

DISABILITY AMONG ELDERLY IN THE KHANAPUR BLOCK OF SANGLI DISTRICT IN WESTERN MAHARASHTRA

(A community based cross sectional study)

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**Dissertation submitted in partial fulfillment of the requirement for the
award of the degree of Master of Public Health**



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October 2008

Acknowledgement

At the outset, I must admit that, it was a privilege of doing a thesis under the able guidance and supervision of my respected teacher Dr. P. Sankara Sarma, Additional Professor; Achutha Menon Center for Health Science studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, Kerala, India. I am very thankful for his keen interest and supervision without which this thesis would not have taken its present form.

I am grateful to Dr. K. R. Thankappan and all other faculties and Mr. Sundar Jaysingh, Assistant Registrar for their constant support and help.

My heart felt thanks to my dear friend and classmate Dr. Jayant Kumar Panda for his constant help without whom it was a daunting task.

I am most thankful to my family especially parents and wife who stood by me and encouraged me for this masters programme and my son who have had to make the most sacrifices.

I am grateful to all the elderly who participated in the study.

I am also grateful to multi purpose workers of Block Primary Health Center; Vita for helping me in data collection without their help it was not possible to finish the data collection in time.

CERTIFICATE

This is to certify that the dissertation entitled, “Disability among elderly in the Khanapur block of Sangli district in western Maharashtra” submitted by Dr. Khalipe Mahesh Mahaling to Achutha Menon Center for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram is a bona fide work carried out by him.

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Declaration

I hereby certify that, the dissertation entitled “Disability among elderly in the Khanapur block of Sangli district in western Maharashtra” is the result of original research and has not been submitted for any degree in any other university or institution.

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October, 2008

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ABSTRACT

DISABILITY AMONG ELDERLY IN THE KHANAPUR BLOCK OF SANGLI DISTRICT IN WESTERN MAHARASHTRA

Background: Despite overall socioeconomic development, most of the aged in India are suffering from chronic disabling conditions affecting their activities of daily living which are universal and basic competencies of adulthood as everyone has to do them on all or most days. With an increasing role being assigned to market forces, the lack of social security schemes for elderly, and the degenerating nature of old age diseases, it may be said that a majority of aged in India have apparently run out of options. With time, they may even lose family care as the result of various socio-cultural and economic changes.

Objectives: To estimate the prevalence of ADL disabilities, to identify its correlates and to assess awareness and utilization of geriatric welfare services among elderly population in the Khanapur block of Sangli district in western Maharashtra, India.

Methodology: A cross-sectional study was undertaken on a sample of 275 (men: 133; women: 142; total: 275) rural elderly subjects in 2008; using a structured interview schedule that included Indian health assessment questionnaire; the tool used to estimate prevalence of ADL disability. SPSS version 15 was used for Univariate, Bivariate and multivariate analysis.

Results: The prevalence of ADL disability among elderly was 5.8% (Men=5.3%, Women=6.3%). In bivariate analysis age, poor physical and mental health, visual and communication difficulty were significantly associated with ADL disability. In logistic regression analysis, after adjusting for age, sex, history of hospitalization in last one year, respect from family and loneliness it could be established that the history of chronic illness [OR=10.87 (1.84-62.5)], depression [OR=13.33(2.2-83.33)] and poor social participation [OR=10.41(1.71-62.5)] were statistically significantly associated with ADL disability.

Conclusion: The burden of ADL disability was associated with modifiable factors. Hence, a holistic and intersectoral approach for promoting physical and mental health of elderly is the need of the hour. Increasing awareness, targeted utilization and impact assessment of social security scheme is necessary.

CHAPTER 1

INTRODUCTION AND REVIEW OF LITERATURE

1.1. BACKGROUND

Demographic transition, which makes a shift from high mortality-high fertility state to low mortality-low fertility state of societies, has long been considered as a yardstick of development. Socioeconomic improvement, better living conditions, better health services, newer advances in health research, empowerment of women and industrialization all get translated into falling birth and death rates.

One of the major outcomes of this demographic transition is an increased proportion of elderly in the population. The United Nations (UN) has taken 60th year as the dividing line between ‘old age’, and ‘middle and younger age groups’(based on UN resolution 35/129) and the population ageing when the proportion reaches seven percent of total population.

India is fast catching up with many other graying societies as a result of its pervasive demographic changes and a rapid growth in the size of the older population. Two factors are noted at work to this direction: (i) progressive reductions in fertility and mortality, and (ii) added life span with increased survival chances especially at the later end of the life cycle. These changes, especially the added life years, have however been mired by the high prevalence of chronic diseases and disability that affect more than half of the country’s older population.¹ With the high incidence of chronic and multiple diseases suffered by a majority of the aged in India, old age results in a painful experience for many in this country with high risks of activities of daily living (ADL) impairments and dependencies.¹

1.2. PUBLIC HEALTH IMPORTANCE

Although a marker of development, population ageing brings some challenges with it. These include social, economic and health related issues; such as increase in dependency ratio, attenuation of economic productivity, increase in chronic and degenerative health conditions, and so on.²

The ageing process compromises the physical and social faculties of elderly as a result of which they need and seek enhanced social support.³ The diminishing economic productivity of aged population renders them financially dependent on working middle age group.³ Yet, another major concern of aging is illness in late life. Non-communicable diseases (NCDs) like hypertension, diabetes mellitus, ischemic heart disease, disability, stroke and mental illness are strongly associated with old age and most of them have a protracted course though not fatal.⁴ These health outcomes, along with general frailty of old age, emphasize the need for greater care and support of elderly by members of their family and society at large.

Socio-economic and demographic transitions of the modern world have created restraints on families' ability to care for elderly.⁵ Preference for a small nuclear family, out migration of youth, increased work participation of women, and growing individualism, have all limited prospects for healthy aging of elderly.⁶

As age advances, health declines. Older people are at risk of dropping below the thresholds of physical and cognitive ability required for safe, independent and efficient completion of everyday self maintenance tasks. These self maintenance tasks include the basic 'activities of daily living' such as bathing, dressing and eating, grooming, getting to and use toilet, and moving between bed and chair. Recognition of difficulty with these tasks

by the older person, because of health problem is disability. ADL are central indicator of disability in older adults for three major reasons: i) ADL are the basic competencies of adulthood. ii) Universality of ADL as all people needs to accomplish ADL tasks and people perform these tasks on all or most days. These ADL tasks are not gender or lifestyle specific but are universal. iii) ADL is hierarchical in nature as these appear to be gained and lost in a generally consistent (but not necessarily fixed) order. As person gets older the normal activities of daily living⁷, as well as the instrumental activities of daily living (IADL)⁸ such as shopping, telephoning, cooking and money management cannot be carried out without support. This suggests escalating demand for long term care and urgent need of public health interventions in terms of special programme for disabled elderly.⁹

1.3. REVIEW OF LITERATURE

This section gives a detailed description of the subject matter under consideration. There are comprehensive notes on following subjects— prevalence of disability among elderly; correlates of disability among elderly; social security schemes for elderly. In this backdrop, the rationale for undertaking the study is discussed thereafter.

1.3.1. Prevalence of disability among elderly

Conceptually, disability is a complex phenomenon that manifests itself in many ways and evolves over a much longer time span.¹⁰ Further its definition is subject to the environmental and socio-economic conditions of individuals. At a simplistic level, however, it refers to an individual's inability to perform basic household and self-maintenance activities, such as eating, dressing, bathing, walking and climbing stairs, etc. Under this paradigm, an individual can be described as disabled if his personal capabilities

fall short of what has been actually demanded by his or her own environment or family conditions.

Despite difficulties in its conceptualizations, the attempt to measure disabilities is important because of its association with a decreased functional autonomy and the increased demand for long term care; besides its usefulness in making assessments about morbidity, mortality and certain health care needs is obvious. For instance, studies by Mor et al ¹¹ and Severson et al ¹² have shown that the ADL difficulties are significant predictors to derive estimates about the use of nursing home and hospital facilities. Similarly, an increasing number of long-term care insurance policies are now relying on the ADL disabilities as a trigger for paying benefits to those covered against this risks.¹³ With the high incidence of chronic and multiple diseases suffered by a majority of the aged in India, there is a very high risk of ADL impairment and dependencies. Prevalence estimates for ADL disability vary across national surveys, likely because of differences in the way questions are posed, definitions used, scales used to measure disability; whether distinctions are made between need for and receipt of assistance; use of special equipment or standby help. Despite these problems ADL disabilities have proved to be reliable predictors of health outcomes.

Majority of prevalence studies on ADL disabilities are from the western world. Most of these studies used different definitions, scales, instruments to estimate the prevalence of ADL disability among elderly. Very few studies from India are available for comparisons.

Table 1.1 ADL disability prevalence rates in studies outside India

Country	Prevalence of ADL disability	Author
Spain	19.1%	Graciani A et al. ¹⁴
China	6.5%	Z. Tang et al. ¹⁵
Singapore	6.6%	Ng TP et al. ¹⁶
USA (HIS) (1993)	20.2%	Criminis EM et al. ¹⁷
USA (NLTC) 1994	4.3%	Manton KG et al. ¹⁸
USA (NLTC) 1999	3.2%	Manton KG et al. ¹⁹
China	17% (Male), 21% (Female)	Danan Gu et al. ²⁰

Prevalence studies in India:

After careful search not many studies were found on ADL disability among elderly in India.

