Disability Among Elderly by Gender in Rural Area of Vellore District, TamilNadu, India, 2008

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(MAE - FETP Scholar 2007-2008)

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CERTIFICATION

This is to certify that this dissertation entitled **"Disability Among Elderly by Gender in Rural Area of Vellore, TamilNadu, India, 2008"** submitted by Dr. A. Somasundaram in partial fulfillment of the requirements for the degree of Master of Applied Epidemiology is the original work done by him.

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Dr. Anavarathan Somasundaram

CONTENTS

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Abbreviations

ICMR	Indian Council of Medical Research
NPOP	National Policy for Older Persons
PSMS	Physical Self Maintenance Scale
MDG	Millennium development Goal
NIE	National Institute of Epidemiology
NRHM	National Rural Health Mission
PHC	Primary Health Centre
SLI	Standard of Living Index
WHO	World Health Organisation

SECTION: I
DISSERTATION

Disability among Elderly by Gender in Rural area of Vellore, TamilNadu, India, 2008

Abstract:

Introduction: In the context of ageing population, presence of disability increases the chances of an elderly to be economically and physically dependent on others. We estimated prevalence and identified factors associated with disability and patterns of health seeking among disabled elderly by gender in a rural area of Vellore district of Tamil Nadu.

Methods: We used a cluster sampling to selected villages from rural Vellore. We interviewed the elderly and collected data on regarding demographic, socio-economic and educational characteristics and health seeking behaviour among disabled elderly. We analysed men and women separately. We calculated the prevalence estimates and 95% confidence intervals (CI). We calculated frequency of health seeking pattern among disabled. We used step-wise multiple logistic regression analysis for calculating adjusted odds ratio (AOR) and 95% CI for identified risk factors for disability.

Results: Of the 808 men, 409 (50%, 95% CI: 46-56) had disability and 537 of the 932 (58%, 95% CI: 55-60) women had disability. Locomotor disability was the commonest disability in both genders (31% vs. 40%). Factors associated with disability include: age [AOR and 95% CI for men 1.5; 1.1-2.6; women 1.5; 1.1-2.0] and currently unemployed [AOR and 95% CI for men 1.4; 1.1-1.8; women 1.6; 1.2-2.0]. Among the disabled,

approximately 80% in both gender sought treatment for disability. The disabled preferred cheaper, disability oriented health services within their reach.

Conclusions: Prevalence of disability indicates gender-specific differences. Increasing age and not engaged in a job were more vulnerable to have disabilities.

Key Words: Elderly, Disability, Health seeking

Disability among Elderly by Gender in Rural area of Vellore, TamilNadu, India, 2008

1. Introduction

It is estimated that the population of elderly aged above 60 years will be 1.2 billion in 2025 and 2 billion by 2050[1]. Two thirds of the elderly o population lives in developing countries and the proportion will be 75% in 2025[2].In India, proportion of elderly 60 plus is 7.7% in 2001, of which majority live in rural areas.

Disability is one of the significant problems that makes elderly economically and physically dependent on others. The prevalence of extreme disability in the rural elderly for the country was 8 %[1]. Further, 31% of those who perceived themselves healthy were found to be suffering from physical disabilities such as visual or hearing problems[1]. Studies from Northern India estimated that 88% of the elderly had minimal to severe disabilities and 66% of elderly people were distressed physically, psychologically, or both[3].

In Vellore district of Tamil Nadu, the elderly population is 8.6% of whom 65% live in rural areas and 35% of that subset is below poverty line[4]. Elderly population is almost equal to that of under-fives (9%) but there is no special health programme to address the problem of their disabilities. Study conducted in Vellore in 1999 found that 9% needed assistance in physical activities and 55% had visual disability[6]. Gender specific issues are prevailing in elderly population also. The women are likely to live longer than men and

consequently more likely to be alone in old age[9]. Women are more likely to have more disability due to biological factors, socioeconomic conditions, and poorer access to nutritious food[9].

Prevention and care programmes are needed to improve quality of life of the elderly. The National policy for old persons was announced in the year 1999 but yet to be implemented at the primary health care level[9]. The Tenth plan of Tamil Nadu has mentioned about a community based geriatric rehabilitation services and it is at policy level[10]. In this context, data related to the health status of the aged are needed to guide policies and programme implementation. In rural areas of Vellore district, the factors associated with the disabilities in elderly and their health seeking behaviour are poorly understood. Hence, we conducted a survey with the primary objective to (1) estimate the prevalence of disability by gender among the elderly in rural area. The secondary objectives of the study were to (1) identify the factors associated with disability (2) identify the health seeking pattern among disabled.

