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Dependency in activities of daily living of institutionalized elderly people in Tiruvallur District

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***Abstract*---**Introduction: The proportion of elderly people in the Indian population is steadily increasing. Over a period of time the disease patterns in India have predominantly changed from infectious to non-communicable diseases. This has led to the rise in morbidity and fall in mortality causing marked increase in elderly population. Aim: To assess the prevalence of dependency on activities of daily living (ADL) among geriatric populations in residential homes in Tiruvallur district. Materials and Methods: A cross sectional study was conducted among institutionalized elderly population aged 65-74 years. Activities of daily living was assessed by Barthel index. Descriptive statistics, Kendall tau's correlation and binary logistic regression were done to test if the differences for various parameters Results: There were 29.6% partially or completely dependent on doing their daily activities Conclusion: Based on the findings of the study, it was concluded that dependency of the institutionalized elderly population was high. The caregivers need to assess the unmet needs of the elderly.

***Keywords*---**institutionalized elderly, activities daily living, barthel index, elderly, geriatric population.

Introduction

Along with the acceleration of aging, the number of disabled elderly people is also rapidly increasing. The International Classification of Functioning, Disability and Health (ICF) defines disability as an umbrella term for impairments, activity limitations and participation restrictions [1]. Completely disabled persons and partially disabled persons with functional deficits due to age, disease or accidents are all considered disabled in this study. Evaluating basic activities of daily living (BADL) and instrumental activities of daily living (IADL) is considered the most common way to screen for disabilities in the elderly [2]

One theory is that due to a decline in mortality rates, the onset of disability will be postponed until late in life and thus will be "compressed" for elderly people who live with disability [3]. Studies also suggested that chronic diseases, such as hypertension, diabetes and cerebrovascular disease, common in the elderly, may result in disability [4]. Multimorbidity among the elderly, which is a world-wide public health issue, is significantly associated with disability [5,6]. Disability can cause many adverse consequences, such as a decline in quality of life and physical or mental health and an increased risk of harm from accidents [7,8].

Although the disabled elderly try to remain independent in BADL/IADL, some may still need assistance from others. Failure to obtain sufficient assistance creates a situation of unmet need [9]. Kim defines unmet need as "the gap between the amount of long-term care need, as assessed by an individual, and the actual resources the individual has at his/her disposal to meet that need" [10]. Unmet needs occur when assistance is not provided or is inadequate [11]. Unmet need is usually measured by self-report, but sometimes, caregivers and care-recipients share their different attitudes toward perceived unmet needs for services [12]. There are studies available that indicate disabled elderly are more likely to face adverse consequences, including higher risks of hospitalization, hospital readmission, emergency department admission, psychological distress and death [13-16]. To reduce the lack of individualized care, some countries have established long-term care systems. Japan and Germany are famous for their universal coverage of long-term care systems with services provided by non-profit organizations [17]. These systems are financed through government, employers and employee contributions. The United States also has an excellent system with services provided by for-profit organizations, including adult day service centers, home health agencies, nursing homes and residential care communities [18]. However, for these, the elderly need commercial insurance. Thus the aim of the present study is to assess the prevalence of dependency on activities of daily living (ADL) among geriatric populations in residential homes in Tiruvallur district

Materials and Methods

Study design : A descriptive study
Study area: Tiruvallur district
Study population: Residents of old age homes aged 65 -74 years, which is the WHO set index age group for elderly people, constituted the study population.

Inclusion criteria

- Elderly people who were present and willing to participate during the time of scheduled data collection were included in the study.
- Residents from the age of 65-74 years were included in the study
- Residents who were able to comprehend and communicate

Exclusion criteria

- Elderly people who were unavailable three times at the time of schedule data collection visit were excluded in the study.
- People who were terminally ill and unable to participate in the study were excluded

Ethical clearance

- Prior to the start of the study, ethical clearance was obtained from Scientific Review Board (SRB), Saveetha University and Institutional Ethical Committee (IEC).
- Written informed consent was obtained from the study participants
- Written consent was taken from the caregivers for the study subjects with poor manual dexterity.
- Patient information sheet was provided to every participant which had details of the study and researcher's contact
- The participants were informed about the purpose of the study.
- The anonymity of the participants was maintained.

Scheduling

Data collection was scheduled in the month of August to December 2020.

Sample size calculation

The sample size was calculated by manual method based on the study by Kristen Malecki et al (2015). Our calculated sample size was 565 with the power of 85.

