Health problems in elderly living alone in the rural area of Sambalpur district,Orissa, India, 2008

By

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CERTIFICATION

This is to certify that this dissertation entitled **"Health problems in elderly living alone in the rural area of Sambalpur district, Orissa, India, 2008"** submitted by Dr. Lal Anant Kumar Sai Deo in partial fulfillment of the requirements for the degree of Master of Applied Epidemiology is the original work done by him.

Director,

National Institute of Epidemiology,

(ICMR), Chennai

Date: 30/11/08

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Dr. Lal Anant Kumar Sai Deo

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ABBREVIATIONS

AOR	Adjusted Odds Ratio
BPL	Below Poverty Line
CDC	Center for Disease Control and Prevention
CI	Confidence Interval
DALY	Disability Adjusted Life Years
ICMR	Indian Council of Medical Research
NIE	National Institute of Epidemiology
NRHM	National Rural Health Mission
POR	Prevalence Odds Ratio
SEA	South-East Asia

PART I: DISSERTATION

ABSTRACT

Health problems in elderly living alone in the rural area of Sambalpur district, Orissa, India, 2008

Introduction: Elderly are vulnerable to loneliness and social isolation, which lead to a decline in both physical and mental health. In the absence of such data in Sambalpur, Orissa, we conducted a survey with the objectives to (1) estimate the population of elderly living alone (2) estimate the health problems associated with elderly living alone.

Methods: We used a cluster sampling to select panchayats and selected participants randomly. We interviewed the participants with a pre-tested questionnaire to collect data regarding demographic, socio-economic and educational characteristics, living arrangements and perceived health symptoms among those who live alone. We calculated the prevalence estimates and 95% confidence intervals (CI). We used multiple logistic regression analysis for calculating adjusted odds ratio (AOR) and 95% CI for identified risk factors for perceived health symptoms with living alone.

Results: Of the 1480 surveyed, 297 were living alone (20%, 95% CI: 17—23). Age-specific estimates were higher among 60-74 (73%) as compared to other age groups. Prevalence of living alone was higher among females as compared to males (58% vs. 42%). Perceived neuro-psychiatric (AOR 2.4; 95% CI 1.6-3.5) and cardiovascular symptoms (AOR 1.4; 95% CI 1.0-1.8) were associated with elderly living alone. Only 398 (27%) regularly visited health institutions.

Conclusions: One fifth of the elderly live alone and was higher among females. Perceived neuro-psychiatric and cardio-vascular symptoms were associated with living alone. Health care utilization was very low among elderly.

Health problems in elderly living alone in the rural area of Sambalpur district, Orissa, India, 2008

1. Introduction

Old age can be broadly characterized by time-altered biological, physiological, psychological changes in an individual and health related capabilities and its implications for the usefulness of the individuals' role in the economy and the society.[1] Between 2006 and 2025 the number of people aged 60 and above will double from 650 million or 11% of global population, to 2 billion people representing 22% of the humanity. United Nations[2] estimated that by the year 2050 just over 80% of the world's older population will be living in the developing countries compared to 60% in 2005. According to the present indications, over half of the growth will be in Asia namely India and China contributing a significant proportion of this growing elderly.

In India according to national level estimates, 75% of elderly population live in rural areas, and 5% of the elderly poulation in rural India are living alone[3] Almost 3.5% of the elderly population might either live alone in the community or in old age home. In addition, data suggest that more elderly women live alone than men (4.1% versus 1.8%)[4] Further, it is estimated that 75% of the elderly men live with their spouses and only 30% of elderly women live with their spouses. According to recent estimates, Sambalpur district of Orissa has an elderly population of 8%[3] . However, in the published literature, no information is available at the district level on elderly people living alone and their health status.

Living arrangements among elderly may have a direct or indirect (via emotional well being) impact on health.[5] Studies have suggested that support and care of the elderly come mostly from the family. Changes in living arrangements, family structure and mode of retirement affect the old adversely. The fragmentation or migration of family members changes the dynamics of the family support as the number of the elderly living alone rises. Only 6% of the elderly in India live in a household where their immediate relatives are not present[6]

We need to identify subgroup of elderly with a high prevalence of key geriatric syndromes amenable to primary care interventions. Assessment of perceived health problem can help differentiate high risk elderly people who require timely evaluation and management.[7] Such assessment can be a practical strategy for improving the predictive value of more detailed screening and assessment procedures. This leads to a low cost method of geriatric risk stratification, which allows resources to be directed to the patients in greatest need.

Despite availability of health infrastructure and manpower in Sambalpur district, there is no specific programme for the elderly population and about their health problems. There is no data available on elderly population living alone. Therefore we conducted a study with the objectives to (1) estimate the population of elderly living alone (2) estimate the health problems associated with elderly living alone.

2. Methods

2.1 Study population

We included elderly above 60 years of age who are permanent residents of rural areas of Sambalpur district

2.2 Study design

We conducted a cross-sectional study

2.3 Sample size

Based on the national level estimates in India 5% as proportion of loneliness among elderly in an elderly population of 59,000 in rural area of Sambalpur with a confidence interval of 2%, 95% confidence coefficient, rate of homogeneity of 0.1 and a cluster size of 20. To account for non-response of 10%, we needed to include 1474 from 74 clusters.

2.4 Sampling procedure

We used cluster sampling technique. We defined cluster as a *panchayat* consisting of several villages of the block. We selected clusters according to probability proportionate to size from the rural areas of Sambalpur district. From each of the clusters, we started randomly at one direction from the entry point of the panchayat. We selected one house by random number and we went to the nearest door on the left till we found 20 eligible elderly.

2.5 Data collection

We interviewed the participants with a pre-tested questionnaire to collect data regarding demographic, socio-economic and educational characteristics, living arrangements and

perceived health symptoms among those who live alone. We recruited field health workers and supervisors and trained them for data collection. We conducted the survey from the month of June to November 2008.

2.6 Quality assurance

We pilot- tested the questionnaires in the nearby village and made changes according to the needs of local area. The trained field supervisors cross-checked 20% of the questionnaires to identify any discrepancies in data collection. The principal investigator validated 10% of data form for quality assurance and consistency. To minimize the bias, we referred to available records and to minimize the interviewer's bias, we involved the health workers from outside the study area for data collection.

2.7 Operational definitions

Perceived symptom – We defined the type of ailments as perceived and described by the participant and complained as health problem.

Perceived symptom complex – We grouped individual health symptoms under broad headings of Neuro-psychiatric, Locomotor, Sensory neural, Cardio vascular and Gastro-intestinal problems.(Table-2)

Exposure variable – We defined the potential determinants of the outcome (perceived symptom complex) as the exposure variables of our study.

Economically dependent- We defined economically dependent as those with no income of their own.

Low social status- We grouped those working on daily- wages or ever unemployed as belonging to low social status.