2. Methods

Study population

We selected those who are sixty and above, by age, and usual residents in rural (as per the census of TamilNadu) areas of Vellore district for our study.

Study design

We conducted a cross sectional analytical study to estimate the proportion of elderly population with disability and their types. The analytical component was for measuring the factors associated with disability.

Sample size

Based on an earlier study in the area[7], we assumed a prevalence estimate of 55% with at least one disability in a target population of 3, 06,000. We also assumed a confidence coefficient of 95%, confidence interval of 5% and rate of homogeneity of 0.1. We allowed for a non-response of 10% and doubled the sample size to have estimates separately for males and females. Finally our sample size was 1740 individuals from 20 clusters.

Sampling procedure

We used cluster-sampling technique. We selected the villages by probability proportional to size. In these villages we started randomly at one direction from the entry point of the village. We selected one house by random number and we went to the nearest door on the

left till we found 20 eligible elderly who met our inclusion criteria. When we did not find adequate number of elderly in one village in that direction, we carried on to the next village in the same direction. Our survey stopped when we reached the cluster size.

Data collection

We interviewed the participants to collect data regarding demographic, socio-economic and educational characteristics and health seeking behaviour among disabled elderly. For disability assessment, we modified and used an instrument based on Lawton Brody's Physical Self Maintenance Scale (PSMS) [21]. We took each activity of daily living and assessed for disability of the individual components of PSMS. We used medical or clinical records and medications used for verifying the presence of disability

We recruited field investigators and trained them for data collection.

Operational definitions

Elderly is defined as individuals who are sixty and above (UN definition for aged in developing countries/ Indian context with evidence- National Policy for the Old Persons both males and females[16].

Usual resident refers to individuals in the above age group who is residing in the rural areas of Vellore district during the past 6 months

Disability refers to limitation of normal physical, mental, social activity of an individual. In our study we considered a participant to disabled if he or she had medical records or visible disability, or if he or she needed assistance in any of the activities of daily living.

Living alone refers to those who live without any of his family members or friends

Currently married means those who are living with spouse in the same household

Current employment refers to those during the survey were engaged in some form of income earning

Standards Of Living Index (SLI) : Factors taken into account were : House type, Toilet facility, fuel for cooking, Drinking water source , Separate cooking room , Ownership of house, land, livestock and durable goods. The participants were categorised as Low, Medium, and High income group based on the total scores Viz 0 to 14, 15 to 24 and 25+ respectively.

Economically dependent refers to those who are fully dependant on others including family members for money.

Data analysis

We analysed the data for men and women separately. We calculated the prevalence estimates and 95% confidence intervals (CI). We identified factors associated with disability by calculating prevalence odds ratios (POR) and 95% CI. We examined variables that we expected as confounding factors or effect modifiers in stratified analysis. Of the significant variables in the univariate analysis, we identified highly correlated variables and selected few variables. We constructed a model for logistic regression analysis by including those exposure variables in a step-wise manner and calculated adjusted OR (AOR) and 95% CI. We calculated frequency of health seeking behaviour among those with disability.

Quality assurance

We submitted the protocol for peer review and incorporated the comments of the peer-reviewers. We translated the questionnaire and data collection instrument in Tamil.

We did a back- translation of the questionnaire. Then we piloted the questionnaire in the study area. We trained the field investigators before the actual survey. The primary investigator validated 5% of the interviews through observation of field procedures of data collection for quality assurance and consistency. We double-entered and cleaned the data.

Protection of human subjects

We made the participants fully aware of the fact that their participation was voluntary and that they were free to withdraw at any time. We explained the benefits of the study and took written informed consent. We collected the identifiers in a separate sheet, did not write any identifiers on the data collection instrument and used a code instead to ensure confidentiality. We referred the elderly who had disabilities during our field survey and arranged medical interventions as required. The ethics committee of National Institute of Epidemiology, Chennai approved the project. We took permission from the Vellore district health administration to conduct the study.

3. Results

3.1. Characteristics of the study population

Our study included 808 men and 932 women. Of the 808 men, 60 % were below 70 years age. The proportion of illiterates was 42%. Majority (66%) engaged themselves in self-employment or as labourer. Half of them received support from children. Almost 70% belonged to low socioeconomic status and 40% had their own source of income. , 41% were economically dependent. (Table 1)

Of the 932 women, 65% were below the age of 70 years. Little over half of them were widowed. The proportion illiterate was almost two-times higher among women as compared to men (82%). About one third of them were engaged in some form work and 187 (20%) women had own source of income. Little over three quarter of them belonged to low socio economic status. Almost half of them were dependent on others for money, of which 59% were supported by children. Hindus constituted 95% both in men and women. The proportion belonging to Scheduled caste or tribe population was almost same between men and women (29% vs. 28%)

3.2. Prevalence of disability and Categories of disabilities (Table 2)

Of the 808 men, 409 (50%, 95% CI: 46 -56) had disability and 537 of the 932 (58%%, 95% CI: 55-60) women had disability. Of the different categories of disability, locomotor disability was prevalent in 247 (31%) men and 372 women (40%). The other major disability in both gender was visual disability (n=188, 23% in men vs. n=234, 25% in women). Among those who had disabilities little over a quarter of them in both gender had more than one disability.