1. As per ageing survey by Canadian international development agency (CIDA) done in Delhi, the distribution of persons with single or multiple ADL limitations was as follows:

Table 1.2 Prevalence of ADL disabilities in India as per CIDA ageing survey²¹

No. of disabilities	Male %	Female %	Total %
No disability	35.98	34.38	35.09
One disability	8.59	4.95	6.57
Two disabilities	17.02	10.94	13.65
Three or more disabilities	38.41	49.74	44.69

2. In a study done in Tamil Nadu State, India reveal that fifty percent of the elderly population in the study area were suffering from one or other forms of physical disability.²²
3. Prevalence of disability in India as per national statistical survey organization (NSSO) 58th round 2002 was found to be around six percent with an urban (6.4 percent) and rural (5.5 percent) difference.²³

Prevalence of ADL disability is on decline in the developed world because of better pediatric care, improved sanitation and hygiene, decline in manual labor, improvement in health and underlying social environment.^{18, 19} But this is not the same for the developing

countries like India as basic pediatric care or basic sanitation facilities are not universally available to the population.

1.3.2. Correlates of Disability

Understanding the disability dynamic mechanism could lead to better targeting of efforts to reduce or postpone disabilities at older ages.¹ A growing number of studies have shown strong association of sociodemographic factors with the dynamic changes of disability in the elderly.²⁴⁻²⁸

a. General health status as a determinant of disability among elderly

An individual experiences deteriorating general health and immunity during old age; the bones become fragile, the joints get stiff, the sensitivity of sensory organs diminishes, infection rates run high. Also, they encounter high rates of non-communicable diseases like hypertension, diabetes and complications of these conditions such as acute coronary events and stroke. About 35-50 percent elderly may report arthritis, 40 percent hypertension, 30 percent hearing impairment, 15-40 percent defective vision, deformity and cataract, 10 percent diabetes and about eight percent varicose vein.²⁹ A study done among rural elderly by Rao Venkoba (1990)³⁰ showed that 88 percent had vision defects, 40 percent locomotor difficulties, 17 percent cardiovascular, 16 percent respiratory illnesses, 14 percent problems related to central nervous system, 13 percent dermatological, 10 percent gastrointestinal, eight percent acoustic, four percent psychiatry and two percent neoplasm. Some chronic diseases tend to occur more in women and increase with age.³¹

Majority of the elderly in India complained of some diseases such as vision defects, cancer, blood pressure, heart disease, respiratory illness and diabetes.^{33, 34} It is also evident that many of the aged suffered from a combination of ailments.³⁵ All these chronic

conditions make most elderly either home bound or bed-ridden as these conditions affect activities of daily living considerably. Deteriorating health adversely affects the functional independence and economic productivity of the elderly making them more and more dependent on others.

In developing countries elders form a weak group availing social benefits, including government health services.^{3, 36} Inequalities based on class, gender and race are expected to influence the health of the elderly predisposing them to chronic conditions and subsequent disability. As per national sample Survey 60th round 2004, in rural areas 41.9 percent men and 17 percent women perceived their health as poor indicating high prevalence of poor health which mainly constitute chronic debilitating conditions restricting activities of daily living.³⁷

Unhealthy behaviors like smoking, alcohol use, smokeless tobacco consumption, physical inactivity, unhealthy diet in previous years of life predispose elderly to various chronic conditions like hypertension, cerebrovascular and cardiovascular diseases as well as cancers as evidenced by emerging epidemic of non-communicable diseases.

b. Demographic factors

Demographic factors like age, sex, ethnicity, marital status and place of residence determine prevalence of disability. With few exceptions,³⁸ almost all prior studies consistently found that the incidence rate of disability increases with age, whereas the probability of getting better decreases with age.³⁹⁻⁴⁵ As age advances prevalence of disability increases. Evidence shows the prevalence of disability in age group of 60 and above was 5.5 percent as against 2.5 percent in age group of 55-59 in rural India.²³ In a study done in Tamil

Nadu, shows that the likelihood of physical disabilities increases significantly with an increase in age.²²

Gender difference in the dynamics of ADL disability is inconclusive. Some studies have reported that older males have an advantage in disability dynamics over older females,^{24, 46} while some other studies provide an opposite result (i.e., elderly women have the advantage)^{27, 38} and still others find that there is no significant gender difference in disability dynamics.^{45, 47, 48} Since mortality rates are usually higher among men than women, even at older ages, the percentage of women tend to increase with advancing age making them more prone to chronic debilitating conditions. Though debatable, women suffer more from disability in day to day life due to gender differences of the society as they are more likely to be dependent on others, given lower literacy rate, higher incidence of widowhood, less access to skill formation, education, health care and other sources of private and public support.⁴⁹ Indeed, the concerns of the oldest-old should be viewed primarily as the concerns of older women as the majority of older persons are women. Prevalence of disability was high among urban (6.4 percent) compared to rural (5.5 percent) resident elders.²³

Despite the challenges from several recent studies⁵⁰, the protective effects of marriage on disability at late age have been widely recognized.^{45, 51, 52} Marital status is an important determinant of the well-being of the elderly as it provides social support to them. According to a study in south India by Rajan SI et al (2003)⁶ nearly two-thirds of elderly women were widows; while only 22 percent of elderly men were widower.⁶ As evident from a study conducted in 1995 married elderly had fewer acute and chronic conditions, fewer activity limitations and a lower probability of being disabled and less psychiatric morbidity.

⁵³ On simple demographic grounds alone, the prevalence of dependency in India is likely to

more than double over the next 50 years and will increase as much as four or fivefold elsewhere in the world.⁵⁴

Living arrangement is an important factor for elderly care as substantial proportions of families have espoused the small family norm, and this decline in family size has reduced the probability of co-residence of parents and their children.⁶ The out-migration of youth in search of employment, leaving behind the aged parents at home, too has affected co-residence.⁵⁵ Both these have reduced the supportive framework for elderly at home along with increased work participation of women resulting in more difficulties to carry out the activities of daily living especially for those who are chronically ill and disabled due to old age.

c. Socio-economic factors

Although most of the studies have shown that the higher socioeconomic status could reduce the risk of the onset of disability and increase the likelihood to regain functioning at late ages,^{22, 27, 38, 56} a small number of studies found such protective effects as not significant or weak.⁵⁷⁻⁵⁹ The well-being of the elderly depends largely on certain socio-economic conditions such as: labour force participation, literacy, marital status and health. In most developed economies where social security is universal, the labour force participation rates are low. However, the picture is different in developing countries. Given little or no social security the aged have to work mostly in informal agriculture sector.⁶⁰ Most Asian countries exhibit low work participation of the elderly in the workforce that too in unorganized sector like agriculture. The work participation of women is still lower as compared to men. Socio-economic status plays important role in maintaining better physical and mental health. Those with better income status have more access to health services and

control over resources. In a study in India, it was observed that elderly people who belong to the higher socio-economic class were found to have lesser disabilities.²²

Unfortunately 78 percent of India's elderly are in unorganized sector having no income security and one third of the below poverty line population are in the age group of 60 years and above which accounts for the present 23 million poor older persons.⁶¹

As people get older; they need more intensive and long-term care, which in turn may increase financial stress in the family. Inadequate income is a major problem facing the elderly in India.⁶² The most vulnerable are those who do not own productive assets, have little or no savings or income from investments, no pension or retirement benefits, and are not taken care of by their children or live in families that have low and uncertain incomes and a large number of dependents. Proportion of aged dependent on others for day to day maintenance was 67 percent in rural areas and 64 percent in urban areas as per NSSO 60th round.³⁷ According to India's Institute of Public Administration's working paper on chronic poverty among Indian elderly; 58 percent of women and 45 percent of men in the rural areas were entirely economically dependent on others, whereas in urban areas these figures were 64 percent and 46 percent respectively.⁶¹ For elderly people living with their families - still the dominant living arrangement - their economic security and well-being are largely contingent on the economic capacity of the family unit. Particularly in rural areas, families suffer from economic crisis, as their occupations do not produce income throughout the year. In general, there is a marked difference between males and females in this respect. The most vulnerable group consists of elderly women in urban areas; 64 percent of them are dependent on others for food, clothing and healthcare.⁶¹ This is one of the reasons why the elderly to continue to work despite their poor health.

All these factors collectively stress the need for social security schemes for elderly as accepted in the Directive Principles of State Policy of the Indian Constitution which states that: “The State shall, within the limits of its economic capacity and development make effective provision for securing the right to work, to education and to public assistance in cases of unemployment, old age, sickness and disablement”. The framers of the constitution did recognize the need for social security programme for elderly to be supported by the state. With the change in situation, as the problem started growing, it did receive attention of the law makers. In pursuance of this directive principle, certain provisions are made for public assistance to older persons.