2.8 Data analysis

We calculated the prevalence of elderly living alone and 95% confidence interval (CI). We conducted a dose-response analysis for the prevalence of elderly living alone and age. We calculated the prevalence of health symptoms under four broad headings. We described perceived health symptoms as four possible outcomes grouped under broad headings of neuro-psychiatric, locomotor, sensory neural and cardiovascular symptoms. We calculated prevalence odds ratio (POR) and 95% CI for factors associated with the perceived health symptoms. We performed a multivariate logistic regression analysis to estimate the independent association of elderly living alone and the presence of perceived health symptoms. We also measured the dose-response by using the chi- square for trend for selected variables. We stratified to eliminate confounding factors and to identify effect modifiers. We examined the multi-collinearity for the variables that were significant in the univariate analysis. We selected statistically significant variables, which were not highly correlated with each other. We introduced these variables in the unconditional logistic regression model for assessing the independent association of the exposure variables with the outcome. We calculated adjusted odds ratio (AOR) and 95% CI.

We entered the data in Epi-info- 3.3.2 version (Center for disease control, Atlanta, USA) software for analysis.

2.9 Protection of human subjects

The interviewer provided the consent form in local language to the participants and allowed him/her to read the form for 10 - 15 minutes and in case the person was unable to

read, the contents of the form were read and made to understand to the participant. The interviewer cleared the doubts of the participants about the study. If the participant was illiterate, the interviewer read the consent form loudly before him/her explained about the study. If the participant agreed, then signature or thumb impression was taken from him/her. We gave one copy of consent form to the participant. We used coding for the participants to maintain confidentiality by coding of each interview schedule. We assured the participants that the procedure was harmless. After the completion of the interview each elderly was given health education and referred to the nearest health institution if required. The ethics committee of National Institute of Epidemiology (ICMR), Chennai approved the project.

3. Results

3.1 Characteristics of the study population

Our study population included 1480 elderly persons. Of the 1480, half of them were were males. (Table-1) Little over 40% of them (n=606) were in the age group 60 to 64 years and 36% (n=532) were 65 to 74 years and 17% belonged to 75 to 85 age group and rest of them were 85 years and above. Most of them were followers of hindu (n=1448, 98%). Little over half of the participants were from Scheduled caste and scheduled tribe.Almost 60% (n=867) were illiterates.

Majority of them (80%) were below the poverty line (BPL-monthly income below Rs.1500). Almost half of the participants belonged to low social status (i.e., employed as daily wage laborers or unemployed) Of the 1480 participants, 27% had their own source of income Almost one fifth of them were ever smokers and 16% of them had ever consumed alcohol. Sixty two percent had ever used tobacco. Close to 40% had (n=559) some form of physical disability

3.2 Prevalence of elderly living alone

The prevalence of elderly living alone in the rural area of Sambalpur was 20% (95% CI: 17—23). The calculated design effect of the study was 2.5. Age-specific estimates were higher among 60-74 as compared to other age groups. Prevalence of living alone was higher among females as compared to males (58% vs. 42%).

3.3 Prevalence of perceived symptoms

Of the reported complaints, difficulty in vision was present in three quarter of the participants (n=1142). Close to 50% (n=7707) complained of difficulty of hearing. Of the 1480, 11% reported to be physically dependent for performing the activities of daily living. Almost 40% reported that their mental condition was sub-normal.. Little over one third reported features suggestive of depressive symptoms. Some form of memory loss was admitted by 701(47%) elderly. Problems in sleep complained by 346(23%).

Majority of the participants (n=1247, 86%) perceived their health status to be unsatisfactory. Of the reported perceived individual health symptoms the predominant symptoms include; 77% with difficulty of vision54% with joint pain and 48% with reported memory loss (Table-2). Reported immobility among the participants was 187(13%) and 62% had difficulty in walking

3.4 Univariate analysis of factors associated with perceived symptoms

Of the four categories of perceived symptoms, we identified that living alone was significantly associated with neuro-psychiatric and cardio-vascular symptoms. The odds of having perceived neuro-psychiatric problem was higher among the elderly living alone as compared to those not living alone (POR2.5; 95% CI:1.7—3.6). In the stratified analysis we identified age ≥75 (POR 11; 95% CI:-2.6-46.3) and male gender (POR 4.5; 95% CI 2.3-8.7) to be effect modifiers. (Table 3)Elderly living alone was associated significantly with cardiovascular problem (POR 1.6; 95% CI 1.2-2.1). (Table 4)

3.5 Multivariate analysis of factors associated with perceived health symptoms

Unconditional logistic regression (Table 5) showed significant association of elderly living alone adjusted for age, sex, monthly income, economic dependency, education and social status as per employment with neuro psychiatric symptoms (AOR 2.4; 95%CI 1.6—3.5) and cardiovascular symptoms (AOR-1.4; 95%CI 1.0—1.8).

3.6 Health care seeking behaviour

Majority of the elderly (90%) preferred modern allopathic system for treatment. Only 398 (27%) regularly visited health institutions, rest avoided due to one or more reasons. Majority stated that they incurred Rs 100. towards expenditure per visit. Low-cost free medicines was preferred by 598(40%) and 3% suggested for special geriatric ward in the health institutions with specially trained staff. Almost half of them (48%) suggested that there should be mobile health unit for the elderly.

4. Discussion

In the rural parts of Sambalpur district of Orissa, one fifth of the elderly population live alone and was higher among females. Further we identified that living alone was associated with perceived neuro-psychiatric and cardio-vascular symptoms. Less than one third of them visited health facilities for any treatment. The results provide information for the health services to plan interventions for growing population of elderly in Sambalpur district.

The prevalence of elderly living alone was four fold higher than the national level estimates for rural areas.[3] The reasons could be the changing scenario of living arrangements in rural areas of Sambalpur. The district Sambalpur is getting urbanized and more industries are being set up, people are leaving villages searching for better paid jobs in the industries, leaving behind their ailing elderly ones on their own. A study in Jamaica, West Indies in other part of world also finds urban migration of the younger members of the family in search of higher education nd income leaves the elderly prone to loneliness and lack of support.[9]

Among elderly living alone majority were females. Other studies from India also suggest the same finding [11].The life expectancy of females is higher than that of males, the incident of widowhood adds to the vulnerability of elderly females. According to 1991 census, half of the elderly females in India were widowed, divorced or separated compared to elderly males. This together with economic dependency makes them vulnerable to health problems[5].

We have identified that those with neuro-psychiatric and cardiovascular symptoms were living alone than those did not live alone. Psychological factors assume

greater significance in the functional profile as factors like loneliness, bereavement and depression become more prevalent.[9] A population based prospective study in Japan also finds depression ranks among the most significant health problem in elderly. Among the oldest old , depression is frequent and highly persistent .[12] A study done in Turkey suggests that as the proportion of elderly people increases, the risk of diseases like diabetes mellitus, coronary heart diseases, cerebro-vascular diseases and osteoporosis rises.[13] This limits the activities of elderly in the community and decreases their quality of life and their ability to take care of themselves without assistance .

Majority in the study participants preferred allopathic system of treatment. This is similar to studies from other parts of the country [15]. But most of the elderly do not avail health facilities. The reason that elderly considered their health problem attributed to the ageing process not due to any disease. Further with advanced age and restricted mobility they need assistance to reach up to the health facilities added to it is the economic dependence. A study done in the rural areas of Meerut also finds that the major needs of the elderly were economic dependence, sad attitude towards life, loneliness, distant government health facilities, ignorance and lack of awareness about geriatric welfare sources.[14]

Our study has two main limitations. First, our findings are based on elderly person living alone and we have not considered the elderly living with the family but there was feeling of loneliness. However, we are not aware of any Indian version of 'loneliness' scale. Hence, we felt that categorizing the population based on a simple question of whether lives alone or not could be considered a practical and simple strategy and can be used for a needs assessment by health services. Secondly, the recall bias in terms of

reporting perceived symptoms. However, we have minimized the same by verifying with the available medical records.