According to items of the PSMS scale, difficulty in moving around was the most common self-rated disability in men (18%) and women (21%).

3. 3. Factors associated with disability (Table 3, 4)

On bivariate analysis of different socioeconomic characteristics, men aged above 70 years were found to have more disabilities compared to those below 70. Men who were engaged in some form of self-employment or worked as labourer had lesser disabilities. The prevalence of disability increased with increasing age (Chi square for trend=10.5; p=0.001). The extent to which the men were economically dependent showed a linear trend with disability (Chi square for trend= 3.4; p=0.06). On multivariate analysis, age ≥70 (AOR 1.4; 95% CI: 1.1-1.9) and currently unemployed (AOR 1.4; 95% CI: 1.0-1.9) were significantly associated with disability.

Women who were less than 70 years of age and lived alone had less disabilities as compared to women aged ≥ 70 years and those did not live alone. We observed dose-response relationship for prevalence of disability with age and level of economic dependence in women [Chi square for trend= 3.4 and 2.4; p=0.06 and 0.12 respectively]. In the multiple logistic regression analysis age > 70 (AOR 1.4; 95% CI: 1.0-1.9) and currently unemployed (AOR 1.5; 95% CI: 1.1-1.9) were important factors in women that were associated with disability.

3.4. Health seeking characteristics (Table 5)

Men who perceived disability was 51%. Proportion of men who suffered from disability more than six months was 90%. Of these, majority (80%) sought treatment. Among men who did not seek treatment close to 40% cited distance as the reason. Men sought

treatment in government facility more commonly than the private clinics. Most men (95%) preferred allopathy system. They preferred allopathy for reasons such as cheap (26%), nearness of health facility (26%) and the better care (36%). Men who were satisfied with the treatment were 10%. Of the unsatisfied men, 54% attributed to incomplete cure. Almost one third of the men spent more than Rs 300 per month for treatment.

Among women, 60% perceived that they were disabled and 90% of those with disability had been suffering for more than six months. Among women with disability, 416 (79%) sought treatment and those who did not seek treatment mainly expressed distance as the reason (23%). Among women who sought treatment 55% went to Government health facility. Most women (95%) preferred allopathic system and the reason cited by them was good care (35%). One third of the women spent an average of Rs 300 per month for their disability related treatment. More than half of women went to the health facility without any companion.

Discussion

We conducted a cross-sectional community based study among rural areas of Vellore district of Tamil Nadu. The prevalence of reported disability was higher among women as compared to men. Locomotor associated disability was the commonest disability in both the gender followed by visual disability. The main factors associated with disability were age and current unemployment in both men and women. Men and women do not differ much in their treatment seeking characteristics.

Our study showed a significant difference between men and women with respect to prevalence of disability. Women are more vulnerable to suffer from chronic diseases than men due the lesser social status women have in the in the society, health seeking pattern. However, in our study men and women sought treatment in almost equal proportion. On the other hand, we do not have information as to whether they went regularly or not as women may need assistance for availing health facility. More women live without spouse and more women live lonely are a disadvantage when compared to women. In the elderly women, the incidence of osteoarthritis rises 20-fold in women as compared to 10-fold in men [12]

Age more than 70 years was an independent predictor of disability in our study which is consistent with many other studies [13]. Biologically also as age increases even in healthy adults many physiologic functions are maintained in the basal resting state, but there is reduction in the homeostatic mechanisms and organ functioning[11]. And since age is not a modifiable factor intervention to identify the disability early can be contemplated. However, according to the National Policy for Old Age has envisaged specialized

strategy to reach the elders in their villages and also there is provision orienting medical professionals in the health care[16]

Current unemployment status was another independent predictor variable for disability in both men and women after adjustment for many of the socio-economic and demographic factors. It can be argued that those who are not disabled are engaged in employment in old age. First of all the socioeconomic status and the dependence for money and living alone necessitate earning for livelihood. The general assumption is that as one becomes old the likelihood of being employed is less. However, in the Indian context, studies suggest elderly work not only for their survival but also for supporting the families[14]. Further studies have indicated that being physically active is less prone for developing disability[20]. In addition, evidence suggests that lack of routine exercise is a significant predictor of ADL disability in elderly [13]. Hence, being employed a person keeps physically active and therefore, has decreases the chance of disability.

