Original Research Article

Morbidity and functional ability in the elderly: a cross sectional study in a rural population of Manipur

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ABSTRACT

Background: Elderly in India suffers from both communicable and non-communicable diseases, also functional independence reduces due to physiological changes. This study aims to determine the pattern of morbidity, functional ability in activities of daily living (ADL), instrumental activities of daily living (IADL) and to assess any factors associated with ADL.

Methods: A cross-sectional study was conducted from May 2017 to April 2019 among 420 elderly aged 60 years and above residing in rural areas of Wangoi in Manipur. Probability proportional to size (PPS) sampling method was used to select 6 villages out of 28 villages. A pre-tested interview schedule was used as study tool. Data were analysed using SPSS IBM statistics version 21 using mean, SD, proportion, chi-squared (χ^2) test, univariate and multivariate logistic regression analysis were performed taking p value<0.05 as statistically significant.

Results: Some form of morbidity was reported by 49.1% of the respondents. The prevalence of dependent according to ADL was 8.1%. According to IADL score, 97.6% female and 46% male have limitation. Elder age group, female gender, living without spouse, illiterate were significantly associated with dependency according to ADL. In adjusted analysis, every unit increased in age, risk of being dependent increases significantly by 10% [AOR=1.10 (1.04-1.16)].

Conclusions: Almost half of respondents had some form of morbidity. Only a few (4.5%) were dependent according to ADL. A more comprehensive study covering different communities using various laboratory investigations can be conducted in Manipur.

Keywords: Elderly, Functional ability, Manipur, Morbidity, Rural

INTRODUCTION

Population ageing is one of the most significant trends in 21st century. It is generally expressed as older individuals forming large share of the older population. Two main factors of population ageing are increase in life expectancy and decline in fertility rates. Life expectancy at birth is projected to continue to rise in the coming decades in all major regions of the world. Being a vast country, India may face the problems differently at rural and urban part. In India, the elderly people suffer from dual medical problems, i.e. both communicable as well as non-communicable diseases. It is estimated that one out of two elderly in India suffers from at least one chronic disease which requires life-long medication.[1,2]

Functional independence in elderly also reduces due to physiological changes due to ageing process like reduce muscle strength, bone density, bladder capacity and pulmonary ventilation thus leading to lowering of quality of life of the elderly.[3] Also with rapid change in social scenario of Indian society, like less pooling of resources, an entire generation of female working, a large number of couples now opt to have kids late into their marriage or

not to have them at all, citing professional commitments and the emerging prevalence of nuclear family set-ups in India in recent years the elderly people are likely to be exposed to not only physical but psychological, emotional and financial insecurity in the years to come.[4]

Few published data are available on this topic particularly regarding the rural population of Manipur so this was taken up. The objectives were to determine the pattern of morbidity, functional ability in activities of daily living (ADL), Instrumental activities of daily living (IADL) and to assess any factors associated with morbidity and ADL with selected socio-demographic variables of interest among the elderly residing in a rural setting in Manipur, North-east India.

METHODS

This cross-sectional study was carried out from May 2017 to April 2019 among elderly population aged 60 years and above residing in rural areas of Wangoi in Manipur. Wangoi having a population of 64,539 according to census 2011, is the sub-division of Community Development Block Imphal-West II consisting of 28 villages under Imphal-West district.[5] Those who refused to give consent and who cannot be contacted on two consecutive visits were excluded from the study. Sample size was calculated based on a prevalence of morbidity of 2.3% from a study conducted in Assam.[6] At 95% confidence level with an absolute allowable error of 2 and after adding 10% for non-responders the calculated number was 278. By taking design effect of 1.5, the estimated sample size was found to be 417, rounded off to 420. The study area comprises of 28 villages out of which 6 villages were selected using Probability proportional to size (PPS) sampling method. From each selected village, 70 elderly people were selected. Selection of the first respondent was done by spinning a bottle in the middle of the village. The household it points to after stopping was selected and any eligible elderly residing in that household was included. Then the next household was defined as the one whose front door is closest to the one visited. This was continued until 70 elderly were selected. If there were more than one elderly living together in a household, both were included. If 70 elderly individuals cannot be covered from a village, a direction (North, South, East and West) was chosen by lottery method, the adjacent village in the selected direction which was not included in the 6 selected villages was chosen for completing the study units.