There are various social security schemes for elderly such as National old age pension scheme (NOAPS), Annapurna Yojana, Old age social income and security scheme (OASIS), Varishta Pension Bima Yojana, Shravan Bal Yojana by Government of India. But lack of awareness, non-utilization, corruption, delay in paying benefits, red tape, requirement of several proofs and certificates, and most important the paltry sum given, do not achieve the very purpose of these schemes.⁶¹

d. Psycho-social Factors

The role of mental health in shaping the overall well-being of an individual is well recognized and any deviation from complete mental well being have multitude of deleterious effects. Depression due to various factors related to old age like income insecurity, loss of respect in family, social isolation due to immobility, poor health, and loss of life partner is common in elderly. Prevalence of depression among elderly aged 60 years and above is about 1 percent as reported in a study done in India.⁶³ A study conducted near

Madurai, Tamil Nadu among elderly aged 60 and above years found that depression contributes to 67 percent of total psychiatric morbidity.⁶⁴

Various domains of daily activities like walking inside house, transferring from bed or chair, bathing, toileting, grooming and dressing may call for second hand assistance at some stage of ageing. Functional dependency on others in old age could be perceived by elderly as a threat to their self esteem and independence. Dissatisfaction over current functional status could trigger depressive illness in elderly. Bruce ML (2001)⁶⁵ after reviewing studies on depression and disability has concluded that disability is associated with an increased risk of depression and vice versa. Chronic illnesses leading to disability are seen to be associated with higher prevalence of depression. Social network and social support are important predictors of psychological wellbeing.⁶⁶ Ageing takes away the extent as well as the quality of one's social network thereby placing the aged at risk of developing depression and disability.

1.4. RATIONALE OF THE STUDY

Despite overall socioeconomic development, improvements in living standards, better medical infrastructure and effective public health measures most of our preceding results are mired by the poor health conditions of the aged with a high prevalence of co-morbid conditions and multiple ADL disabilities. With an increasing role being assigned to market forces, the growing cost of medical care, persistent poverty, the poor quality of health services in the government sector, the lack of social security and social health insurance, and the degenerating nature of old age diseases, it may be said that a majority of aged in India have apparently run out of options. With time, they may even lose family care as the result of various socio-cultural and economic changes.

The direct effects of age-based changes in individuals resulting into true senescence, severe weaknesses, poor endurance capacities, lack of body resistance, memory loss, and run down physical and mental conditions, might leave the aged in a situation where they may have to rely on external support for their self-maintenance activities or activities of daily living. These usually incurable conditions may tend to gradually worsen with the ultimate option of seeking medical or home care. In India, few can afford this option. For a majority of the ageing Indians, getting away from these conditions seem difficult without strong and concerted efforts by the major stakeholders including the families, the community, the NGOs, the media and above all the government. At the government level, perhaps the public health strategies offer a low cost and economically viable window of hope.

Since Khanapur block is rural, drought prone area with lot of outmigration it appears to be appropriate to study ADL disability and its correlates along with social security schemes for elderly in order to suggest corrective mechanism. Therefore, to design culturally appropriate strategies to prevent and manage disability and prolong independent life, it is fundamental to understand the factors that contribute to disability. The attempt to measure disabilities is important because of its usefulness in making assessments about morbidity; mortality; and health care and social security needs which is obvious as well. It may help in formulating public health policy on ageing and disability. This is indeed a situation that needs to be seriously examined with the help of specially designed studies and relevant statistical details as there are very few studies on ADL disability among elderly in Maharashtra and India.

CHAPTER 2

METHODOLOGY

2.1. OBJECTIVES OF THE STUDY

2.1.1. Major Objectives

- To estimate the prevalence of ADL (Activities of daily living) disabilities among elderly population in the Khanapur block of Sangli district in western Maharashtra, India.
- To identify factors associated with ADL disabilities among elderly in the Khanapur block of Sangli district in western Maharashtra, India.

2.1.2. Minor Objective

- To assess awareness and utilization of geriatric welfare services among elderly in the Khanapur block.

This chapter deals with detailed methodology of the study. It includes sections on study design, study setting and rationale for its selection, sample size estimation, sample selection procedure, data collection, data storage and analysis, variables in the study, study tools and ethical consideration.

2.2. STUDY DESIGN

The study was a cross-sectional survey following quantitative research methodology.

2.3. STUDY SETTING

The research study was carried out in the Khanapur block of the Sangli district, one of the most developed districts of Maharashtra, India. The proportion of elderly as per 2001 census in Sangli district was 11 percent which is higher than the state average of 8.7 percent.

The Khanapur block has 66 villages and 31 revenue divisions. Total population is 252,672 of which 220,686 are rural and 31,986 are urban as per 2001 Census. As Sangli district has high percentage of elderly and Khanapur block is rural, drought prone area with lot of out migration and is also away from district head quarters, it provides ideal set up for studying life of elderly and associated disabilities.

2.4. SAMPLE SIZE ESTIMATION

The prevalence of disability among elderly varies across countries¹⁴⁻²³ and depends upon definitions or tools used. For this study purpose prevalence was taken as 6 percent as per National Sample Survey 58th round, 2000.²³ In this study, simple random sampling was adopted to select sample. For that, by keeping expected disability prevalence among elderly as 6 percent and worst acceptable limit as 3 percent, for 95 percent confidence interval which comes to 240. Making room for practical field issues, the estimated sample size was 275.¹

¹ $S = (1.96)^2 PQ/D^2$, where S, is sample size without considering sample frame, P is expected prevalence of condition under study, Q is (1-P), D is half width of confidence interval. Here, $S = (1.96)^2 * 0.06 * 0.94 / (0.03)^2 = 240$. Making room for practical field issues, the estimated sample size was 275.

2.5. SAMPLE SELECTION PROCEDURE

From 66 villages in the Khanapur block, 20 villages were selected randomly. All these 20 villages come under the Block Primary Health Center Vita. The latest list of elderly from each village was available with the MPWs (Multi purpose workers) as these villages were surveyed by MPWs in April-May 2008 under family health survey for National Rural Health Mission.

Total number of elderly collectively from these 20 villages came to 4798. Using random number table in computer, a sample of 275 was selected from the sample frame of 4798. If the selected individual came under the exclusion category, those who were seriously ill or bed ridden, then the next individual from the list was selected.

2.6. DATA COLLECTION

Initially all 20 village MPWs were called for a training programme for data collection after necessary permission from concerned Medical officer. These MPWs were trained in data collection procedure using the Marathi translates of the structured interview schedule. Each MPW was asked to take five interviews before starting actual data collection and these pilot interviews were reviewed by the researcher & queries if any were explained individually. Supportive super-vision was provided to the MPWs by the researcher through regular visits.

The structured interview schedule (Appendix 2) consists of closed questions. The Indian Health Assessment Questionnaire (Appendix 2), the tool used to detect ADL disabilities was also part of the interview schedule.

Information regarding other domains was collected under different categories such as demographic details, socioeconomic details, and living arrangements. Also details

regarding perceived physical and mental health; history of illness; hospitalization; personal habits; visual, hearing, mental, loco motor functions; inter personal relations were collected. Details regarding social security schemes and assistive devices and assistance in ADL were also collected. Utmost care was taken to safeguard the privacy and autonomy of the respondents.

2.7. DATA STORAGE

After the data collection, the data were entered in the Epidata 3.1. In situations when there were missing or incomplete data, clarifications were sought from concerned respondents and necessary corrections were made in the data entered.

2.8. DATA ANALYSIS

The data were analyzed using SPSS (statistical package for social sciences) for windows version 15.0. The primary objective of the analysis was to estimate prevalence of ADL disabilities among elderly and to identify its correlates. In order to identify the factors associated with disability among elderly, the independent variables were grouped into various categories, the details of which are given below.

2.9. INTRODUCING VARIABLES USED IN THE STUDY

a) Dependent variable

Disability

Indian Health Assessment Questionnaire was used to measure this variable, the details of which are discussed in the coming section.

b) Independent variables

Demographic variables

Age, sex, living arrangement, marital status

Socioeconomic variables

Educational status, major past occupation, current occupation, monthly family income, monthly personal income, means of subsistence.

Personal habits

Ever use of tobacco, alcohol, snuff.

Illness variables

Presence of chronic illness; treatment history; recent history of hospitalization and its reason; perceived physical and mental health; effect of ill health on the activities of daily living.

Sensory function

Vision, hearing, mental function, communication

Interpersonal interaction and social life

Difficulties in maintaining inter personal relations, family relations and difficulties in social participation.

Mobility

Ability to stand for longer periods, joint mobility, travel

Social security schemes

Information regarding awareness, utilization of social security and health insurance schemes was collected.

Assistive devices and Assistance in ADL

Use of assistive devices, finance for assistive devices, reasons for not acquiring assistive devices. Persons assisting & their attitude towards elderly.

2.10. INTRODUCING SPECIAL TOOL USED IN THE STUDY

Indian Health Assessment Questionnaire (HAQ) was used in this study to measure the dependent variable ADL (Activities of daily living) disability. It is based on The Health Assessment Questionnaire-Disability Index (HAQ-DI) which was originally published in 1980 by Fries et al. from Stanford University, USA.⁶⁷

Three years later, Pincus et al. published an abridged version ('Modified HAQ' or MHAQ), retaining only eight questions out of the original 20 and showed that MHAQ captured the same information as obtained with the somewhat lengthy original questionnaire.⁶⁸

The following modifications were carried out to obtain the Indian HAQ. One item was added to the eight basic ADL, namely, 'Are you able to squat in the toilet or sit cross-legged on the floor?' because these two activities are so unique and relevant to the Indian culture and life style. The psychological domain was not included because the Indian HAQ was intended to measure physical rather than psychological disability. An index based on basic 8-ADL (MHAQ of Pincus et al.) was also computed for each patient to assess the superiority of 12-ADL HAQ. Thus, the Indian HAQ comprised 12 questions (nine basic and three advanced ADL, on the standard HAQ format) relevant to the Indian population. It is sensitive, reliable and valid instrument to measure functional disability.⁶⁹

Each question in Indian HAQ is scored 0 to 3, 0 meaning no difficulty, 1 meaning some difficulty, 2 meaning much difficulty and 3 meaning unable to do activities of daily living. Disability index is calculated by dividing the total score of all 12 questions by 12. Those having disability index of equal to two or more are considered as having ADL disability.