With respect to specific disabilities, in our study the prevalence of locomotor disability was common and more so in women and the next common disability found in men and women was visual disabilities. At the national level nearly half of the elderly have visual problems and almost similar proportion had visual disability according to a survey conducted in the same area. [1, 3, 5, 6, 10, 15]. Nearly 10 to 20% of elderly had disabilities in activities of daily living[1], [21].

We planned to use the PSMS self-rated version to assess the disability in a comprehensive manner. However, we could only use the items in the scale to assess disability in terms of individual activities of daily living. Many studies on the disability of elderly have used individual activities of daily living to know the disability prevalence.

However, we identified limitations in adapting the scale to our context to enable a community level health worker to easily assess the disability status.

Regarding the utilization of health services we observed that most of the elderly persons expressed that they sought treatment for their disability. However, the primary investigator observed through informal discussions that they went to the hospital not exclusively to seek treatment for disability Hence, we could not directly related the treatment seeking behaviour with that of disability. . However, the data suggest that disabled elderly need somebody to assist them in seeking health care since half of them are not accompanied by anyone. Therefore continued treatment and follow up is not taking place. One another factor for not seeking regular treatment is lack of transportation. Further, the waiting time in the Government settings where treatment is free of cost could be the reason why more than 90% of the disabled elderly reported that they had disabilities more than six months. It could be either due to delay in treatment or irregular treatment sought.

Our study has limitations. First, we used the PSMS self rated version for assessing the disability. The score was not very appropriate in our study settings and so we could not grade the disability but could only differentiate the presence or absence of disability in individual activities of daily living. So our study findings may not categorize the elderly on the grades of severity. However, the self-rated items in the PSMS scale measured disability in terms of activities of daily living. Our main aim was to measure the magnitude of the problem of disability among elderly. Hence, to that extent the PSMS items complemented the information obtained from the elderly on disability.

Secondly, we studied the health seeking behaviour only among those who were disabled. However, elderly seek treatment for disability while seeking healthcare for other health problems. Therefore we could not directly attribute the health seeking behaviour to disability per se.

Based on our findings; we conclude that the prevalence of disability in rural Vellore of Tamil Nadu indicates gender differences. Increasing age and not engaged in a job are more vulnerable to have disabilities. The disabled preferred cheaper, disability oriented health services within their reach. PSMS scale was not much useful in assessing the disability.

We proposed number of recommendations on the basis of the study. Firstly we recommend the government to develop gender specific programmes to diagnose and manage disability among elderly. There could be a provision made within the framework of National Policy on Older Persons. Secondly, we need to educate the elderly about availability of health services to treat preventable/ treatable disabilities. Thirdly, in a larger context, further studies are needed to develop a culturally sensitive and locally relevant screening tool for early identification and referral of disability among elderly

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Table 1: General Characteristics of the Elderly by Gender in Rural area of Vellore, TamilNadu, India, 2008

Characteristics	Men (n= 808)		Women (n= 932)	
	#	%	#	%
Age ≥70	323	40	326	35
Illiterate	470	58	168	18
Hindu follower	765	95	886	95
Belongs to Scheduled caste/ tribe	235	29	260	28
Not living with spouse	116	14	512	55
Living alone	56	7	187	20
Economically fully dependant	330	41	479	51
Currently unemployed	272	34	537	58
Has own source of income	326	60	180	19
Lowest score in Standards of Living Index*	249	31	223	24

* **Factors considered for SLI**: House type, Toilet facility, fuel for cooking, Drinking water source , Separate cooking room , Ownership of house, land, livestock and durable goods

Table 2: Prevalence of disability (reported as well as in activities of daily living) among the elderly by gender, in Rural area of Vellore district, TamilNadu, India, 2008

Disability		Men (n=808)		Women (n=932)	
		#	%	#	%
Self-reported disability	Locomotor	247	30.6	372	39.9
	Visual	188	23.3	234	25.1
	Hearing	57	7.1	75	8.0
	Mental	4	0.5	2	0.2
	Speech	2	0.2	0	0
	Incontinence	5	0.6	8	0.9
	Others *	17	2.1	16	1.7
Disability in activities of daily living †	Grooming and up-keeping the appearance	71	9	65	7
	Bathing	79	10	69	7
	Dressing	56	7	56	6
	Eating	47	6	51	6
	Moving around	146	18	197	21
	Toileting	26	3	28	3

* Include falls, disabilities due to systemic diseases such as Cardiovascular, respiratory, cancer, dental etc.