A pre-tested interview schedule was used for data collection. The questionnaire consists of Socio-demographic profile, Health problems, Katz index activities of daily living (ADL), Lawton instrumental activities of daily living (IADL).[7,8] Katz index ADL and Lawton IADL were validated questionnaire developed by the Hartford University of Geriatric Nursing for functional ability in daily living and to assess independent living skills.

Operational definitions

Morbidity: In this study, presence of morbidity include any individual having any chronic diseases- (i) which was documented by any physicians, (ii) by evaluating their drug box, (iii) self-reported or (iv) by screening method.

Katz index of independence in activities of daily living (Katz ADL): This is an instrument used to assess functional status as a measurement of the individual's ability to perform activities of daily living independently. The Index ranks adequacy of performance in the six functions of bathing, dressing, toileting, transferring, continence, and feeding. The respondents are given a score of 1 or 0 for independence in each of the six functions. A score of 5-6 indicates full function, 3-4 indicates moderate impairment, and 2 or less indicates severe functional impairment.[7]

Lawton instrumental activities of daily living scale (IADL): There are 8 domains of function measured namely, ability to use telephone, shopping, food preparation, housekeeping, laundry, mode of transport, responsibility for own medications, ability to handle finances. Women were scored on all 8 areas of function; men were not scored in the domains of food preparation, housekeeping, laundering. Individuals are scored according to their highest level of functioning in that category. A summary score ranges from 0 (low function, dependent) to 8 (high function, independent) for women and 0 through 5 for men to avoid potential gender bias.[8]

Statistical analysis

Collected data were entered in Microsoft Excel software and data cleansing were performed. Data were analyzed using SPSS IBM Statistics version 21 (Chicago, IL, USA). Descriptive statistics like Mean, SD, percentages and proportion were employed. Analytical statistics such as Chi-squared (χ^2) test, univariate and multivariate logistic regression were performed to test the association between the ADL and selected socio-demographic profile of the elderly. A probability value <0.05 was considered as statistically significant.

Ethical issues

Approval was taken from the Institutional Ethics Committee, vide letter no. Ac/06/IEC/JNIMS/2017(PGT) dated 26th Aug 2017 for study Protocol No. 59(15) PGT 2017 before the start of research. Written informed consent was taken from the study subjects. All identifiers were removed and a unique code number without name was given to maintain the confidentiality.

RESULTS

A total number of 454 elderly were approached, out of which, 420 were interviewed and 34 of them could not be contacted even after two visits or refused to give consent.

Hence, the response rate was 92.5%. The age of the respondents ranges from 60-90 years. The mean (±SD) age was 68.2±6.4 years. Majority of them (290, 69%) belonged to 60-69 years age group and only 8.9% of them were 80 years and above. Males constituted a slightly higher proportion (211, 50.2%). Majority of them were married (273, 65%), followed by widows or widower (123, 29.3%), divorced/separated (15, 3.6%) and unmarried (9, 2.1%). Majority of them were Hindu/Meitei (325, 77.4%) and Muslim (95, 22.6%). Almost nine out of ten were living in a joint family (377, 89.8%) and (43, 10.2%) were living in a nuclear family. Presently, (165, 39.3%) were staying with spouse, children, grandchildren, (110, 26.2%) with children, grandchildren, (74, 17.6%) with spouse, children, (34, 8.1%) with spouse, (25, 6%) with children only and (12, 2.9%) with others. Regarding the educational status, (152, 36.2%) were illiterate, (99, 23.6%) were primary, (86, 20.5%) were middle, (51, 12.1%) and higher secondary and above (32, 7.6%). Almost half of the respondents (196, 46.7%) were unemployed/homemaker, (66, 15.7%) were Govt. employee, (108, 25.7%) were farmer, (34, 8.1%) were businessman, (16, 3.8%) were laborer. Financially, (207, 49.3%) were dependent, (113, 26.9%) were independent and (100, 23.8%) were partly dependent.

Table 1: Distribution of respondents according to presence of morbidity (n=420).