Based on the findings, we conclude that a considerable proportion of the elderly population was living alone in the rural area of Sambalpur district in Orissa. It was more prevalent among women. Elderly living alone added to existing health problems like cardio-vascular and neuro-psychiatric symptoms and can affect the activities of daily living and quality of life. The elderly despite of having several health problems, majority did not avail or avoided seeking health care facilities. Health care within reach was the present felt need of the elderly.

Our study points to opportunities to improve the use of the government health services for elderly population in Sambalpur district. First, we need to plan interventions to provide gender-specific geriatric care. We propose strengthening of geriatric services by dedicated indoor and outdoor services in different health care delivery system. Further, we recommend educating the elderly about the services available in the government health facilities.

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Tables and Figures

Table 1 Base-line characteristics of elderly (n=1480) by status of living alone, Rural Sambalpur, Orissa, India, 2008

Characteristics		Living alone (n=297)		Not living alone (n=1183)	
		#	%	#	%
Socio-demographic	Age 60-74 years	216	73	922	78
	Male gender	124	42	622	53
	Hindu follower	290	98	1158	98
	Scheduled caste and tribes	169	57	583	49
	Ever married	289	97	1178	100
	Literate	113	38	500	42
Economic	Monthly income >Rs .1500	22	7	910	77
	Owns the residence	247	83	1156	98
	Living in a pucca house	27	9	130	11
	Owns a property	148	50	828	70
	Currently working	78	26	317	27
	Ever unemployed or engaged in daily wages	182	61	551	47
	Economically dependent	230	77	855	72
Behavioural	Ever smoker	65	22	225	19
	Ever alchocolic	58	20	177	15
	Ever used tobacco products	206	69	705	60
	Physically dependent for daily chores	36	12	119	10

Table 2: Prevalence of perceived symptoms of elderly (n=1480), Sambalpur, Orissa, India, 2008

Perceived symptoms		Living alone (n=297)		Not living alone (n=1183)	
		#	%	#	%
Locomotor	Joint pain	185	62	611	52
	Immobility	113	38	74	6
	Tremor of limbs	139	47	533	45
Neuro-psychiatric	Memory problem	169	57	532	45
	Subnormal mental condition	129	43	451	38
	Problem in sleep	96	32	250	21
	Sadness, lethargy, depression	160	54	333	28
Sensory-neural	Problem in vision	227	76	915	77
	Problem in hearing	143	48	564	48
	Vertigo	113	38	454	38
Cardiovascular	Breathlessness	25	8	120	10
	Palpitation	93	31	333	28
Gastrointestinal	Constipation	64	22	247	21
	Acid-peptic disorder/gastro intestinal problems	23	8	105	9

Table 3: Stratified analysis of selected characteristics for the association between living alone and perceived neuro-psychiatric symptoms, Sambalpur, Orissa, 2008

Characteristic	Strata	Prevalence of living alone						Stratum-specific prevalence odds ratio (95% confidence interval)
		With perceived neuro-psychiatric symptoms (n=1150)			Without perceived neuro-psychiatric symptoms (n=330)			
		#	Total	%	#	Total	%	
Age	>75	79	283	28	2	59	3	11.0 (2.6-46.3)[1]
	≤75	183	867	21	33	271	12	1.9 (1.3-2.9)
Gender	Male	114	561	20	10	185	5	4.5 (2.3-8.7)[2]
	Female	148	589	25	25	145	17	1.6 (1.0-2.6)
Monthly income (Rupees)	≥ 1500	22	236	9	0	59	0	Undefined
	< 1500	240	914	26	35	271	13	2.4 (1.6-3.5)
Economic dependent status[3]	Dependent	205	835	25	25	250	10	2.9 (1.9-2.6)
	Not dependent	57	315	18	10	80	13	1.5 (0.8-3.2)
Educational status	Literate	99	470	21	14	143	10	2.5 (1.4-4.5)
	Illiterate	163	680	24	21	187	11	2.5 (1.5-4.0)
Social status[4]	High	96	556	17	19	191	10	1.9 (1.1-3.2)
	Low	166	594	28	16	139	12	2.9 (1.7-5.1)

[1] Effect modifier
[2] Effect modifier
[3] Economic dependent is one with no own source of income
[4] Low social status is either working on daily wages or ever unemployed

Table 4: Stratified analysis of selected characteristics for the association between living alone and perceived cardiovascular symptoms, Sambalpur, Orissa, 2008

Characteristics	Strata	Prevalence of living alone						Stratum-specific prevalence odds ratio (95% confidence interval)
		With perceived cardiovascular symptoms (n=436)			Without perceived cardiovascular problem symptoms (n=1044)			
		#	Total	%	#	Total	%	
Age	>75	35	120	29	46	222	21	1.6 (0.9-2.6)
	≤75	76	316	24	140	822	17	1.5 (1.1-2.1)
Gender	Male	44	210	21	80	536	15	1.5 (1.0-2.3)
	Female	67	226	30	106	508	21	1.6 (1.1-2.3)
Monthly income (Rupees)	≥ 1500	10	59	17	12	808	5	3.8 (1.6-9.3)
	< 1500	101	93	27	174	236	22	1.3 (1.0-1.8)
Economic dependent status[5]	Dependent	22	377	24	45	302	15	1.8 (0.9-8.1)
	Not dependent	89	343	26	141	742	19	1.5 (1.1-2.0)
Educational status	Literate	32	154	21	81	459	18	1.2 (0.8-1.9)
	Illiterate	79	282	28	105	585	18	1.8 (1.3-2.5)
Social status[6]	High	38	198	19	77	549	14	1.5 (0.9-2.2)
	Low	73	238	31	109	495	22	1.6 (1.1-2.2)

[5] Economic dependent is one with no own source of income
[6] Low social status is either working on daily wages or ever unemployed

Table 5: Logistic regression analysis of factors associated with perceived neuro-psychiatric and cardio-vascular symptoms among elderly, Sambalpur, Orissa, 2008

Characteristics	Perceived neuro-psychiatric symptoms		Perceived cardio-vascular symptoms	
	Crude odds ratio	Adjusted odds ratio (95% confidence interval)	Crude odds ratio	Adjusted odds ratio (95% confidence interval)
Living alone	2.5	2.4 (1.6-3.5)	1.6	1.4 (1.0-1.8)
Age > 75	1.5	1.4 (1.0-1.9)	1.4	1.4 (1.1-1.8)
Female gender	1.3	1.3 (1.0-1.7)	1.1	0.9 (0.7-1.7)
Monthly income ≤ 1500 rupees	0.8	0.8 (0.6-1.1)	1.9	1.9 (1.4-2.6)
Economically dependent[7]	0.8	0.7 (0.5-0.9)	1.5	1.2 (0.9-1.6)
Illiterate	1.1	0.9 (0.7-1.2)	1.4	1.4 (1.1-1.8)
Low social status[8]	1.5	1.4 (1.1-1.8)	1.3	1.1 (0.9-1.4)

[7] Economic dependent is one with no own source of income
[8] Low social status is either working on daily wages or ever unemployed

Annexure 1: Informed consent form

Consent form for
Health problems in elderly living alone in the rural area of Sambalpur district, Orissa, India, 2008

Information sheet:

Namaskar,

We, _____ and _____ are working at _____. Dr Lal Anant Kumar Sai Deo, is working at Chief district medical office, Sambalpur is doing research on **"factors associated with health problems in elderly living alone in rural area of Sambalpur district, Orissa 2008".** We are part of his research team. The National institute of epidemiology, Chennai and District health administration, Sambalpur are also working with us.