† According to the items of Physical Self Maintenance Scale

Table 3: Factors associated with Disability among the Elderly Men in Rural area of Vellore District, TamilNadu, India, 2008

Characteristics	Frequency of exposure				Prevalence Odds Ratio	95% Confidence Interval
	Disabled (n=399)		Not Disabled (n=409)			
	#	%	#	%		
Age ≥70	181	56	142	44	**1.5**	**1.2 – 2.1***
Illiterate	157	46	181	54	0.8	0.6 -1.1
Hindu follower	379	49	386	51	0.9	0.4 – 1.6
Scheduled caste/ tribe	114	49	121	51	0.9	0.7 – 1.2
Not Living with Spouse	63	54	53	46	1.2	0.8 -1.9
Living alone	30	55	26	46	1.2	0.6 – 2.1
Economically fully dependent	173	52	157	48	1.3	0.9 – 1.6
Currently unemployed	153	56	119	44	**1.5**	**1.1 -2.0†**
Has own source of income	250	52	232	48	1.2	0.9 – 1.6
Lowest score in Standard of living index	284	51	275	49	1.2	0.9 – 1.6

* In the multiple logistic regression analysis: Adjusted Odds Ratio 1.4 and 95% Confidence Interval: 1.1-1.9

† In the multiple logistic regression analysis: Adjusted Odds Ratio 1.4 and 95% Confidence Interval: 1.0-1.9

Table 4: Factors associated with Disability among the Elderly women in Rural area of Vellore District, TamilNadu, India, 2008

Characteristics	Frequency of exposure				Prevalence Odds Ratio	95% Confidence Interval
	Disabled (n=531)		Not Disabled (n=401)			
	#	%	#	%		
Age ≥70	204	63	122	37	**1.4**	**1.1 – 1.8***
Illiterate	432	56	332	44	0.9	0.6 – 1.2
Hindu follower	508	57	378	43	0.7	0.4 – 1.3
Scheduled caste/ tribe	145	56	115	44	0.9	0.7 – 1.2
Not Living with Spouse	251	59	169	41	0.8	0.6 – 1.0
Living alone	105	56	82	44	0.9	0.6 – 1.3
Economically fully dependent	283	59	196	41	1.1	0.9 – 1.5
Currently unemployed	332	62	205	38	**1.6**	**1.2 – 2.0†**
Has own source of income	436	58	316	42	1.2	0.8 – 1.7
Lowest score in Standard of living index	400	56	309	44	1.0	0.7 – 1.2

* In the multiple logistic regression analysis: Adjusted Odds Ratio 1.4 ; and 95% Confidence Interval: 1.0-1.9

† In the multiple logistic regression analysis: Adjusted Odds Ratio 1.5 and 95% Confidence Interval: 1.1-1.9

Table 5: Health seeking characteristics among Elderly with disability in Rural area, Vellore, TamilNadu, India, 2008

Health seeking characteristics	Men			Women		
	#	Total	%	#	Total	%
Perceives disability	394	772	51.0	527	883	59.6
Duration of disability > 6 months	355	397	89.4	478	530	90.2
Not sought treatment	90	394	22.8	112	528	21.8
Cited distance of the health center as the main reasons for not sought treatment	11	28	39.3	12	51	23.5
Treated in private health facility	114	312	36.5	149	423	35.2
Prefers non-allopathy treatment	17	308	5.5	19	420	4.5
Good care received is the main reason for preference	115	304	37.8	143	415	34.5
Satisfied with treatment	269	301	89.4	361	417	86.6
Unsatisfied since not cured	28	49	57.1	37	72	51.4
Expenditure per month for disability < Rs. 300 Rs	189	273	69.2	259	374	69.3
Goes alone to health facility	126	241	52.3	167	322	51.9

Annexure I

Informed Consent form

Disability among the Elderly by Gender in Rural area of Vellore, TamilNadu, India, 2008

I am ..... (field investigator) working for the Department of Public Health and Preventive medicine involved in a study conducted by National Institute of Epidemiology FETP Scholar organization.

I am doing research in rural area of Vellore District on the disabilities on the elderly people who are a vulnerable group. I am going to give you information and invite you to be part of this research. You do not have to decide today whether or not you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research.

This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask them of me or of another researcher

If you do not wish to answer any of the questions included in the survey, you may skip them and move on to the next. I will be asking information regarding household members, your age, income, social status etc. In the second part I will be asking questions to assess if you have any disability using standard assessment questionnaire. Lastly I will be asking questions relating to utilization of health services by you.

The information recorded is confidential, and no one else except Dr.A.Somasundaram will have access to your survey.

