman. 2001. The Global Burden of Disease 200 in ageing populations, Research Paper No. 01.23. Harvard Burden of Disease Unit, National Institute on ageing group 1-poi-AG 17625.
- David E. Bloom, David Canning and Gunther Fink. 2008. Population ageing and economic growth. Harvard School of Public Health Discussion paper.
- Prakash Bhattacharya. 2005. Implications of an ageing population in India: Challenges and Opportunities: Presented at the living folio and beyond symposium sponsored by the society of Actuaries, Orlando Fla, January,2005.
- Irudaya Rajan, S. 2006. Population Ageing and health in India: Centre for. Enquiry into health and allied themes, *Survey* No. 2804 & 2805. Mumbai.
- Manoj K Pandey. 2009. On ageing, health and poverty in rural India, ASARC working paper, 2009/14. Institute of Economic Growth, Delhi, India.
- Ahila, S. and K. Ramu. 2009. Economic implications of ageing population in Cuddalore district of Tamil Nadu, PhD research proposal, Department of Economics Annamalai University.
- Fogel, Robert W. 1994. Economic growth, population theory, and physiology: The bearing of long term processes on the making of economic policy. *The American Economic Review*, 84(3) (Jun., 1994).

- Duraisamy, P. 2001. Health status and curative health care in rural India, working paper series No.78, NCAER, New Delhi.
- Creina Day and Steve Dowrick. 2004. Ageing Economics: Human Capital productivity fertility, *Agenda*, 11(1): 3-20.
- Government of TamilNadu. 2013. Cuddalore and Viruthachalam Municipality Profile Report.
- Naryana, K.V. 2003. Changing Health Care System. *Economic and Political Weekly*, 38(2): 1230-1241.
- Deepa Shankar and Vinish Kathuria. 2003. Health sector in 2003 – 2004 Budget. *Economic and Political Weekly*, April 12, 2003.
- Ramu, K., S, Sathyabama and B. Mathavan. 2007. Assessment of child delivery cost in private and public health care system: A micro level study in Moovalur village Nagapatinam District Tamil Nadu, *Journal of Humanities*, 44:415-426.
- Hammer, J. Yamini Aiyar, Salimah Samji. 2007. Understanding Government Failure in Public Health Services. *Economic and Political Weekly*, 42(40).
- Anil Gumber. 1997. Burden of disease and cost of ill health in India: Setting priorities for health interventions during the ninth plan. *Margin*, 29(2):133-171.
- Ramaiah, K.D., K. Ramu, Helen Guyatt., K.N. Vijayakumar and S.P. Pani. 1998. Direct and indirect cost of acute form of lymphatic filariasis to households in rural areas of TamilNadu. *Tropical Medicine and International Health*, 3(2): 108-115.
- Krishnamoorthy, K., K. Ramu, A. Srividya, N.C. Appavoo, N.B.L. Saxena , Shivilal and P.K. Das. 2000. Cost of Mass Annual Single Dose Diethylcarbamazine Distribution for the Large Scale Control of Lymphatic Filariasis. *Indian Journal of Medical Research*, 111: 81-89.
- Statistical outline of India, 2011 -12. "Tata Service Limited Department of Economics and Statistics, Bombay" House Mumbai.
- Rajiv Misra, Rachel Chatterjee and Sujatha Rao. 2003. (Eds.) India Health Report, Delhi: Oxford University press.
- Mathiyazhagan. 1998. Willingness to pay for rural health insurance through community participation in India. *International Journal of health planning and management*. 13:47 – 67.

Duraisamy. 2002. Public – Private choice and the cost of health care in Tamil nadu. The Second Symposium on the Private – Public mix in Health Development in India: A Lessons from Canadian Experience – Organized by Institute of Social & Economic Change and Indo Shastri Canadian Institute, Bangalore, March 27-29, 2002.

Mangal. 2004. Institutional of user charges in government hospitals in Rajasthan, *Journal of health management*. 6:1-5.