We are doing this research as the population of elderly persons is increasing very fast, it is essential for us and for you also to know about their health problems which are quite different from those of younger ones. The days are changing so as the society in which we are living. Every body is running after money, trying to earn more to lead a comparatively better life .Today people don't have no time for their own children and family so it is unthinkable of the condition of elderly persons living with them. Further miserable condition is of those elderly persons who are living alone for whatever reasons there may be. No body to look after their needs feeling lonely, passing through extremes of physical and psychological conditions in the fag end of their life. These conditions invariably lead to health problems and enhance physical decline.

We are looking into the factors that are particularly associated with causing health problems in the elderly persons living alone and leading a lonely life. By knowing these factors, the health department will take care of these factors to reduce sufferings of the elderly living alone.

To find out what are the factors we need to ask questions to you (the participant). We would like to confidentially ask these few questions to you once. We will also collect data from the records of health worker, Panchayat office and voters list. Answering these questions will take about 30 minutes of your time. We will interview the participant at his/ her residence.

Taking part in this survey is voluntary. No compensation will be paid to you for taking part in this study. You can choose not to take part. You can choose not to answer a specific question. You can also stop answering these questions at any time without having to provide a reason. This will not affect your rights to health care in the local primary health center, or any other rights. There is no specific benefit for you if you take part in the survey. However, taking part in the survey may be of benefit to the community, as it may help us to understand the problem, its causes and potential solutions. When the results will have been analyzed, a report will be shared with all the participants by focus group discussion at the village and the local health officials, so that the right measures can be taken to reduce health problems and suffering among the elderly population.

The information we will collect in this survey will remain between you and the investigation team. We will not write your name on this form. We will only use a code instead. Only the principal investigator will know the key to this code. It will be kept under lock and key. It will be destroyed after the project is over.

If you wish to find out more about this survey before taking part, you can ask me all the questions you want. You can also contact Dr. Lal Anant Kumar Sai Deo, MAE-FETP Scholar (VIIth Cohort) and principal investigator of this survey attached to the National Institute of Epidemiology, Chennai, at the Chief district medical office, Sambalpur who will be happy to give you more details. You can also call to his mobile phone (9937888066) or office phone (06632533746). You can also contact the authority of National institute of epidemiology (ICMR), Chennai over phone (044 – 26821156) to know more about the research. If you are agreeing to take part, we will go ahead now.

Annexure-2: Certificate of consent

Health problems in elderly living alone in the rural area of Sambalpur district, Orissa, India, 2008

Certificate of consent:

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 asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this study and understand that I have the right to withdraw from the study at any time without in any way it affecting my further medical care.

Name of the study participant

Signature/thumb impression of the study participant

Name of the witness

Signature/thumb impression of the witness

Name of the interviewer

Signature of the interviewer
Date:

(If the participant is illiterate, literate witness selected by the participant must sign. The witness should not have any relationship with the research team.)

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

Name of the witness

Signature/thumb impression of the witness

Name of the interviewer

Signature of the interviewer
Date:

(One copy to be given to the participant after signature of participant, witness and investigator)

Annexure 3: Identifier form

Identifiers collection form

(To ensure confidentiality, identifiers will not be collected in the paper questionnaires but on this separate identifier log to be kept under lock and key)

ID NUMBER: ☐☐ ☐☐ ☐☐☐☐

(Put this ID No in every page of data collection form)

Date: _____/ _____/ _____

Name of the Participant: _____

(write in capital letter)

Name of the father: _____

Detail address

Name of the village _____ Name of the Sub-center _____

Name of the Gram panchayat:_____

Number of investigation team:_____

Name of Investigator: 1 _____, Health worker (Male)

2. _____, Health worker (Female)

(Detach the this Identifier collection from the data collection after putting the ID No in every page of data collection form)

Annexure 4: Data collection instrument

Health problems in elderly living alone in the rural area of Sambalpur district, Orissa, India, 2008"

ID No : ☐☐ ☐☐☐☐ ☐☐☐☐	Team No___
Date__ /___ /____	

I will ask you few question about your family and also about you

Questionnaire items		Options	Coding
1.What is the respondent's sex	1-Male	2.Female	
2. What is your age			
3.What is your Religion	1.Hindu	2.Muslim	
	3.Christian	4.Other	
4.What is your caste	1.SC	2.ST	
	3.OBC	4.General	
5.What is your marital status	1.Unmarried	2.Married	
	3.Separated	4.Divorced	
	5.Widow		
6.Do you own the house	1.Yes	2.No	
7.What is the type of house	1.Kuccha(made of wood & mud)	2.Pucca(made of brick & cement)	
8.What is your self rated financial status	1.Surplus	2.Just enough	
	3.Rather difficult	4.Very difficult	
9.What is your average monthly income in Rupees	1.Below 500	2.500 to 1499	
	3.1500 to 2999	4.3000 and above	
10.Do you own a property	1. Yes	2.No	
11.Are you still working or retired	1.Working	2.Retired	
12.What is your occupation Present/Past	1. Business	2.Government service	
	3.Non Govt. service	4.Agricultural land owner	
	5.Agricultural worker	6.Non Agri. Worker	
	7.Not gainfully employed	8.Unemployed	
13.What is your main source of income	1.Pension	2.Own source	
	3.Dependent	4.Other source	
	5.No income	6.Dont know	
14.Are you economically dependent	1.Fully dependent	2.Partially dependent	
	3.Independent		

Questionnaire items		Options	Coding
15.Who else is staying with you	1.Spouse & children	2.Spouse	
	3.Children	4.Relative	
	5.Other	5.None	
16.Who is head of the family	1.Self	2.Spouse	
	2.Children	4.Relative	
17.Are you living alone	1.Yes	2.No	
18. What is the cause of your living alone	1.Unmarried & living alone	2.Death of spouse	
	3.Separated	4.Divorced	
	5.Family conflict	6.Migration of family members	
	7.Change of place	8.Chronic disease	
	9.Low economic status	10.Residence isolated	
19.Since when you are living alone	_____		
20.Do you feel lonely	1.Yes	2.No	
21.Do your family members/children interact with you who do not stay with you	1.Regular	2.Occassional	
	3.Never	4.No children	
22.What is the mode of interaction	1.Personal visit	2.Over Telephone	
	3.Letter	4.More than one means	
23.Do you miss them	1.Yes	2.No	
24.Do you smoke	1.Never	2.Occassionaly	
	3.Regularly	4.Smoked in past	
25.Do you consume alcoholic drinks	1.Never	2.Occassionally	
	3.Regularly	4.In past	
26.Do you chew tobacco	1.Never	2.Occassional	
	3.Regularly	4.In past	
27.What is your self assessment of health status	1.Good	2.Satisfactory	
	3.Poor		
28.Are you currently sick	1.Yes	2.No	
29.Are you currently bed ridden	1.Yes	2.No	
30.Did you have any sickness last one week or one month	1.Yes	2.No	
31.Did you suffer from illness during last one year	1.Yes	2.No	
32.Can you read news paper &Books	1.Yes	2.No	
33.Do you watch TV	1.Yes	2.No	
34.Can you see and recognize things properly	1.Yes	2.No	
35.Do you have difficulty in vision	1.Suffer from poor vision	2.Using aids for vision	
	3.Blind	4.No problem	
36.Do you have difficulty in hearing	1.Difficulty in hearing	2.Using hearing Aids	
	3.No problem		
37.Do you walk everyday	1.Yes	2.No	