2.11. OPERATIONALISING VARIABLES

- **Disability:** is defined as “Any restriction or lack of abilities to perform activities of daily living in the manner or within the range considered normal for human being”. Activities of daily living are such as bathing, dressing, walking, toileting, reaching, grip, mobility & domestic life. Those having disability index scores of equal to two or more were classified as disabled.
- **Visual difficulty:** difficulty seeing and recognizing an object at arm’s length.
- **Hearing difficulty:** difficulty hearing what is said in a conversation with one other person in a quiet room.
- **Communication difficulty:** Because of a physical, mental or emotional health condition, person has difficulty communicating. (For example understanding others or others understanding the person)

2.12. ETHICAL CONSIDERATIONS

The research study was cleared by the Technical Advisory committee and the Institutional Ethics Committee of Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, Kerala prior to data collection.

Informed written consent (Appendix 1) was obtained from the respondents willing to participate either by the principal investigator or by the data collectors appointed by the principal investigator. Written consent & interview was taken in respondent’s home or place convenient to him or her. After reading the consent form & answering queries, if the person was willing to participate; signature or thumb impression was taken on the consent form. If s/he was not willing to sign or give thumb impression but was willing to participate then a witness was asked to sign. Interviewer also signed the consent form. Usually, 30

minutes were given to the participant to decide on participation but it was flexible depending upon health and other social issues.

During data collection prime consideration was given to privacy and autonomy of the participant. Confidentiality of the entire data obtained from each participant has been strictly maintained and will continue to do so as mentioned in the consent form.

CHAPTER 3

RESULTS

This chapter primarily describes the outcomes of data analysis in concordance with the objectives of the study. After data entry data were cleaned, coded numerically. For data analysis SPSS version 15 was used. In a stepwise manner data were analyzed for identifying the baseline characteristics of the sample population; the prevalence of ADL disability; and the association between ADL disability and various independent variables. The results are organized under following major headings---sample characteristics, prevalence of disability, and correlates of disability.

In the sample of 275, all consented to participate in the study with a response rate of 100 percent.

3.1. SAMPLE CHARACTERISTICS

A detailed description of the study sample is provided in this section. The characteristics of sample population will be discussed under the following titles---demographic details; socioeconomic details; illness details; personal habits; details on sensory (visual, hearing) functions; mental functions; interpersonal communication and social life; mobility; awareness and utilization of social security schemes; and assistance in activities of daily living (ADL). For each individual characteristic, not only the overall statistics but also gender break up is identified, so as to provide better understanding.

3.1.1. Demographic characteristics of the sample population

In the sample of 275 participants 133 (48.4percent) were men and 142 (51.6 percent) were women. The mean age of the study sample was 68.35 years (SD 6.5). Mean age for men and women was 69.11 years (SD 6.9) and 67.63 years (SD 6.0) respectively. For further analysis, age was grouped into three categories namely young old (60-69 years), old-old (70-79 years) and oldest old (80 years and above). For the total sample as well as for both men and women highest proportions of individuals were in the young old (60-69) category.

Majority of the sample (72.7 percent) was currently married and one fourth (25.4 percent) was widowed at the time of interview. Majority of the men (92.5 percent) were currently married while only 54.2 percent women were currently married. Proportion of widowhood was 8 percent in men and 43.7 percent in women. In living arrangement 25.5 percent were living with spouse while 46.9 percent were living with spouse and children.

Table 3.1.Demographic characteristics of the sample population

Variable	Male (%)	Female (%)	Total (%)
Sex	133 (48.4)	142(51.6)	275 (100.0)
Age			
Young old (60-69)	76 (57.1)	93(65.5)	169 (61.5)
Old-old (70-79)	44 (33.1)	40 (28.2)	84 (30.5)
Oldest-old (80-89)	13 (9.8)	9 (6.3)	22 (8)
Marital status			
Never married	0 (0)	1(0.7)	1(0.4)
Currently married	123 (92.5)	77 (54.2)	200 (72.7)
Separated	1(0.8)	2 (1.4)	3(1.1)
Divorced	1(0.8)	0 (0)	1(0.4)
Widowed	8 (6)	62 (43.7)	70 (25.5)
Living Arrangement			
Alone	1 (0.8)	10 (7)	11 (4)
With spouse only	40 (30.1)	30 (21.1)	70 (25.5)
With spouse & children	82 (61.6)	47 (33.1)	129 (46.9)
With children only	8 (6)	50 (35.2)	58 (21.1)
With distant relative	2 (1.5)	5 (3.5)	7 (2.5)

3.1.2 Socioeconomic characteristics of the sample population

Table 3.2 Socioeconomic characteristics of the sample population

Variable	Male (%)	Female (%)	Total (%)
Educational status			
Illiterate	43 (32.3)	107 (75.4)	150 (54.5)
Literate with no formal education	10 (7.5)	4 (2.8)	14 (5.1)
Primary (up to class 4)	43 (32.3)	21 (14.8)	64 (23.3)
Secondary (up to class 10)	33 (24.8)	10 (7)	43 (15.6)
Higher secondary(up to class 12)	4 (3)	0(0)	4 (1.5)
Graduation	0 (0)	0(0)	0(0)
Post graduation	0(0)	0(0)	0(0)
Current employment			
Retired	18 (13.5)	7 (4.9)	25 (9.1)
Paid employment	0(0)	0(0)	0(0)
Self employed	48 (36.1)	8 (5.6)	56 (20.4)
Unemployed (health Reason)	50 (37.6)	55 (38.7)	105 (38.2)
Unemployed (other Reason)	5 (3.8)	0(0)	5 (1.8)
Keeping house	2 (1.5)	66 (46.5)	68 (24.7)
Others	10 (7.5)	6 (4.2)	16 (5.8)
Major past employment			
Agriculture	79 (59.4)	49 (34.5)	128 (46.5)
Service	20 (15)	1 (0.7)	21 (7.6)
Business	7 (5.3)	2 (1.4)	9 (3.3)
Laborer	26 (19.5)	34 (23.9)	60 (21.8)
Household/House maker	1 (0.8)	56 (39.4)	57 (20.7)
Others	0(0)	0(0)	0(0)
Monthly family income			
Low (Rs.<= 2000)	77 (57.9)	91 (64.1)	168 (61.1)
High (Rs. >2000)	56 (42.1)	51 (35.9)	107 (38.9)
Personal Income			
Yes	58(43.6)	18 (12.7)	76 (27.6)
N0	75 (56.4)	124(87.3)	199 (72.4)

In the educational status of the sample population, 54.5 percent were illiterate, 23.3 percent had primary (up to class 4) while 15.6 percent had secondary (up to class 10) education; 39.8 percent men and 78.2 percent women had no formal education indicating more illiteracy among women as compared to men. As per current employment status 38.2 percent (men: 37.6 percent, women: 38.7 percent) of the participants were unemployed due

to health reasons and 20.4 percent still had to work mostly in agriculture. Current occupation as house keepers was mentioned by half (46.5percent) of the women. As it was rural agricultural community, 46.5 percent (men: 59.4 percent, women: 34.5 percent) registered agriculture as major past occupation while 21.8 percent as laborers, mostly agriculture labor.

Self reported monthly family income from all sources was categorized in two categories; those having monthly income of less than Rs. 2000 are considered into low income category (61.1 percent) while those having monthly income of Rs. 2000 and above are considered under high income category (38.9 percent). Only 27.6 percent elderly had personal income currently. Men and women having current personal income were 43.6 percent and 12.7 percent respectively.

3.1.3. Illness characteristics of the sample population

In section on perceived physical and mental health during last one month, 41.5 and 38.5 percent elderly perceived physical health and mental health respectively as bad or very bad. About one third (35.6 percent) elderly said that they had chronic illness (illness of more than 3 months duration) currently while 20.4 percent had been hospitalized in last one year. Due to poor health 24 percent were unable to carry out usual activities in past month while 39.6 percent were on any form of medication at that time of interview.

Table 3.3: Illness characteristics of the sample population:

Variable	Male(%)	Female(%)	Total(%)
Perceived physical health in past month	N=133	N=142	N=275
Very good	3(2.3)	3(2.1)	6 (2.2)
Good	19(14.3)	15(10.6)	34 (12.4)
Moderate	59(44.4)	56(39.4)	115(41.8)
Bad	50(37.6)	64(45.1)	114(41.5)
Very bad	2 (1.5)	4 (2.8)	6 (2.2)
Perceived mental health in past month			
Very good	3 (2.3)	3 (2.1)	6 (2.2)
Good	21 (15.8)	21 (14.8)	42 (15.3)
Moderate	59 (44.4)	62 (43.7)	121 (44)
Bad	45 (33.8)	51 (35.9)	96 (34.9)
Very bad	5 (3.7)	5 (3.5)	10 (3.6)
Presence of chronic illness (>90 days period)			
Yes	44 (33.1)	54 (38.0)	98 (35.6)
No	89 (66.9)	88 (62.0)	177(64.4)
Hospitalization in last year			
Yes	26 (19.5)	30 (21.1)	56 (20.4)
No	107 (80.5)	112(78.9)	219(79.6)
Impact of poor health on daily activities (unable to do usual activities)			
Yes	25 (18.8)	41 (28.9)	66 (24)
No	108(81.2)	101(71.1)	209(76)
H /o medication			
Yes	46 (34.6)	63 (44.4)	109(39.6)
No	87 (65.4)	79 (55.6)	166(60.4)

3.1.4. Details on sensory and mental functions

In sensory functions, 33.8 percent elderly had visual difficulties as they had difficulty to see and recognize objects at an arm's length and 19.3 percent had hearing difficulty as they had difficulty in hearing what is said in a conversation in a quiet room. In mental function, 30.9 percent experienced depression during last month. 16.4 percent had difficulty in memory and concentration. Because of poor physical and mental health condition 6.9% respondents had difficulty in communication.