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact Dr.A.Somasundaram, in national institute of Epidemiology or you can contact him in his phone number 9443812848 or in his email drsomu01@yahoo.co.in

This proposal has been reviewed and approved by ICMR ethical committee which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find more about the committee, please contact 044 -26357156.

The knowledge that we get from this research will be shared with you and your community before it is made widely available to the public. Each participant will receive a summary of the results. There will also be small meetings in the community and these will be announced. Following the meetings, we will publish the results so that other interested people may learn from the research.

You do not have to take part in this research if you do not wish to do so, and choosing to participate will not affect your job or job-related evaluations in any way. You may stop participating in the interview at any time that you wish without your job being affected.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study and understand that I have the right to withdraw from the [discussion/interview] at any time without in any way affecting my medical care.

Print name of participant _____

Signature of participant_____ or Thumb print of participant

Day/month/year

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given.

Print name of witness_____

Signature of witness _____

Date _____

Day/month/year

I confirm that the individual has given consent freely.

Print name of researcher _____

Signature of researcher_____

Date _____

Day/month/year

A copy of this Informed Consent Form has been provided to the participant _____

Annexure II

Data collection Instrument (questionnaire)

Field survey of Prevalence of disability among Elderly in Rural area of Vellore, TamilNadu, India, 2008.

Part I

Personal Identifier form **(To be kept confidential)**
Door No.
Head of the Family:
Door No.
Village
Participant identifier No.
Name of the Participant
Street
Address

Part II **Data collection for different Variables**

We request you to kindly answer the following questions

S. No	Particulars	Responses						Co
1.	Gender	1. Male			2.Female			
2.	Please tell your age:	1. 60-64	2. 65-69	3. 70-74	4. 75-79	5. 80&+		
3.	Are you married and living with wife? (Marital status)	1. Unmarried	2 Married	3. Separated	4. Divorced	5. Widowed	6. Others	
4.	What have you studied?	1 Illiterate	2. Read& write	3. primary	4. High school	5. Graduate	6. PG	7. technical
5.	What is your occupation?	1. Unemployed	2. Agri self	3. non Agri self	4. Agri labour	5. non Agri labour	6. Others	
6.	What is your source of income?	1. Own income	2. Family income	3. Government	4. others			
7.	What is your religion?	1. Hindu	2. Christian	3. Muslim	4. Others			
8.	What is your Caste?	1. BC	2. MBC	3. SC	4. S.T	5. Others	6. Don't know	
9.	In which type of family do you live?	1. Joint Family	2. Nuclear family	3. Alone	4. others			
10.	With whom do you live?	1. Spouse	2. Children	3. Others	4. Alone			

11.	Do you depend on anybody for money?	**1. Fully Dependent**	**2. Partially Dependent**	**3. Independent**	
12.	Whom do you depend for money?	**1. Spouse**	**2. Children**	**3. Grandparents**	
		4. Friends	**5. Others**	**6. Independent**	
13.	Are you suffering from any illnesses? (ask for medical records if any)?				
14.	Do you feel that in any way you are not able to carry out your daily routines?	**1. Yes**	**2. No**		
15.	Have you ever been diagnosed or you are suffering from any disability?	**1. Yes**	**If, Specify**		
		2. No			
16.	If yes, how long you are suffering from this difficulty	**1. < 15 days**	**2. > 15 days < 6 months**	**3. > 6 months**	
17.	Did you seek any treatment for this?	**1. Yes**	**2. No**		
18.	If no why?	**1. Distance**	**2.No Transport**	**3. Waiting time**	**4. Home remedies**
		4. Fed up	**5. No Escort**	**6. No Money**	**7. Others**

19.	If Yes, where did you go for treatment?	**1. Private**	**2. PHC**	**3. GH**	**4. Medical college**	
		5. Rural Dispensary	**6. Quacks**	**7. Traditional Healer**	**----------**	
20.	Which system of medicine do you prefer?	1. Allopathy	2. Siddha	3. Homeopathy	4. Unani	
		5. Home remedies	6. Medical Shop	7. Others		
21.	Why do you prefer the particular system?	**1. Cheaper**	**2. Nearer**	**3. Transport**		
		4. Better care	**5.Family Doctor**	**6. Others**		
22.	Are you satisfied with the treatment you are taking?	1. Yes	2. No			
23.	If no, what are the reasons?	**1. Not Cured**	**2. No injection**	**3. Not Regularly going**		
24.	How much do you spend for the treatment of the disability?	1. < 100	2. 101 - 200	3.301 -400	4. 401 - 500	5.501-1000	6. > 1000
25.	With whom do you go to the health facility?	**1. Alone**	**2.Family Members**	**3. Others**		

Part III Standard of Living Index (SLI)