Questionnaire items		Options	Coding
38.How much distance you walk daily			
39.Do you have difficulty in walking	1.No problem	2.Walk with difficulty	
	3.Using Aids	4.Needs support	
40.Do you require help for your daily function like brushing, toilet ,dressing ,eating ,walking etc.	1.Yes	2.No	
41.Do you suffer from any loss of limb			
42.Can you chew and taste the food	1.Yes	2.No	
	3.Use dental Prosthesis		
43.Are you in a good mood enjoying	1.Excellent	2.Good	
	3.Not so good	4.Very bad	
44.Do you take part in social activities	1.Never	2.Occassionally	
	3.Always		
45.Are you feeling satisfied	1.Much	2.Not much	
	3.Not at all		
46.Are you feeling angry	1.Yes	2.No	
47.Are you worried	1.yes	2.No	
48.Do you suspect somebody that he can inflict harm on you	1.Yes	2.No	
49.Do you hear external voices in your ear saying something or seeing things	1.Yes	2.No	
50.Do you have sleep problems	1.Yes	2.No	
51.Do you feel sad & lacking in energy, emptiness	1.Yes	2.No	
52.How many times you visited to health institution last week	1.Never	2.Once	
	3.More than once		
53.What type of treatment you prefer	1.Modern Allopathy	2.Homeopathy	
	3.Ayurvedic	4.Traditional	
	5.Does not believe in any system		
54.What is the cost of each visit in Rupees	1Below 10	2.10 to 50	
	3.50 to 100	4.Above 100	
55.Who bears the expenditure of treatment	1.Free from Govt.	2.Own	
	3.Children	4.Relatives	
	5. Other source		
56.Are you taking medicines regularly	1.Yes	2.No	
57.What ailment now you are suffering since one week or more	1.Headache	2.Head reeling	
	3.Sleep problem	4.Sadness/lethargic/ depression	
	5.Heart palpitation	6.Difficulty in breathing	
	7.Diarrhoea	8.Constipation	
	10.Problem in urination	12.Joint pain	
	13.Skin disease	14.Others	
	15.More than one		
58.Were you diagnosed earlier for some disease	1.Rheumatism/osteoarthritis	2.High blood pressure	
	3.Diabetes	4.Asthma	
	5.Cardiac problems	6.Paralysis	
	7.Depression/neurosis	8.Cancer	
	9.Others	10.More than one	

Questionnaire items		Options	Coding
59.What will be beneficial for your health problems	1.Home based nursing care	2.Transport facility for health care	
	3.Low cost/free medicines for diseases	4.Special Geriatric ward in health institutions with specially trained staff	
	5. Mobile periodical heath check up unit for elderly.		

Annexure 5: Additional tables

TableA: Odds of elderly living alone according to increasing gradients of Age, Sambalpur , Orissa, India, 2008

	Elderly living alone (n=297)		Elderly not living alone (n=1183)			
Age group	#	%	#	%	**Odds ratio**	**Chi^2**
60-64	96	32	510	43	1 (Reference)	9.476
65-74	120	40.4	412	35	1.55	
75-84	57	19.2	183	16	1.65	
85 and above	24	8.1	73	6	1.75	

Table B: Odds of elderly living alone according to increasing gradients of Education, Sambalpur , Orissa, India, 2008

Educational status	Elderly living alone (n=297)		Elderly not living alone (n=1183)		Odds ratio	Chi^2
	#	%	#	%		
6th-10th	20	7	81	5	1 (Reference)	1.152
1st-5th	93	31	419	35	0.90	
Illiterate	184	62	683	58	1.09	

Table C: Odds of elderly living alone according to increasing gradients of Monthly income, Sambalpur , Orissa, India, 2008.

	Elderly living alone (n=297)		Elderly not living alone (n=1183)			
Monthly income	#	%	#	%	Odds ratio	Chi^2
3000& Above	1	.3	41	3.5	1 (Reference)	41.311
1500-2999	21	7.1	232	19.6	3.71	
500-1499	45	15.2	238	20.1	7.75	
Below 500	230	77.4	672	56.8	14.03	

Table D : Prevalence of health symptom complex in elderly according to selected characteristics, cross sectional study, Sambalpur, Orissa, India, 2008

Characteristics		Frequency of exposure					
		Among those with health problems		Among those without health problems		Prevalence odds ratio	95% confidence interval
		#	%	#	%		
Locomotor problems	Living alone	280	77	67	23	1.2	0.9—1.6
	Poverty	911	77	274	23	1.6	**1.2—2.2**
	Age	270	79	72	21	1.3	0.9—1.8
	Education	662	76	205	24	1.2	0.9—1.5
	Sex	569	77	165	23	1.3	**1.0—1.7**
	Economic dependence	838	77	247	23	1.6	**1.2—2.0**
	Social status	546	74	187	26	0.9	0.8—1.2
Sensory-neural problem	Living alone	252	85	45	15	0.9	0.6—1.3
	Poverty	1010	85	175	15	0.8	0.5—1.1
	Age	321	94	21	6	3.0	**1.9—4.8**
	Education	767	88	100	12	1.7	**1.2—2.2**
	Sex	635	86	99	14	1.1	0.8—1.5
	Economic dependence	927	85	158	15	0.9	0.6—1.2
	Social status	625	85	108	15	0.9	0.7—1.2

Table E:Logistic regression analysis of selected characteristics

	Characteristic	Crude OR	Adjusted OR	95% confidence interval
Loco motor problem	Living alone	1.2	1.1	0.8—1.5
	Poverty	1.6	1.6	**1.2—2.2**
	Age	1.3	1.4	**1.0—1.8**
	Education	1.2	1.1	0.9—1.5
	Sex	1.3	1.2	0.9—1.6
	Economic dependence	1.6	1.4	**1.0—1.8**
	Social status	0.9	0.8	0.7—1.0
Sensory-neural problem	Living alone	0.9	0.9	0.6—1.3
	Poverty	0.8	0.9	0.67—1.5
	Age	3.0	3.0	**1.9—4.9**
	Education	1.7	1.8	**1.3—2.5**
	Sex	1.1	0.9	0.7—1.4
	Economic dependence	0.9	0.7	0.5--1.1
	Social status	0.9	0.8	0.6—1.1

PART II: LITERATURE REVIEW

Health problems among elderly living alone

Introduction

Old Age

The results relating to the condition and health care of persons aged 60 and above, to be referred to as the aged persons,

Demographic Burden:

It is found from the survey results that of the estimated 66.4 million aged persons in the country, about 75 per cent were residing in the rural areas and remaining 25 per cent in the urban areas. Their magnitude, either in terms of number or share to total population is found to rise gradually The proportion of aged persons, which was 6.5 per cent (43.5 million) in 1981 (as per Population Census), grew to 6.8 per cent (61.4 million) in 1991 and 7.4 per cent (76.6 million) in 2001.