Table 3.4 Details on sensory and mental functions

Vision:	Male(%)	Female(%)	Total(%)
Difficulty	46 (34.6)	47 (33.1)	93 (33.8)
No difficulty	87 (65.4)	95 (66.9)	182 (66.2)
Hearing :			
Difficulty	32 (24.1)	21 (14.8)	53 (19.3)
No difficulty	101 (75.9)	121 (85.2)	222 (80.7)
Mental Function			
Memory & concentration			
Difficulty	18 (13.5)	27 (19)	45 (16.4)
No difficulty	115 (86.5)	115 (81)	230 (83.6)
Depression (in last month)			
Yes	40 (30.1)	45 (31.7)	85 (30.9)
No	93 (69.9)	97 (68.3)	190 (69.1)
Ability to communicate			
Difficulty	8 (6)	11 (7.7)	19 (6.9)
No difficulty	125 (94)	131 (92.3)	256 (93.1)

3.1.5. Details on family and social life

A quarter (26.2 percent) of participants felt that they were not consulted in family matters and had no respect in the family and 27.6 percent had feeling of loneliness as they felt that they were left out by family members and friends. Because of present state of health 28.7percent had difficulty in social participation without assistance and women had more difficulties than men.

Table 3.5 Details on family and social life

Family & Social life	Male(%)	Female(%)	Total(%)
Respect in family			
Yes	103 (77.4)	100 (70.4)	203 (73.8)
No	30 (22.6)	42 (29.6)	72 (26.2)
Loneliness			
Yes	36 (27.1)	40 (28.2)	76 (27.6)
No	97 (72.9)	102 (71.8)	199 (72.4)
Social participation			
Difficulty	28 (21)	51 (35.9)	79 (28.7)
No difficulty	105 (79)	91 (64.1)	196 (71.3)

3.1.6. Mobility

One third of elderly had difficulty in standing for long periods such as 30 minutes and standing up from sitting down position. Around half of them were unable to travel affecting their work and social participation.

Table 3.6 Mobility

Ability to stand for long periods	Male(%)	Female(%)	Total(%)
Difficulty	35 (26.3)	69 (48.6)	104(37.8)
No difficulty	98 (73.7)	73 (51.4)	171(62.2)
Standing up from sitting down			
Difficulty	30(22.5)	65 (45.8)	95 (34.5)
No difficulty	103 (77.4)	77 (54.2)	180(65.5)
Ability to travel			
Difficulty	86 (64.7)	55 (38.7)	14 (51.3)
No difficulty	47 (35.3)	87 (61.3)	134(48.7)

3.1.7. Details on awareness and utilization of social security schemes

Awareness regarding social security schemes was abysmally low in the sample population as only 14.5 percent (men: 20.3 percent, women: 9.2 percent) were aware of social security schemes stresses need for awareness campaign. As awareness is less, beneficiaries to these schemes are also less (7.3 percent). Only 2.5 percent had any form of health insurance. Majority (92 percent) felt that government should help them by giving reasonable amount of old age pension

Table3.7 Details on awareness and utilization of social security schemes

Awareness of social security schemes	Male(%)	Female(%)	Total(%)
Yes	27 (20.3)	13 (9.2)	40 (14.5)
No	106 (79.7)	129 (90.8)	235 (85.5)
Eligibility to get pension			
Yes	53 (39.8)	55 (38.7)	108 (39.3)
No	17 (12.8)	8 (5.6)	25 (9.1)
Don't know	63 (47.4)	79 (55.6)	142 (51.6)
Beneficiary to social security schemes			
Yes	14 (10.5)	6 (4.2)	20 (7.3)
No	119 (89.5)	136 (95.8)	255 (92.7)
Health insurance cover			
Yes	4(3)	3(2.1)	7(2.5)
No	113 (85)	119 (83.8)	232 (84.4)
Don't know	16 (12)	20 (14.1)	36 (13.1)
Expectations from Govt.			
Old age pension	126 (94.7%)	127 (89.4%)	253 (92%)
Health insurance	7 (5.3%)	12 (8.5%)	19 (6.9%)
Others	0(0)	3 (2.1%)	3 (1.1%)

3.1.8 Details on assistive devices and assistance in ADL

As age advances most of elderly need assistive devices like spectacles, walking stick, dentures, hearing aid as well as they need assistance for doing activities of daily living which is reflected here as 56.4 percent of elderly were using any of the above mentioned assistive devices and 50.5 percent had person helping them in ADL. Majority (91percent) said that attitude of person helping them in ADL was sympathetic.

Table 3.8 Details on assistive devices and assistance in ADL

Use of assistive devices	Male(%)	Female(%)	Total(%)
Yes	77 (57.9)	78 (54.9)	155 (56.4)
No	56 (42.1)	64 (45.1)	120 (43.6)
Person assisting in ADL			
Yes	65 (48.9)	74 (52.1)	139 (50.5)
No	68 (51.1)	68 (47.9)	136 (49.5)
Attitude of care givers	N =65	N =74	N =139
Sympathetic	61 (93.8)	65 (87.8)	126 (91)
As social duty	4 (6.2)	9 (12.2)	13 (9)

3.2. PREVALENCE OF ADL DISABILITY

Prevalence of ADL disability in this sample of elderly is 5.8 percent with women (6.3 percent) having more ADL disability than men (5.3 percent) but sex difference is not statistically significant.

3.3. CORRELATES OF ADL DISABILITY

As a first step in exploring the association between ADL disability and the independent variables, simple bivariate analysis was done. For each cross tabulation, unadjusted Odds ratio with 95 percent confidence interval and p value were noted for significant relations. Then the independent variables were put in logistic regression models in stepwise manner and a final model was evolved for the significant correlates of ADL disability. Age, sex, history of hospitalization in last one year, respect from family and loneliness were adjusted in all the models.

3.3.1. Bivariate analysis

First, the independent variables were clustered under specific groups like demographic variables, socioeconomic variables etc. for better understanding and interpretation of the results. For further analysis living arrangement is grouped as those living with own family and those living with others or alone; marital status as currently married and not having spouse; education as having formal education and not having formal education; self perceived physical and mental health as good and bad; difficulty in communication and social participation as yes and no. Each independent variable was then cross tabulated against ADL disability, and trends in association were noted. The association was noted significant if p value was less than 0.05. Unadjusted for other variables, it was found that eighteen variables were significantly associated with ADL disability.

a. Demographic factors associated with ADL disability

Among demographic factors age group was found to have significant association with ADL disability.

Table 3.9. Demographic factors associated with ADL disability

Variable	Disability%	No Disability%	OR (95% C.I)	P value
Sex				0.704
Male (N=133)	7(5.3)	126(94.7)	1	
Female (N=142)	9(6.3)	133(93.7)	1.22(0.44-3.37)	
Age group				0.035*
60-69 (N=169)	5 (2.9)	164 (97.1)	1	
70-79 (N=84)	8 (9.5)	76 (90.5)	3.45(1.09-10.90)	
80-89 (N=22)	3 (13.6)	19 (86.4)	5.18(1.15-23.39)	
Living Arrangement				0.961
With own family	15(5.8)	242(94.2)	1	
With others/alone	1(5.6)	17(94.4)	0.95(0.118-7.62)	
Marriage group				0.135
Currently married	9 (4.5)	191(95.5)	1	
Not having spouse	7(9.3)	68 (90.7)	2.18(0.78-6.09)	

b. Socioeconomic factors associated with ADL disability

Among socioeconomic factors none of the independent variables were found to have significant association with ADL disability.

Table 3.10. Socioeconomic factors associated with ADL disability

Education group (N=275)	Disability%	No Disability% %(%)	OR (95% C.I)	P value
Formal education	6(5.4)	105(94.6)	1	0.810
No formal education	10(6.1)	154(93.9)	1.14(0.40-3.22)	
Family income /SES (N=275)				0.102
Upper income	3(2.8)	104(97.2)	1	
Lower income	13(7.7)	155(92.3)	2.91 (0.80-10.45)	
Personal income				0.082
Yes	1 (1.3)	75 (98.7)	1	
No	15 (5.8)	184 (94.2)	6.11(0.79-47.11)	

c. Illness factors associated with ADL disability

Among illness factors self perceived poor physical and mental health; history of: chronic illness, significant injuries in past, hospitalization, medication, reduction and inability to do usual activities were found to have significant association with ADL disability.