SLI classified as Low : 0-14 Medium : 15-24 High : 25+

House type	Pucca	**4**
	Semi Pucca	**2**
	Kachha	**0**
Toilet facility	Own	**4**
	Public	**2**
	No Facility	**0**
Main fuel for cooking	Petroleum Gas	**2**
	Kerosene	**1**
	Wood	**0**
Source of drinking water	Pipe/Hand Pump/Well	**2**
	Public Tap	**1**
	Others	**0**
Separate room for cooking	Yes	**1**
	No	**0**
Ownership of house	Yes	**1**
	No	**0**
Ownership of land	Yes	**1**
	No	**0**
Livestock Ownership	Yes	**1**
	No	**0**
Ownership for durable goods	Car/ Tractor	**4**
	Moped/Scooter/Motorcycle/ Telephone/Refrigerator/Color TV	**3**
	Bicycle/Electric Fan/ Radio/ Transistor/ Sewing Machine/Black&White TV/ Water Pipe/ Bullock Cart/Thresher	**2**
	Does Not Own	**0**

Part IV Physical Self Maintenance Scale (PSMS)

Circle the number to the right of the statement that best describes you in regards to the following activities.		
Do you eat?		
	a. without any help,	3
	b. with some help (cutting food, identifying for blind, etc.), or	2
	c. does someone feed you?	1
Do you dress and undress yourself		
	a. without any help (pick out clothes, dress and undress yourself),	3
	b. with some help (dressing or undressing), or	2
	c. does someone dress and undress you?	1
Do you take care of your own appearance, things like combing your hair, shaving (for men)		
	a. without help,	3
	b. with some help, or	2
	c. does someone do these things for your	1
Do you get around your house/apartment/room?		
	a. without help of any kind (except for cane),	3
	b. with some help (from a person, walker, crutches, chair), or	2
	c. don't get around your home at all unless someone moves you	1
Do you get in and out of bed		
	a. without help	3
	b. only with some help from a person or device, or	2
	c. don't get in and out of bed unless someone lifts you	1
Do you bathe- that is, take a bath, shower, or sponge bath		
	a. without any help,	3
	b. with some help from a person or device, or	2
	c. Only when someone bathes you (lifts you in and out, or bathes)	1
Do you have trouble getting to the bathroom on time?		
	a. yes	1
	b. no	2
About how often do you wet/soil yourself during the day or night		
	a. Never	4
	b. Less than once a week	3
	c. Once or twice a week	2
	d. Three times or more a week	1

Review of literature

The world is ageing. With people living longer and fewer children being born, the absolute number of older people is increasing. Today, worldwide, there are some 600 million persons aged 60 and over; this total will double by 2025 and will reach virtually two billion by 2050 when there will be more people aged 60 and over than children under the age of 15. The e vast majority of older persons will be living in developing countries which are often least prepared to meet the challenges of rapidly ageing societies.

With ageing comes an increased risk of developing chronic diseases and disability. In order to prepare for unprecedented population ageing now, it is of utmost importance that health systems in developing countries prepare to address consequences[1].

Women and Ageing

The elderly women have a different social profile. The impact of old age on women is different from that of men because of differences in their status and role in society. This is specially so because proportion of widows in 60+ age group is considerably higher than of widowers[2].

Ageing women make up a significant proportion of the world's population and their numbers are growing. The number of women age 60 and over will increase from about 336 million in 2000 to just over 1 billion in 2050. Women outnumber men in older age groups and this imbalance increases with age. Worldwide, there are some 123 women for every 100 men aged 60 and over[3].

More older women than older men are blind, largely because they live longer but also because of restricted access to treatment. Gender is a powerful determinant of mental health that interacts with such other factors as age, culture, social support, biology, and violence.

Marital status

In many studies particularly in India the proportion of men who live with their spouse is higher than the women. Here in India, women marry men who are much elder to them. We see in the society there are lots more women living without their spouse. There are persons who remained unmarried. Also there are elderly persons who are divorced, separated due to social conditions.

Many documents define marital status of elderly as currently living with spouse as currently married and others as currently unmarried. This describes the social part of the marital [7].

Occupation

Contrary to our assumptions that elderly retire during their old age, we see that many national surveys reveal that they are currently employed to support themselves as well as to support their family members. Equal proportion of men and women engage in some or other form of employment. This has indirectly kept them free from disability as they are physically active.

Economic dependency

Economic independence reveals the associated problem of day-to-day maintenance of livelihood of the elderly. The distribution of aged persons by state of economic independence is given in Statement 48 for each sex, separately for rural and urban sectors of India. 65 per cent of the aged had to depend on others for their day to- day maintenance. The situation was worse for elderly females. Among them, about 85 per cent were economically dependent

either partially or fully. Economically dependent aged, a majority (76 to 78 per cent) had to depend on their children and a sizable proportion (13 to 15 per cent) on their spouses for their economic support. Only 3 per cent were supported by their grandchildren and the rest had to depend on 'others', including non-relations.