Sex Ratio:

According to Population Census, the sex ratio among the aged that was 960 females per 1000 males during 1981, dropped to 930 during 1991 and thereafter increased to 1029 in 2001. The NSS estimates, on the other hand, showed a rising trend between the period 1993-94 and 1995-96, but declined between 1995-96 and 2004. The trend is also somewhat different in the rural and urban areas. In the rural areas, the sex ratio among the aged declined during the period 1987-88 to 1993-94 and rose in 1995-96, has again declined in 2004 . In urban areas, the sex ratio increased during 1987-88 to 1993-94 and then

dropped in 1995-96 and 2004.

Aged Persons and their Surviving Sons and Daughters:

The extended family system is the dominant form of family in India. In such a system, many of the aged, particularly those who have lost their spouses, depend on their children for maintenance. child. In other words, about 6 per cent of the aged had no surviving children on the date of survey. The rural-urban differences appeared to be nil with respect to the proportion of the elderly who had surviving children. However, it was marginally higher for males than for females. The results also indicate that since 1995-96, there has been a little improvement in regard to the proportion of aged persons having their children alive. 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 Nevertheless, 4 to 5 per cent were still living alone. An interesting gender-differential is observed in the living arrangement among the elderly and the pattern is similar in both rural and urban areas. In terms of proportions, more males than females lived with their spouses. On the other hand, compared to the males, proportionately more females lived either alone or with their surviving children or lived with other relations and non-relations. widowhood is higher among women because they live longer, and because in our society, men generally marry women younger than themselves.

The living arrangement

The living arrangement of the aged has not changed much over time since 1995-96. It can be seen that more than 15 per cent of females in rural areas of Tamil Nadu and Uttaranchal. and urban areas of Chhattisgarh were 'living alone' during the survey period.

Economic Independence:

The living arrangement describes how the physical well-being of the aged is taken care of in the family in our society. Similarly, the

economic independence reveals the associated problem of day-to-day maintenance of livelihood of the elderly. The per 1000 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. As many as 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. In this respect, males were much better off -- 46 to 49 per cent among them did not fully depend on others for their livelihood. Compared to 1995-96, the results of the present survey indicate that the economic condition of the elderly has improved in general and more in the urban sector, both among men and among women. Economic Support Providers: As has been observed, a large proportion of the elderly are economically dependent on others for their livelihood. It is, therefore, pertinent to know who are the persons providing economic support to these elderly. Such information was collected in the survey and the results are presented in Statement 49 separately for each sex and sector at the all- India level. It is seen that of the economically dependent aged, a majority (about 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 (6 per cent) had to depend on 'others', including non-relations. Between the years 1995-96 and 2004, the distribution of the aged who were economically dependent changed in respect of the category of persons supporting them for their livelihood. The patterns of change are not similar for males and females, but are so for the elderly living in the rural and urban areas. In the intersurvey periods, the proportion of the aged males and females depending on their children for economic support has increased in both rural and urban areas and more so in the rural areas. On the other hand, the proportion of those depending on their spouse decreased, in general, among the males but marginally increased among the aged females in the urban areas.

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. The proportion (number per 1000) of the aged persons who cannot move around and are confined to their home or who cannot move at all and are confined to bed is given in Statement 51. The results are given for each sex and sector at all-India level. About 8 per cent of the aged persons were either confined to their home or bed. The proportion of aged persons reporting confinement to their home or bed was found to increase with the age for all categories, being as high as 27 for persons aged 80 or more. The incidence of confinement is seen to be higher among women than among men in both rural and urban areas

Own Perception Own Perception about Health:

The perception about one's

health is an important factor in getting an idea about a person's actual health condition. A person may be considered as being in good health if he feels so. This is the criterion generally used in NSS surveys to classify an individual as sick or otherwise. Moreover, it reflects the mental health of that person. With this idea, information about the perception of aged persons about their current health was collected in the survey. It can be seen that as high as 55 to 63 per cent of the aged with sickness felt that they were in a good or fair condition of health. The proportion among the aged without sickness was 77 to 78 per cent. Possibly they considered their sickness as a problem of ageing. Among the aged, the men seemed to be feeling that they had a better health condition even with sickness compared to the aged women. As against this, about 13 to 17 per cent of the aged who were not even sick considered themselves as having a 'poor' state of health.(**Government of India National sample survey organization 60th round 2004)**

The ageing of population is an obvious as well as more glaring consequence of the process of demographic transition. Being ahead in the process, the developed regions of the world have already experienced its consequences and the developing world is well on its way to face a similar outcome. Though the proportion of elderly (defined in terms of those aged 60 and above in a population) seems to be relatively low in some of the developing countries, they have more elderly persons in absolute numbers because of their large population base. The recent emphasis on studies pertaining to elderly in the developing world is attributed to their increasing numbers and deteriorating living conditions.

Eroding traditional family system

While their increasing numbers is attributed to demographic transition (low fertility and higher life expectancy), their deteriorating conditions are the result of the fast eroding traditional family system in the wake of rapid modernization, urbanization and migration. The projected increase in both the absolute and relative size of the elderly population in many third world countries is a subject of growing concern for social policy makers and pension economists. This is true for countries such as India and Sri Lanka[1]

Old age can be broadly characterized by time-altered changes in an individual's biological psychological and health related capabilities and its implications for the consequent changes in the individuals' role in the economy and the society. **(Rudy, Raja and Misra1995)** The demographic change in the form of the increasing proportion of the elderly in the population is a result of decline in the mortality rate accompanied with improvement in child survival and an increase in life expectancy which is projected to be 67 years in 2011to2016 for males and 69 years for females .It is estimated that by the

year 2050 the majority of the elderly people worldwide will reside in the developing countries. Between 2006 and 2025 the number of people aged 60 and above will double from 650 million or 11% of global population, to 2 billion people representing 22% of the humanity. By then there will be older people than children 14 and under. The number of persons aged 80 and older is growing especially fast. By 2050, they will constitute 20% of the world's older population. Developing countries are ageing at a much faster rate than developed countries. By 2050, just over 80% of the world's older population will be living in the developing countries compared to 60% in 2005. **(- P population Aging 2006. New York: United Nations Department of Economic and SocialAffairs.PopulationDivision,2006(http://www.un.org/esa/population/publications/ageing/ageing 2006.htm).**

According to the present indications, most of this growth will take place in developing countries and over half of it will be in Asia namely India and China contributing a significant proportion of this growing elderly. The 2001 census has shown that elderly population of India accounted for 77 million. While the elderly constituted only 24 million in 1961 it increased to 43 million in 1981 and to 57 million in 1991.The proportion of elderly person in the population of India rose from 5.63% in 1961 to 6.58% in 1991 and to7.5% in 2001.The growth rate among different cohorts of elderly such as 60plus,70plus and 80plus during the decade (1991-2001) was much higher than the general population growth rate of 2 percent per annum during that period. . **(Irudaya, Rajan, Sarma and Misra 2003).**

In India according to national level estimates, 75% of elderly population live in rural areas, 5% of the elderly population in rural India are living alone **(NSS 60th Round Jan-**

Jun 2004). Almost 3.5% of the elderly population might live alone either as an inmate of old age home or otherwise, , living arrangements may have a direct or indirect(via emotional well being) impact on health. (Indrani Gupta, Deepa Shankar). In addition, data suggest that more elderly women live alone than men 4.1% versus 1.8% **(Life of elderly in India-Prashad- Shyam).** Further, it is estimated that 75% of the elderly men live with their spouses and only 30% of elderly women live with their spouses.