Table 3.11.Illness factors associated with ADL disability

Physical health	Disability%	No Disability%	OR (95%C.I.)	P value
Good	1(0.6)	154(99.4)	1	0.003*
Bad	15(12.5)	105(87.5)	22(2.862-169.08)	
Mental health				
Good	2 (1.2)	167 (98.8)	1	0.001*
Bad	14 (13.2)	92 (86.8)	12.70(2.82-57.13)	
Chronic illness				
No	2 (1.1)	175 (98.9)	1	0.000*
Yes	14 (14.3)	84 (85.7)	14.58(3.24-65.63)	
H/o injury				
No	12 (4.8)	237 (95.2)	1	0.039*
Yes	4 (15.4)	22 (84.6)	3.59(1.06-12.07)	
H/o hospitalization in the last year				
No	8 (3.7)	211 (96.3)	1	0.005*
Yes	8 (14.3)	48 (85.7)	4.39(1.57-12.29)	
H/o medication				
No	1 (0.6)	165 (99.4)	1	0.002*
Yes	15 (13.8)	94 (86.2)	26.33(3.42-202.49)	
Reduction in work (last month)				
No	4 (2)	199 (98)	1	0.000*
Yes	12 (16.7)	60 (83.3)	9.95(3.09-31.98)	
Unable to work (last month)				
No	4 (1.9)	205 (98.1)	1	0.000*
Yes	12 (18.2)	54 (81.8)	11.38(3.53-36.71)	

d. Personal habits

Personal habit of using smokeless tobacco was not found to have significant association with ADL disability. As there were very few smokers and alcoholics, were not considered for analysis.

Table 3.12. Personal habits

Smokeless tobacco	Disability%	No Disability%	OR (95%C.I.)	P value
No	6 (10.7)	50 (89.3)	1	0.089
Yes	10 (4.6)	209 (95.4)	2.50(0.87-7.225)	

e. Sensory functions and ADL disability

In sensory functions visual and communication difficulties were found to have significant association with ADL disability while hearing difficulty was not found to have significant association with ADL disability.

Table 3.13. Sensory functions and ADL disability

Visual difficulty	Disability	No Disability%	OR (95%C.I.)	P value
No	13 (4.9)	250 (95.1)	1	0.010*
Yes	3 (25)	9 (75)	6.41(1.54-26.53)	
Hearing difficulty				
No	13 (5.3)	233 (94.7)	1	0.280
Yes	3 (10.3)	26 (89.7)	2.07(0.53-7.73)	
Communication difficulty				
No	8(3.1)	248(96.9)	1	0.000*
Yes	8(42.1)	11(57.9)	22.54 (7.13-71.28)	

f. Mental health and ADL disability

In mental health no respect in family, feeling of loneliness and depression were found to have significant association with ADL disability.

Table 3.14. Mental health and ADL disability

Family respect	Disability%	No Disability%	OR (95%C.I.)	P value
Yes	7 (3.4)	196 (96.6)	1	0.008*
No	9 (12.5)	63 (87.5)	4(1.43-11.17)	
Loneliness				
No	5 (2.5)	194 (97.5)	1	0.001*
Yes	11 (14.5)	65 (85.5)	6.56 (2.19 -19.60)	
Depression				
No	2 (1)	188 (99)	1	0.000*
Yes	14 (16.5)	71 (83.5)	18.51(4.11-83.33)	

g. Social participation and ADL disability

Social participation was found to have significant association with ADL disability.

Table 3.15. Social participation and ADL disability

Social participation	Disability%	No Disability%	OR (95%C.I.)	P value
No difficulty	2(1)	194(99)	1	0.000*
Difficulty	14(17.7)	65(82.3)	20.89(4.62-94.38)	

h. Assistance in ADL and disability

Association of ADL disability with assistance in ADL is natural.

Table 3.16. Assistance in ADL and disability

Assistance in ADL	Disability%	No Disability%	OR (95%C.I.)	P value
Yes	15 (10.8)	124 (89.2)	1	0.007*
No	1 (0.7)	135 (99.3)	16.33(2.12-125.45)	

3.3.2. Multivariate analysis

Binary multiple logistic regression analysis

Binary logistic regression models were run for independent variables after excluding those that were closely related to each other. Several manually built models were compared, and each model was adjusted for age and sex.

The final model had history of chronic illness, depression and difficulty in social participation as the factors associated with ADL disability. After adjusting for age, sex, history of hospitalization in last one year, respect from family and loneliness it could be established that the odds of having ADL disability was 10.87 times higher among persons with history of chronic illness than among persons without history of chronic illness; 13.33 times higher among those with depression than among those without depression; 10.41 times higher among those who had difficulty in social participation than among those who had no difficulty in social participation.

None of the other demographic, illness, sensory functions, locomotor and social security factors that were statistically significant in Univariate and Bivariate analysis were found to be significant.

Table 3.18 Factors associated with ADL disability when adjusted for other variables

Independent variable	Adjusted OR of ADL disability (95% CI)	P value
Chronic illness		
No	1	
Yes	10.87 (1.84—62.5)	0.008*
Depression		
No	1	
Yes	13.33 (2.2—83.33)	0.005*
Difficulty in Social participation		
No	1	
Yes	10.41 (1.71—62.5)	0.011*

CHAPTER 4

DISCUSSION AND CONCLUSION

4.1. DISCUSSION

The main objective of this study was to estimate the prevalence of ADL (Activities of daily living) disabilities among elderly, to identify factors associated with ADL disabilities, and to assess awareness and utilization of geriatric welfare services in the Khanapur block of Sangli district in western Maharashtra, India.

4.1.1. General characteristics

While exploring the objectives, this research study gave a comprehensive insight on sociodemographic characteristics; physical and mental health characteristics of the sample population of elderly. It also showed the need for assistance in activities of daily living as well as the need for social security schemes for elderly.

As evidenced in the study, the young old meaning 60 to 70 years age group forms more than 60 percent of the total sample and old-old group only 8 percent indicate current life expectancy trends.

Proportion of widowhood was higher (43.7 percent) among women and it gives indication regarding the living arrangements in the rural area and dependence of elderly women on others for daily maintenance. In living arrangement 25.5 percent were living with spouse alone while 46.9 percent were living with spouse and children indicating joint family nature of the sample population as rural agricultural families might still prefer joint families to have more hands to work; also elderly especially women can look after household chores while other men and women can work in agriculture.

Half a century back there was lack of awareness, availability and accessibility for education especially for women which was reflected in the sample, as sixty percent participants didn't have any form of formal education. As it was rural agricultural community, two third of the elderly were working in unorganized sector like agriculture or agriculture labour without any income or social security in old age. Proportion of elderly working in agriculture was almost equal to all India average of 78 percent.⁶¹ Poor socioeconomic conditions of elderly compounded by poor physical and mental health lead to high rate of hospitalization. Because of poor health 40 percent of them were unable to work. This supports the fact that poor socioeconomic status leads to poor health and more disabling chronic conditions and vice versa.^{22, 27, 38, 56} Almost half of the sample population lived on less than 2000 rupees per month per family which indicates the plight of elderly especially ill and disabled ones.⁶² High rate of dependency, which is closer to NSSO 60th round³⁷ finding of 67 percent is a reality as two third (72.4 percent) of them did not have any personal income at present.

Poor family and social environment was reflected in poor mental function in 16.3 percent, high rate of depression and feeling of loneliness. Old age and poor health affected mobility in one forth of the elderly reducing their social participation affecting social network and social support which are important predictors of psychological wellbeing.⁶⁶ Due to poor health half of the elderly were in need of assistance for activities of daily living indicates though the prevalence of disability was 5.8 percent in the sample population 50 percent of them need some assistance in ADL. On positive side more than 90 percent elderly reported sympathetic attitude of the care givers. Only a small section was aware of social security schemes for elderly and even smaller section was beneficiary of the same which may

be because of rural background; illiteracy; poverty and social discrimination as well as due to beurocratic problems or other system level barriers.

4.1.2. Prevalence of ADL disability

The prevalence estimates of the study (5.8 percent) endorsed the research study hypothesis that the prevalence of disability among elderly is around six percent. In a population-based cross-sectional study in rural regions of Beijing, the ADL disability prevalence was 6.5 percent;¹⁵ closer to this study result. Similarly as reported by a study in Singapore prevalence of ADL disability was 6.6 percent.¹⁶ As previous studies^{11,12} shown that the ADL difficulties are significant predictors of health care utilization, in this study as well rate of hospitalization was high. Over half the elderly Indians studied by Joshi et al⁷⁰ had requirement for help from others in activities of daily living which is substantiated by this study with 50.5 percent of the study subjects needed help in ADL. Though visual and hearing difficulties are not based on standard criteria, prevalence of these conditions was high. Still it may be an underestimate as facilities for diagnosis of visual and hearing problems were not accessible and affordable to this rural population.

4.1.3. Correlates of ADL disabilities

Several factors associated with ADL disability among elderly emerged from this study, of which some were consistent with previous study findings where as few were not.

In this study, age was found to be significantly correlated with ADL disability in bivariate analysis and it endorses the prior studies which found that the incidence rate of disability increases with age, whereas the probability of getting better decreases with age.^{22,}

^{23, 39-44} This is evident from literature that the association of sex and ADL disability is still contentious. However, this study did not find any significant association between the two.

Regarding marital status though literature says marriage has protective effect on disability, this study could not find such relation which may be due to high percentage of widowhood among women in contrary to previously published reports.

History of chronic illness and depression is statistically significantly associated with ADL disability in both bivariate and logistic regression analysis; and this finding is consistent with previous studies^{29, 30, 32-35, 37} which establish the fact that poor physical and mental health are predictors of disability. In this study about 40 to 45 percent had poor physical and mental health leading to 20 percent hospitalizations and there is statistically significant association between hospitalization and ADL disability in the bivariate analysis.

The role of mental health in shaping the overall well-being of an individual is well recognized; and depression, due to various factors related to old age, is associated with disability.^{63,64,65,66} The possible explanation for this may be ageing takes away the extent as well as the quality of one's social network thereby placing the aged at risk of developing depression.