Health Care

Elderly do not seek health care as much as adults and children due to various reasons. First of all they don't perceive it as a disease but attribute to natural ageing. Some physiologic and biologic changes occur but there is possibility for active ageing. With good physical activity and early care for sickness the ageing can be faced and quality of life is maintained. Many studies have documented that they do not seek health care for want of reach, transportation, money, escort, unnecessary waiting etc.

In many settings, ageing women do not have the same access to health care as do men or younger women. The barriers to primary health care faced by older people are often worse for older women — such as a lack of transportation, low literacy levels and a lack of money to pay for services and medications. Invariably, gender and age interact with socioeconomic status, race and ethnicity while high-quality, accessible reproductive health services remain critical to women's well-being, health services need to expand beyond a focus on reproductive biology and adjust to today's realities of an ageing population. [4].

Living alone

Elderly live alone due to social situations as well as forced family conditions. Widowhood, loss of children, migration of family members for want of employment etc. 57

per cent of the aged were living with their spouses and another 32 per cent were living without their spouses but with their children, while about 4 to 5 per cent were

Living with other relations and non-relations. The incidence of widowhood is higher among women because they live longer, and because in our society, men generally marry women younger than themselves. However, the living arrangement of the aged has not changed much over time since 1995-96, the proportion of the aged living alone remaining almost the same.

Physical Mobility

For the aged persons the ability to move is an important indicator of their physical condition of health and also indicates the degree of their dependence on others for movement and performing their daily routine[5].

Disability

Disability in the old age is measured by the researchers in different perspectives viz. the perception of disability, gross visible disability, assessment through activities of daily living, instrumental activities of daily living, presence of diagnosed medical conditions etc.

Elderly people often have multiple pathologies and reduced physiological reserve, and experience a restrictive environment. Multi-level assessment across physical, psychological, and social domains is therefore particularly necessary, and forms the basis for 'comprehensive geriatric assessment,[6]

Problems such as chronic obstructive pulmonary disease, osteoarthritis, cataracts, neurological disorders, and dental problems are important determinants of health status in elderly Indians[7]

Disability among elderly

The rapidly growing absolute and relative numbers of older people in both developed and developing countries mean that more and more people will be entering the age when risk of developing certain chronic and debilitating diseases is significantly higher. The obvious implications in terms of social security, pensions and health infrastructure for economies, especially developing ones, are not discussed in this analysis. Instead, we focus on the health status of the elderly, based on both objective as well as subjective information.

Ageing is a time of multiple illness and general disability. Along with the changes in the biological compositions, life style factors are also important for disorders and diseases in old age. Old age diseases are not always curable, implying a strain on financial as well a physical health infrastructure resources, both at the macro and micro levels. However, the feeling of well- being can still override actual physical discomforts if the surrounding environment is nurturing[8].

It is estimated that the population of elderly aged above 60 years will be 1.2 billion in 2025 and 2 billion by 2050[9]. Two thirds of the elderly o population lives in developing countries and the proportion will be 75% in 2025[10].

There are many scales to measure the disability used by different researchers. Activities of daily living assessment are the common tool used for measuring the prevalence of disability. The scales are either self rated or observer rated. They are categorized based on the predictive values. They are also based on the feasibility of use in the community settings.

Disability is one of the significant problems that makes elderly economically and physically dependent on others. The prevalence of extreme disability in the rural elderly for the country was 8 %.

Further, 31% of those who perceived themselves healthy were found to be suffering from physical disabilities such as visual or hearing problems[1]. Studies from Northern India estimated that 88% of the elderly had minimal to severe disabilities and 66% of elderly people were distressed physically, psychologically, or both[11].

In Vellore district of Tamil Nadu, the elderly population is 8.6% of whom 65% live in rural areas and 35% of that subset is below poverty line[12] Elderly population is almost equal to that of under-fives (9%) but there is no special health programme to address the problem of their disabilities. The women are likely to live longer than men and consequently more likely to be alone in old age[9]. Women are more likely to have more disability due to biological factors, socioeconomic conditions, and poorer access to nutritious food[13] .

Prevention and care programmes are needed to improve quality of life of the elderly. The National policy for old persons was announced in the year 1999 but yet to be implemented at the primary health care level. The Tenth plan of Tamil Nadu has mentioned about a community based geriatric rehabilitation services and it is at policy level[10]. In this context, data related to the health status of the aged are needed to guide policies and programme implementation.

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