According to recent estimates, Orissa has 8% of total elderly population living alone (NSSO64th round). Sambalpur district of Orissa has an elderly population of 8%. However, in the published literature, no information is available at the district level on elderly people living alone and their health status.

In Asian countries support and care of the elderly come mostly from the family, prevalence of widowhood and divorce rate have different impact on the living arrangements of elderly(Martel and carriere2003).Changes in living arrangements, family structure and mode of retirement affect the old adversely (D'Souza, 1989).

The fragmentation or migration of family members changes the dynamics of the family support as the number of the elderly living alone rises. Only 6% of the elderly in India live in a household where their immediate relatives are not present. . **(Irudaya Rajan and Kumar 2003).**

Study on living arrangement and health status of elderly in rural China, June(2002) has constructed a health index by taking into account the physical, mental and social well-being variables. The study has shown that aged people who live alone have the poorest health status compared to others. Study on health status and health risk among elderly according to living conditions shows elderly living alone are more prone to

environmental and nutritional risk factors and also their health status is poorer than elderly living with family.(**Gender Differential in Health and Treatment Seeking Among Elderly in India: Does Living Condition Matters? Sutapa Agrawal**).

Perceived health problem-

The way a person rates his or her own health is a summary measure of health status that predicts functional decline, health care use and mortality. Those reporting impaired health are more likely to report geriatric conditions. A single

item health status measure that is easily assessed can help identify a subgroup of patients with a high prevalence of key geriatric syndromes amenable to primary care interventions. This economy of measurement makes perceived health assessment suitable as a brief screen for unrecognized problems. Such assessment can be a practical strategy for improving the predictive value of more detailed screening and assessment procedures. This leads to a low cost method of geriatric risk stratification which allows resources to be directed to the patients in greatest need. Main outcome measures are – self reported geriatric syndromes, perceived memory loss, depressions, falls, GI symptoms, incontinence, weight loss, problem in walking and problem in activities of daily living etc. Assessment of perceived health problem can help differentiate high risk elderly people who require timely evaluation and management. **(Perceived health & geriatric risk stratification, Daniel Bluestein, Caroline M Rulfedge**). Perceived health is a summary indicator of variation in health and functional status based on complex set of factors including past events, behavior, family history, physical activity etc.Poor health is independent predictor of functional decline, use of health care and mortality. It has been shown as to be a better predictor of mortality than medical history diagnosed.(Mossey JM

Shapiro E, Self rated health A predictor of mortality among elderly Am. J. of Public health 1982-72(8) :800-8).

Isolation and loneliness

The solitude that results from living alone may be compounded by the effects of poor mobility it makes difficult to get to meet others outside the house, added to this may be the isolating effects of deafness and poor vision. It does not require much imagination to conceive the depth of loneliness experienced by a single, deaf, visually impaired old person who is too immobile to get out of his own . Another adverse social factor is comparative poverty , whether on pension benefit or not a retired elderly person may have a low income which may be adequate for meeting daily living cost, not to deal with major health challenges.

The population of the world is expected to increase to 9.4 billion by 2050 from its current size of 6.1 billion. During the same fifty years, the percentage of the elderly population - those aged 60 or above - is expected to increase from 9.9 to 20.7. For the first time, the number of elderly is expected to surpass the number of children under 14 years of age by the year 2050. Interestingly among the elderly, it is the oldest old (those aged 80 or above), which will increase most rapidly over time. Their number is projected to reach a level of 320 million in 2050. Among the various regions of the world, the proportion of the elderly in Europe (excluding Eastern Europe) is as high as 20 percent; Southern Europe, it is already the highest in the world, namely 21.5%.Though in Asia as a whole the elderly constitutes only 9% of the population there are significant variations between different regions of Asia, Eastern Asia leading with 11 % as of 2000. Currently while one in ten Chinese is elderly, only one in 12 Indians is elderly. These percentages are expected to reach 26 and 21 for China and India in 2050. [1]

The age structure of the population is changing as the proportion of elderly persons is increasing. With ongoing economic development and the consequent changes in family structure and relationships, the elderly lose their relevance and significance in their own households and face problems. The problems of the aged differ not only between nations but also within nations and between groups. Being old, weak, hard of hearing, partially blind and immobile, the aged seldom move out or approach for help and consultation. They are superficially respected, cared for and heard. Due to the above problems, the aged feel lonely and this has detrimental inß uence on health of the aged (both sexes); and also, loneliness leads to progressive spontaneousreduction of daily milieu and social requirements, as well as an impression of dependence that cannot be easily overcome.i In most developed countries, there are about 65 men for every 100 women in the age group of 65 years and above according to WHO. In India, there are 108 men

for every 100 women; and in Chandigarh, it is 116 men for every 100 women RGI of age 65 years and above. In most developed and developing countries, many more women than men are widowed as per WHO. A high percentage of widows (49.3%) and widowers (25.7%) were observed in the present study. It is due to the fact that the longevity of females is more than that of males. Of the total 361 elderly persons studied, 86.1% had one or more health-related problems, whereas Ray observed the same in 81.3% and Saraswati in 72.4% in Chandigarh among the aged persons. There were on an average 2 health-related complaints per aged ill

person, whereas Padda and Parvan reported the corresponding Þ gure as 2.55 and 2.62 respectively. The leading health-related problems observed were those of the circulatory system (hypertension, heart attack), musculoskeletal system, connective tissue, eye

(cataract); diabetes mellitus; those of respiratory system and skin. About 18.6% aged persons had cataract inone or both the eyesIt was found that loneliness mean score was significantly higherin females as compared to males.