Presence of morbidity	Male N (%)	Female N (%)	Total N (%)
Yes	95 (45)	111 (53.1)	206 (49.1)
No	98 (46.9)	116 (55)	214 (50.9)

Table 2: Distribution of respondents according to ADL score (n=420).

ADL score	N (%)
Independent	386 (91.9)
Moderately dependent	15 (3.6)
Dependent	19 (4.5)

Almost half of the respondents (206, 49.1%) reported some form of morbidity with females reporting a slightly higher (53%) as compared to males (Table 1). According to ADL score only 19 (4.5%) were dependent and 15 (3.6%) were moderately dependent (Table 2).

Table 3: Distribution of the respondents according to IADL score gender-wise (n=420).

IADL score	Male N (%)	Female N (%)
With limitation	96 (46)	204 (97.6)
Without limitation	114 (54)	5 (2.4)

As per IADL score majority of the females (204, 97.6%) had some limitations whereas only 96 (46%) males had limitations (Table 3).

The most common morbidity recorded among the respondents was visual impairment (112, 26.7%) followed by circulatory system disorders (90, 21.4) (Table 4).

Table 4: Distribution of respondents according to different morbidity (n=420).

System	Morbidity	N (%)	Total
Visual impairment	Cataract	28 (6.7)	112 (26.7)
	Refractive error	74 (17.6)	
	Both	10 (2.4)	
Circulatory system	HTN	85 (20.2)	90 (21.4)
	CAD/ MI/ arrhythmias	5 (1.2)	
Oral cavity	Broken teeth	69 (16.4)	87 (20.7)
	Caries	14 (3.3)	
	Denture	4 (1)	
Musculoskeletal diseases	Osteoarthritis	10 (2.4)	77 (18.3)
	Myalgia	5 (1.2)	
	Osteoporosis	47 (11.2)	
	Backache	10 (2.4)	
Endocrine, nutritional, metabolic diseases	DM	37 (8.8)	47 (11.2)
	Thyroid diseases	10 (2.4)	
GIT	Gastritis	24 (5.7)	47 (11.2)
	Others (gall stones, liver diseases)	9 (2.1)	
	Haemorrhoids	4 (0.9)	
Genitourinary system	BHP	19 (4.5)	27 (6.4)
	Urinary incontinence	3 (0.7)	
	Kidney diseases	4 (1)	
	Uterine prolapsed	1 (0.2)	
Ear problem	Hearing impairment	18 (4.3)	18 (4.3)
Respiratory diseases	Bronchial asthma	5 (1.0)	14 (3.3)
	COPD	4 (1.0)	
	Chronic bronchitis	5 (1.2)	
Nervous system	Peripheral neuropathy	8 (1.9)	8 (1.9)
Any cancer	Colon	1 (0.2)	1 (0.2)

Table 5 shows the crude odds ratio and adjusted odds ratio with dependency on activities of daily living (ADL) as dependent variable and selected independent variables. Increasing age, belonging to female gender, not living with spouse and those who are illiterate were found to be significantly associated with dependency in the univariate analysis but after adjustment only increasing age was found to be significantly associated with dependency (p=0.001).

Table 5: Crude odds ratio (COR) and adjusted odds ratio (AOR) with dependency on Activities of Daily Living (ADL) as dependent variable and selected independent variables.

Variables	Categories	COR	95% CI	P value	AOR	95% CI	P value
Age		1.11		0.0001	1.10	1.04-1.16	0.001
Gender	Male	1					
	Female	2.61	1.21-5.60	0.01	2.16	0.78-5.94	0.13
Literacy	Literate	1					
	Illiterate	2.41	1.19-4.89	0.01	1.87	0.69-5.05	0.21
Living with spouse	Yes	1					
	No	2.55	1.26-5.19	0.01	1.00	0.39-2.49	0.98

DISCUSSION

Out of the total 420 respondents, majority (69%) were in the age group 60-69 years. This corresponds to the average life span of Indian being 68 years. Majority of elders in present study were currently staying with spouse, children, grandchildren (39.3%), a few of them stayed with spouse only (8.1%) and 12 (2.9%) of them were staying with brothers, relatives or alone. Similar findings were seen in studies conducted in Haryana and Assam where majority stayed with spouse and children 57.7% and only 3.4% were staying with others or alone and 53.6% stayed with spouse and children and only 3.1% were staying alone respectively.[6,9] Such an outcome might be due to the reflection of the Indian culture and tradition where most people stay as joint families. Regarding the occupational status, in present study majority (46.7%) of them was unemployed/household worker and 15.7% of them were pensioner/government employee.