Difficulty in social participation turned out to be important correlate of ADL disability. Old age people living with difficulty in participation in various social events were found to have higher level of disability. But this may happen in the other way around, in other words poor social participation may be due to ADL disability itself or depression due to various reasons of old age. The elderly may have difficulty in social participation as they may feel lonely and left out by friends and relatives.

4.2 STRENGTHS OF THE STUDY

To my knowledge, no authentic studies have yet been undertaken on ADL disabilities among elderly in rural areas of Maharashtra. Hence, this study is a new one in that this endeavor will push for further research in prevalence of various types of disabilities, their determinants and need for social security schemes for elderly. The tool, which was used to determine the prevalence of ADL disability, was a pre-validated one thus making it possible to compare this study findings with that in other settings.

4.3. LIMITATIONS OF THE STUDY

This study measured the prevalence of ADL disabilities and accordingly elderly were classified as disabled or not. To measure prevalence of other disabilities like visual, hearing, locomotor, mental etc. one needs careful clinical examination and has to follow standard definitions or criteria which was not possible with time and resource constraints. Since the study followed cross-sectional study design, it carries all the demerits of a cross-sectional research study.

4.4. POLICY IMPLICATIONS OF THE STUDY

Acknowledging their contributions to the family and society at large both in past and future the elderly deserve better solution to their health and socioeconomic problems. The finding that the elderly suffer from myriad socioeconomic and health problems leading them to disability calls for urgent interventions. This recommendation carries much more significance in the present context when the society and country is graying rapidly and family values are losing importance. Moreover, most factors that were found to be associated with disability were amenable to interventions. Also, it is an added

advantage that these interventions can be made possible with minimum effort and liability on part of the stakeholders.

A permanent mechanism should be established with the help of primary health care workers for the periodic screening of elderly with high risk for disabling conditions like chronically ill and those from weaker sections of the society. The disability like ADL disability can be detected by using tools similar to that used in the study. The advantage is that the application of this tool does not demand the involvement of a professional. Moreover, it can also be used as a self administered tool. Those elderly score high on the scale can be referred to a health facility for further evaluation and treatment.

As non-communicable diseases (NCDs) or chronic illness risk factors are mostly modifiable, special attention needs to be given to these disabling conditions through health promotion and behavior communication intervention campaigns.

The health department of the state government should take an initiative for separate out-patient department for elderly or geriatric clinic with timings convenient to them. Involvement of existing primary health infra-structure for geriatric care is the need of the hour. Government should make it sure that at least weaker sections of the society will get free of cost treatment at public hospitals because most of the elderly can't afford the user fees charged at these hospitals. There is need for special diagnostic camps for poor elderly with all specialties under one roof so the disabling conditions can be diagnosed and treated as well as risk modification can be done.

There is risk for disabled and chronically ill elderly of losing their social contact because of immobility and ill health. There is need for involvement of non government organizations and social organizations to enhance the social participation of the

elderly so that their both physical and mental wellbeing can be maintained to prevent further deterioration of their condition. Since most elderly still maintain their functional capacity, their potential can be capitalized for the benefits of family as well as the society. Local self governments can play a role in assisting those elderly who are willing and able for gainful employment at local level which make them self sufficient and will have better utilization of their time.

Since most of the elderly come from unorganized sector, usually they do not have any income or social security or post retirement benefits. Though Government of India and most state governments have launched several social security schemes like National old age pension scheme (NOAPS), Annapurna scheme, old age social income scheme and health insurance schemes for elderly; pitfalls of which need to be addressed seriously and urgently. As the proportion of awareness and beneficiaries of welfare schemes are very low; there should be special campaign for awareness generation especially in rural areas. Revising rate of pension under NOAPS is necessity with rising inflation. Majority of elderly interviewed reported that because of paper work, beurocratic problems and need of identity proof, age certificate and BPL (below poverty line) card and, others it was difficult for them to apply and get the pension under NOAPS. Hence there should be impact assessment of current social security schemes for elderly. Increase funding for the NOAPS is must as of the total BPL population, one third is from elderly population. As government of India spends six percent of its budget for its employees' pension scheme which covers minuscule of the elderly population as against only 0.6 percent for NOAPS.⁶¹ As very small population is having health insurance cover; there is need for involvement of insurance companies to provide health insurance to elderly at a minimum possible premium.

4.5. CONCLUSION

The following issues are at the core of this discussion: 1. Prevalence of ADL disability and its correlates among elderly and 2. Social security schemes for elderly. Measurement of the activities of daily living is critical because they have been found to be significant predictors of health care utilization.¹¹⁻¹³

The prevalence of ADL disability is around six percent in elderly in the study sample with poor physical and mental health in terms of chronic illnesses and depression respectively are significant predictors of ADL disability. Both of these lead to difficulty in social participation. Hence, there is need to change the pathways of ageing by sensitizing people to improve their post-fifties' life span by evolving to take-up enhanced habits of physical exercise, balanced diet, cognitive engagement, moderate drinking, no smoking or tobacco chewing, and frequent health screenings.

Unsupportive environment – may be another critical factor and needs serious consideration in countries like India where family-provided care is the main stay of ageing. Understanding the social context of ageing may therefore be significant to devise ways for creating a more amenable atmosphere for the growing number of elderly. Given these facts, drawing a comprehensive preventive mechanism to make the ageing process a more endurable experience is almost imperative for a country like India. This is all the more significant because of the high incidence of morbidities, non-existent publicly run health care infrastructure in rural areas, old age poverty and no trace of social security schemes and health insurance practices in the country.

As the study pointed out, the beneficiaries among the older persons for various schemes and programmes initiated by the government are very insignificant when

compared to the very high size of their population and the growth rate among them. Further, given the level of urbanization and industrialization of India, economic factors and diminishing value system are likely to make welfare of the elderly as the most critical area for intervention. In Indian context, social security has to be integrated with anti-poverty programmes.

Since Maharashtra is among the faster ageing, urbanizing and industrializing state in India, the elderly especially disabled and poor elderly will face myriad problems in coming years. Hence, all the stakeholders in elderly care in Maharashtra should re-examine the current policies for elderly care and support through an intersectoral co-ordination approach. There is need of a special programme for disability risk identification, disability detection and intervention through existing public health infrastructure.

To conclude, two observations may bear significance at the policy level. One is the poor quality of survival due to a high prevalence of disabilities in later life years and the second relates to the fact that, in most cases the functional disabilities are not only age determined. These are rather the outcome of socioeconomic and health related factors like—disease, frailties, life style, as well as poverty, social discrimination, lack of social security etc. It is therefore advisable to follow a public health approach to prevent the disabilities by (i) creating awareness among people about the need for preserving their health stock to ensure healthy ageing, (ii) setting up public health and social goals for different segments of the older population. Since years have already been added to life let us all work together to add life to years!

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APPENDIX-1

Informed Consent Form

I am Dr. Khalipe Mahesh Mahaling, originally from Vita Tal: Khanapur Dist: Sangli, studying as Master of Public Health (MPH) student at Achutha Menon Center for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram 695011 (Kerala).

I am doing a study titled “Disability among elderly population in the Khanapur block of Sangli district in western Maharashtra” as a part of my course requirement. The main aim of the study is as follows:

- 1) To estimate the prevalence of ADL(activities of daily living) disabilities among elderly in Khanapur block of Sangli district in western Maharashtra.
- 2) To study the factors associated with disability among elderly.
- 3) To assess awareness & utilization of geriatric welfare services among elderly.

This study involves responses from elderly like you. This is a routine procedure to obtain informed consent from the participant in a study. So I request you to participate in the study. Participation is voluntary and you are free to refuse to answer any question and can withdraw from the interview at any point. The interview involves answering a few questions about your general health condition & difficulties you are facing in doing day to day activities (Activities of daily living) which will take about 15-30 minutes.

While there is no direct benefit for you individually from the study, but the finding of the study will contribute in future to better health & social welfare policies for elderly, especially those with disability.

Any information you provide will be kept strictly confidential and will be used for the sole purpose of my research as a part of the MPH dissertation.

Should you have any queries or doubts, please feel free to clarify those. I will try my level best to answer to any of your queries right now or in future as well. My contact number is 02347-272544.

You can also contact Dr. Anoop Kumar Thekkuveetil, Member Secretary, Institutional Ethics Committee, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum 695011 (Kerala).

Contact No. 0471-2520256/2520257

Email id: Anoop@sctimst.ac.in

Are you willing to participate? : YES NO

As part of the requirement, I would need your signature/thumb impression indicating your willingness to participate. Will you be able to sign below?

Signature or Thumb impression of the participant:

Signature of the interviewer:

If unwilling to sign/give thumb impression, but willing to be interviewed:

Signature of independent witness:

Signature of the interviewer:

Date:

Time:

A) DEMOGRAPHIC INFORMATION

ID No.