Widowhood and loneliness

. Studies by Gangrade and Singh have reported more loneliness in females than in males. Contributory factors for higher loneliness in females were loss of companion, illiteracy, less social contacts and maltreatment by the family members. It has been found that loneliness was signiÞ cantly higher among the aged who were living alone as compared to those who were living with spouse, or couples who were living with the family. It is due to the fact that though the widows/widowers live with their families, they are maltreated/ignored in their own homes. Being single, without the life partner, it is not possible for them to discuss their personal problems with others. Gurudas observed that men who lived with their spouse had more satisfaction with life than those who had lost their wife. Jindal found that isolation was more prevalent among the widowers than among the married ones. Loneliness

was also signiÞ cantly lower in the aged couples who were living with the family as compared to the widow/widowers who were living with the family. Nayyar observed that aged living with the family were happier than those living alone. Therefore, it can be seen that the aged who

were living alone or those who were widows/widowers were experiencing more loneliness than the aged who were living with their life partner. Keeping in view the magnitude of health-related problems and loneliness in Chandigarh, it is recommended that geriatric health services should be strengthened by dedicated indoor and outdoor

services in different health-care delivery systems with more social and recreational facilities for them.[2]

Most elderly live in rural areas. Many live in various types of extended families commonly called joint families. Since most of India practices patrilocal residence, it is common to find the elderly living with sons and daughters-in-law and grand children. In land owning households, it is in fact the sons who often continue to stay with the parents and work on the family farm. Of course, in the poorest classes where survival depends upon wage labor, joint families are less common. Since a majority of people in India work in the unorganized sector, for many of the elderly, there is no formal age of retirement. They continue to work in the fields or on their businesses or in their homes until they are unable. According to 1991 Census around 61% of the male elderly continue to work beyond the age of 60. See Figure 4 for IHDS estimates.

Historically, the elderly in joint families have always been accorded a high degree of respect and command a greater degree of authority than the younger members of the household. Many major decisions of the household are either taken by the elderly, in most cases men, or in consultation with them. This remains the case in many joint families even today. To the extent that this is true, they are relatively well cared for within the means afforded by the family. In fact gender studies have often explored how daughters-in-law serve the family and are in charge of much of the care giving, often to their own detriment. However, following rapid industrialization and urbanization, the younger generation (especially males) is increasingly leaving home in search of employment. Some remit money home to support the family left behind, while others just move away taking their wives and children, leaving the elderly parents behind. In the latter case, the well being of the elderly is put at risk because

there are few, if any, extra-familial institutional supports. Sometimes the parent left behind may be a widow or widower.

The marital status of the elderly varies remarkably by gender. Most elderly men are currently married, whereas most elderly women are widows. This results from a combination of cultural and biological factors. In most parts of India women marry men much older than them and this combined with the fact that women have greater longevity leads to many women outliving their husbands by several years. In addition, in many parts of India it is acceptable by tradition for men to remarry after being widowed, but this is proscribed for most widows. Unfortunately, the lives of elderly widows are often quite sad. They form the largest proportion of the elderly who are destitute. Through their life course most women are dependent on men -first their father, then their husband, and finally their son. A woman's well being after she loses her husband depends on whether the son or other children support her[3]

Widowhood

The proportion of widowhood increases, as they grow older. According to NFHS-2 (1998-99), in the age group of 60 and above, fifty eight percent are widowed among the total female population. According to Census 1991, among females in the age group of 60 and above, more than 65 percent of widows are in the states of Goa, Assam, Karnataka, West Bengal, Andhra Pradesh and Tamil Nadu.

Among widows surveyed 78 percent are in the age group of 50 and above. And 22 percent belongs to the reproductive age group of 15-49 years (NFHS-2). Of those widows

surveyed, 78 percent are illiterate, close to 14 percent have completed up to primary education and 7 percent have studied up to secondary school and only 1.4 percent of them have studied beyond secondary school. It is seen that more than three-fifths are illiterate in the age group of 20 to 49 years.

Illiteracy

Mostly common in the age group 60 and above, among rural residents, among tribals and those with low standard of living (85%-90%). Illiteracy rates for widows are highest in Bihar (91 percent), Rajasthan (90 percent), Uttar Pradesh (87 percent) and Orissa (86 percent). Around 80% of the households in rural areas do not have toilet facilities and live in semi *pucca* and *kachha* houses. On an average, in India 80% of widows live in households with low or moderate standard of living. However, in some states like Tripura, Orissa, Nagaland and Bihar more than 90% are living with lower economic status (low to moderate standard of living condition).

Female headship is likely to appear at a later stage of life cycle, compared with male headship. It may relatively be short lived because of its late occurrence and also the headship may be transferred to a male member on remarriage. Female headships are higher in urban areas than their rural counterpart (46% and 37%). Females head 40 percent of the households and the remaining are headed by are males in those households where at least one widow lives. As was observed, only 9 percent males in the age group of 60 and above are heading the households, while 40 percent of females of the same age group are heading in the households. However, the proportion of female-headed

households are higher than male-headed households in the states like Meghalaya (more than 70 percent) and Goa, Kerala, Sikkim, Nagaland and Mizoram (more than 60 percent).

Only 6.5 percent of widows live alone. More widows in rural areas (7.2%) than urban areas (4.8%) are living alone. Mean household size of male-headed household of *dejure* population where widow inhabits is 6.4 persons whereas; in the female-headed households the mean household size is only 4.4 persons.

Important finding from the study indicate that higher proportion (48%) of households headed by females belongs to low standard of living group. This implies that female-headed households are by and large poorer than male-headed households. In female-headed households one in seven widows live alone.(4)

- Widowhood is not a comfortable situation in life. From the living arrangement it is observed that nearly 7 percent of widows are living alone. Being a women, in the kind of social culture we are in, living alone is a task for which there is a strong need for better coverage of social security.

- Female headship of household is one indication, but it has to consider the of poverty along with headship and more particularly widows in early age. Both the

government and the philanthropic organization can give a focus for empowering them.

- The NSSO data reveals that 13 percent of elderly widows (60+) work outside. Though it is encouraging to know that women even at this age are still working, but they are involved in occupation which requires excessive physical labour. Special programme may be targeted to them.

- Old widows also report that they work though they are in older ages (80+). This clearly shows that they may be forced/ compelled to work. An insight to this is desirable.

- The NFHS-2 shows that widows are more prone to prevalence of tuberculosis and asthma. This shows that special coverage of health schemes may be made for them, more so in the high prevalent states, in particular.

- Living arrangement analysis has revealed that majority of the widows live with one of the family members, but 10 percent are staying alone. They needs a special care particularly those in advance age.

Changes in society and economy. Instead of strong family ties in India, the position of a large no. of old persons has become vulnerable due to which they cannot take for granted that their children will be able to look after them Industrialization,

urbanization, education and exposure to western life styles are bringing changes in values and life style. Much higher costs of bringing up and educating children and pressures for gratification of their desires affect transfer of share of income for the care of parents. Due to shortage of space in urban areas with higher rents, migrants prefer to leave heir parents in their native places. Changing roles and expectations of women, their concepts of privacy and space, desire not be encumbered by caring responsibilities of old people for long periods. The contribution of elderly populations to demographic figures is increasing day by day. Increasing problems of health care, psycho-social, personal and socio-economic factors associated with the elderly further overwhelms this.

Old age- the vulnerable

Old age is not a disease in itself, but the elderly are vulnerable to long term diseases of insidious onset such as cardiovascular illness, CVA, cancers, diabetes, musculoskeletal and mental illnesses. They have multiple symptoms due to decline in the functioning of various body functions. The Govt. should also effectively plan Health Care Services for the elderly and prepare a feasible implementation design relevant to country needs. The problems associated with the aging of the population are that of absence of facilities for medical treatment and of providing economic and social support hence information on morbidity profile of this population is essential for planning its health care facilities. changes in society and economy. Instead of strong family ties in India, the position of a large no. of old persons has become vulnerable due to which they cannot take for granted that their children will be able to look after them. Industrialization,

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