Comparable findings were reported in study by Seth et al (50.7%), Kumar et al 39.8% of the participants were unemployed and 22.4% were housewife.[10,11] However, study in Karnataka resulted that 70.2% were unemployed and 53.2% were receiving pension.[12] The difference in receiving the pension status may be due to the difference in study setting where the functioning of the state government is better as compared to our setting.

The prevalence of morbidity in this study was 49.1% which was lower as compared to studies like 70.1% in Kottayam, 93.3 % in Haryana, 87.6% in Delhi.[13-15] These variations might be due to difference in lifestyle of different regions where in current study area more people were engaged in some form of physical activity. Current study reported that, visual impairment was the most common morbidity 112 (26.7%) followed by hypertension 90 (20.2%), musculoskeletal diseases 87 (18.3%). Diabetes mellitus was seen in 37 (8.8%), morbidity related to GIT in 47 (11.2%), genitourinary system related in 27 (6.4%), hearing impairment was seen in 18 (4.3%), respiratory diseases in 14 (3.3%), peripheral neuropathy in 8 (1.9%) and colon cancer in 1 (0.2%).

A few of the respondents in the present study (34, 8.1%) were partly dependent/dependent according to ADL. Majority of the female (97.6%) had limitation but a little more than half of male (54%) were without limitation according to IADL score. Comparable result was shown in study by Konjengbam et al where the prevalence of disability in ADL was found to be 12.2%.[16] Rao et al resulted 3.9% had disability according to ADL.[17] Higher prevalence reported in different regions of India were 22.4% in Bhubaneshwar, 21.8% ADL and 51.7% IADL in Andhra Pradesh and 37.4% in Haryana which might be due to their study population consisting mainly of the old-old and oldest old categories.[18-20]

In the present study, dependencies in IADL components included handling finance (77.9%), transportation (67.9%), responsibility of own medication (55.7%), laundry (26.2%) and housekeeping (35.7%). Similar findings were seen in study conducted in Kurnool that difficulty in finance management and travelling to outdoors were 67% and 66.5% respectively.[21] But higher in difficulty in laundry (87%), housekeeping (85%) and difficulty in responsibility for own medication was less (10.5%). The components like laundry, housekeeping in present study had lesser proportion might be due to the difference in the customs and practices of the study population where younger generations take over these activities.

Functional dependence in ADL was significantly more with increasing age, female gender, living without spouse, illiterate and living without spouse in univariate analysis but after adjusting the independent variables, the functional dependence for ADL significantly increased with advancing age only. Similar significant findings were observed by Veerapu et al where with increasing age, female gender, living alone, illiterate had higher odds for functional dependence in ADL.[19] After adjusting, the functional dependence for ADL increased with advancing age, lower level of education. Also, in study by Konjengbam et al significant associations were seen between disability in ADL and older age, living without spouse, being illiterate, being unemployed, presence of chronic diseases.[16]

Limitations

The study's limitation is that there could be chances of recall bias in the assessment as self-reporting is one of the methods of reporting morbidities and co-morbidities among the respondents.

In rural Manipur, very few studies have been reported so far to assess the morbidity of elderly population. The sample size was covered during the stipulated time. Being a community based study the study provides a realistic picture of different medico-social problems of elderly in rural population.

CONCLUSION

The study reveals that almost half of the respondents (49.1%) had some form of morbidity. Only a few (19, 4.5%) were dependent according to ADL. Almost all of the female (97.6%) have limitation according to IADL score. The elder age group was significantly more associated with the presence of morbidity. A more comprehensive study of the different communities dwelling in Manipur along with the use of various laboratory investigations to probe more into the morbidity related problem and dependency of elderly population is needed.

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