--	--	--	--	--

 Interviewer Code:

--

 Date:

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NO.	Description	Value labels	Code
A.1	NAME (optional)		
A.2	SEX	1. Male 2. Female	☐
A.3	What is your age? (In completed years) _____ Years		
A.4	ADDRESS		
A.5	What is your highest level of education?	1. Illiterate 2. Literate with no formal education 3. Primary (up to class 4) 4. Secondary (up to class 10) 5. Higher Secondary (up to class 12) 6. Graduation 7. Post-Graduation 8. Others (specify _____)	☐
A.6	MARITAL STATUS	1. Never married 2. Currently Married 3. Separated 4. Divorced 5. Widowed	☐
A.7	<u>Occupation</u>	1. Agriculture	☐
A.7.1	What was your Major occupation during lifetime?	2. Service 3. Business 4. Laborer 5. House hold / House maker 6. Others (specify _____)	☐

A.7.2	What is your <u>CURRENT OCCUPATION?</u>	1. Retired 2. Paid employment_____ pl. specify 3. Self-employed _____ pl. specify 4. Unemployed (health reason) 5. Unemployed (other reason)_____ 6. Keeping house/House-maker 7. Other (<i>specify</i> _____)	☐
A.8	<u>Income:</u> (Self reported average monthly income from all sources)		☐
A.8.1	<u>Family income</u> : (includes Self reported monthly average income of family members from all sources)	Pl.specify _____	
A8.2	<u>Do you have any Personal income?</u> (Personal Self reported average monthly income from all sources)	1--Yes 2--No If yes Please specify_____	☐
A8.3	<u>Is the personal income enough for a living?</u>	1--Yes 2--No	☐
A.8.4	<u>If the personal income is not enough for living whether you are partially or completely dependent on others?</u>	1--Fully 2--Partially	☐
A.8.5	<u>What is your means of subsistence? (This question has more than one response. Mark all the responses.)</u>	1-- Income from own current work 2--Income from past work, pension etc. 3--Supported by children residing in the house 4--Supported by children residing elsewhere 5--Supported by other relatives 6--Others (<i>specify</i>)_____	☐ ☐ ☐

A9	With whom do you live currently?	1--Alone 2--With spouse only 3--With spouse & children 4--With children only 5--With distant relative	
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B BRIEF HEALTH INFORMATION

B.1	How do you rate your physical health in the past month?	1--Very good 2--Good 3--Moderate 4--Bad 5--Very bad	☐
B.2	How do you rate your mental and emotional health in the past month?	1--Very good 2--Good 3--Moderate 4--Bad 5--Very bad	☐
B.3	Do you currently have any Chronic (Have >3 months duration) disease(s) or disorder(s)?	1--Yes 2--No <i>If YES, please specify:</i> _____	☐
B.4	Did you ever have any significant injuries that had an impact on your level of functioning?	1—Yes 2--No <i>If YES, please specify</i> _____	☐
B.5	Have you been hospitalized in the last year?	1—Yes 2—No	☐

		<i>If YES, please specify reason(s) and for how long?</i> 1. _____ 2. _____	
B.6	Are you taking any medication /treatment (either prescribed or over the counter)?	1—Yes 2--No <i>If YES, please specify major medications/ treatment</i> 1. _____ 2. _____	☐
B.7	Do you have any of the following habits?		
	B.7.1] Smoking	1. Never 2.Occasional 3. Regularly	☐
	B.7.2] Drinking	1. Never 2.Occasional 3. Regularly	☐
	B.7.3] Tobacco chewing	1. Never 2.Occasional 3. Regularly	☐
	B.7.4] Using Tobacco as paste	1. Never 2.Occasional 3. Regularly	☐
	B.7.5] Snuff	1. Never 2.Occasional 3. Regularly	☐
B.8	IN THE PAST MONTH, have you cut back (i.e. reduced) your usual activities or work because of your <i>Health condition</i>?	1--Yes 2--No If yes, how many days? _____	☐
B.9	IN THE PAST MONTH, have you been totally unable to carry out your usual activities or work because of your <i>health condition</i>?	1--Yes 2--No If yes, how many days? _____	☐
B.10	Any additional health information	_____ _____ _____	

C Difficulties in Sensory functions:

<u>C.1 VISION</u>			
C.1.1	Do you have difficulty seeing and recognizing a person you know from 20 feet away or who is on other side of the road?	1--Yes 2--No	☐
C.1.2	Do you have difficulty seeing and recognizing an object at arm's length?	1--Yes 2--No	☐
C.1.3	Do you use glasses?	1--Yes 2--No	☐
C.1.4	Do you have difficulty seeing, even if wearing glasses?	1--Without any difficulty 2--With some difficulty 3--With much difficulty 4—Unable to see at all	☐
<u>C.2 HEARING</u>			
C.2.1	Do you have difficulty hearing someone talking on the other side of the room in a normal voice?	1--Yes 2--No	☐
C.2.2	Do you have difficulty hearing what is said in a conversation with one other person in a quiet room?	1--Yes 2--No	☐
C.2.3	Do you use hearing aid?	1--Yes 2--No	☐
C.2.4	Do you have difficulty hearing, even if using a hearing aid?	1--Without any difficulty 2--With some difficulty 3--With much difficulty 4--Unable to hear at all	☐

C3 MENTAL FUNCTION

C.3.1	Do you have difficulty remembering or concentrating?	1--Without any difficulty 2--With some difficulty 3--With much difficulty 4—Unable to remember at all	☐
C3.2	During past month do you feel depressed due to some reason?	1--Yes 2--No	☐

C.4 COMMUNICATION

C.4.1	Do you have difficulty generally understanding what people say?	1--Yes 2--No	☐
C4.2	Do you have difficulty starting and maintaining a conversation?	1--Yes 2--No	☐
C.4.3	Do others generally have difficulty understanding you?	1--Yes 2--No	☐
C.4.5	Because of a physical, mental or emotional health condition, do you have difficulty communicating, (for example understanding others or others understanding you)?	1--Without any difficulty 2--With some difficulty 3--With much difficulty 4—Unable to communicate at all	☐

D) INTERPERSONAL INTERACTIONS & SOCIAL LIFE

D.1	Do you have difficulty dealing with people you do not know?	1--Yes 2—No	☐
D.2	Do you have difficulty maintaining a friendship?	1—Yes	☐

		2—No	
D.3	Do you have difficulty in getting along with people who are close to you?	1—Yes 2—No	☐
D.4	Do your family members consult you & respect your opinion about family matters?	1--Yes 2—No	☐
D.5	Do you feel lonely or left out by your children, relations & friends?	1--Yes 2—No	☐
D.6	In your present state of health, how much difficulty do you have participating in community gatherings, festivals or other local events, without assistance?	1--Without any difficulty 2--With some difficulty 3--With much difficulty 4—Unable to participate at all	☐
<u>E) MOBILITY</u>			
E.1	Do you have difficulty standing for long periods such as 30 minutes?	1--Without any difficulty 2--With some difficulty 3--With much difficulty 4—Unable to stand at all	☐
E.2	Do you have difficulty standing up from sitting down?	1--Without any difficulty 2--With some difficulty 3--With much difficulty 4—Unable to stand at all	☐
E.3	Can you travel yourself?	1—Yes 2—No	☐
<u>F) Awareness & Utilization of Social Security Schemes</u>			
F.1	Are you aware of any of government social security/pension schemes for elderly?	1—Yes 2—No <i>If YES, please specify the scheme_____</i>	☐
F.2	Are you eligible to get pension from the government?	1--Yes 2--No 3--Don't know	☐

F.3	Are you beneficiary of any of social security schemes for elderly?	1—Yes 2—No <i>If YES, please specify the scheme _____</i> <i>The amount you are receiving Rs</i> _____	☐
F.4	If Yes is it enough for your daily living?	1—Yes 2--No	☐
F.5	If you are not beneficiary, do you find any problem in getting the pension from the government even if you are eligible?	1—Yes 2—No <i>If YES, please specify _____</i>	☐
F.6	Are you covered by health insurance?	1—Yes through public insurance 2-- Yes through private insurance 3—Yes both public & private insurance 4—No 5—Don't know	☐
F.7	In your opinion in what ways the government can help you?	1—By giving old age pension. 2—By giving health insurance coverage. 3—Other please specify _____	☐
<u>G)Assistive devices & Assistance in ADL</u>			
G.1	Do you use any assistive device such as glasses, hearing aid, walking stick, wheelchair, dentures etc.?	1—Yes 2--No <i>If YES, please specify which aid/s you are using?</i> _____	☐
G.2	Does it help you?	1—Yes 2—No 3—Not Applicable	☐

G.3	Who financed you for the aids?	1-- Self 2--Children 3--Government 4--NGO 5--Others	☐
G.4	Reasons for not acquiring aids	1--Not available 2--Not affordable 3--Not necessary	☐
G.5	Do you have any person assisting you with your self-care, shopping or other daily activities?	1—Yes 2---No	☐
G.6	If YES, Can you please specify the person/s? (This question has multiple choices)	1--Spouse 2--Children 3--Other immediate family member 4--Paid help 5—Other	☐ ☐ ☐
G.7	In your opinion what is the attitude of the caregiver towards you? (Applies only to Family care givers.)	1—Helping you in activities of daily living with sympathy. 2— Helping you in activities of daily living out of social compulsion. 3—Other_____ please specify	☐

The Indian HAQ

Sr. No.	Activity of daily living (ADL): Are you able to:	Without any difficulty (0)	With some difficulty (1)	With much difficulty (2)	Unable to do (3)
1	Dress yourself, including tying sari/ salwar/dhoti/pyjama and doing buttons?				
2	Get in and out of bed?				
3	Lift a full cup or glass to your mouth?				
4	Walk outdoors on flat ground?				
5	Wash and dry your entire body?				
6	Squat in the toilet or sit cross-legged on the floor?				
7	Bend down to pick up clothing from the floor?				
8	Turn a tap on and off?				
9	Get in and out of auto rickshaw /manual rickshaw /car?				
10	Walk three kilometers?				
11	Shop in a vegetable market?				
12	Climb a flight of stairs?				