Sampling

List of old age homes of Thiruvalluvar district was obtained from the Help Age India – A non Governmental Organization for the welfare of old people. A multistage cluster sampling technique was employed. It was found that 12 old age homes were sufficient to obtain the required sample size. There were totally 32 old age homes in the district and the 12 old age homes were selected in such a way that from each revenue division, 4 old age homes were selected. Old age homes were selected via random sampling using lottery method. Each old age home was visited thrice to include all the participants who were not present at other two times

Survey Instrument

Barthel index of activities of daily living

Statistical Analysis

Data was entered in Microsoft excel spreadsheet and analyzed using SPSS software (version 23.0). Descriptive statistics and chi square tests were done to test the association between variables. Pearson's and Kendall Tau's correlation tests were done to assess the strength of association between age and level of ability to do daily activities. Fisher exact test was done to test the significant difference in the distribution of ADL among males and females. For significance level, a p value of <0.05 was considered statistically significant

Results

There were 565 participants present in the study out of which 284 (50.27%) were males and 281 (49.73%) were females (Figure 1). The mean age of the study participants was 69.91±3.307 years ranging from 65 to 74 years. The assessment of dependency in activities of daily living (ADL) showed that 398 (70.4%) of the participants were independent, 155 (27.4%) were partially dependent and 12 (2.2 %) were completely dependent (Table 1). There was a weak negative correlation (Kendell tau's) found between age and dependency in activities of daily living (ADL). There was a weak positive correlation found between age and nutritional status, dementia (Table 2) Fisher exact test done between gender with activities of daily living, reveals that there is a significant difference in the distribution of activities of daily living between the males and females(Table 3)

Figure 1: Gender distribution of study participants

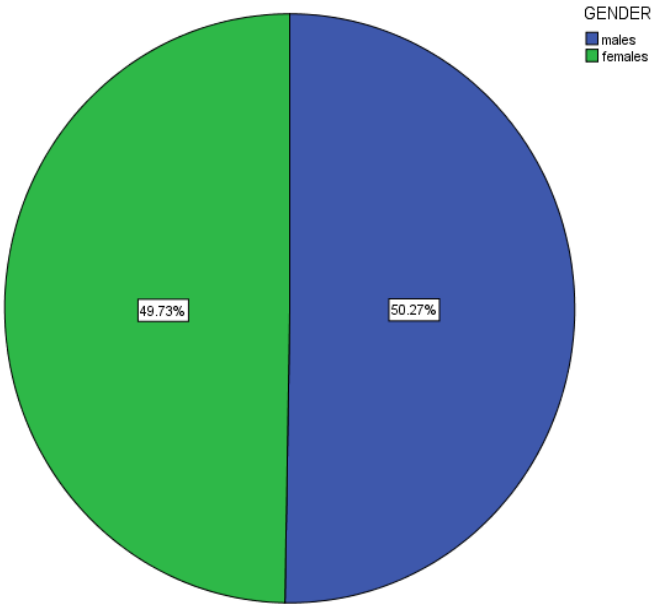

Figure 1 shows that in the gender distribution of the study participants , 50.27% males and 49.73% females participated in the study

Table 1: Gender wise distribution of dependency on doing activities of daily living

Level of dependency on activities of daily living						
Gender	**Very dependent**		**Partially dependent**		**Independent**	
	n	**% (within group)**	**n**	**% (within group)**	**n**	**% (within group)**
Males	8	2.8	78	27.5	198	69.7
Females	4	1.4	77	27.4	200	71.2

Table 1 shows that in the gender wise distribution of dependency on doing daily activities according to Barthel Index , 2.8% , 27.5% and 69.7% of male participants were very dependent, partially dependent and independent respectively . Among females, 1.4% , 27.4% and 71.2% of female participants were very dependent, partially dependent and independent respectively

Table 2: Correlation between age and ADL, Nutritional status , Dementia

Kendall's tau_b	Correlation Coefficient	P value
Age and Level of ability to do activities of daily living (ADL)	-.252	0.000*

Table 2 : Kendall's tau correlation between age and dependency on activities of daily living, nutritional status , dementia shows that there was a weak negative correlation between age and dependency on activities of daily living, a weak positive correlation between age and nutritional status , dementia

Table 3: Comparison of distribution of activities of daily living among males and females

GENDER	Activities of Daily Living (ADL)			Chi square value	P value
		Frequency	Percent (%)		
Males	Very dependent	8	2.8	404.414	0.000*
	Partially dependent	78	27.5		
	Independent	198	69.7		
	Total	284	100.0		
Females	Very dependent	4	1.4		
	Partially dependent	77	27.4		
	Independent	200	71.2		
	Total	281	100.0		

Table 3: Fisher exact test performed for gender and activities of daily living depicts that there is a significant difference in the distribution of activities of daily living between the males and females

Discussion

The Barthel Index is one of the most employed questionnaires for the evaluation of functionality, but there is no information on its psychometric properties. Barthel Index has good reliability, its structural validity has been confirmed, and the questionnaire can discriminate between groups and detect changes at follow-up points. This questionnaire can be used in the evaluation of functionality and basic activities of daily living in elderly people with different conditions. It has been used widely and validated and translated in many languages[19-21] In the present study, 398 (70.4%) were independent, 155 (27.4%) were partially dependent and 12 (2.2%) were completely dependent. Similar findings were found in a study where 76.8% of the 70+-year-olds (n=265) as independent[22]

There was a negative correlation (Kendell tau's) found between age and dependency which interprets that as the age increases , the dependency of the individuals were increased too (reverse scoring given) . Similar findings were found in many studies [23]. More than half of 85- to 89-year-olds (59 per cent) need caregiving because of health or functioning reasons. From age 90 on, only a minority of individuals (24 per cent) do not need help from others. [24]. In our study , there was a significant difference in the level of dependency between males and females. Similar findings were found in a study where there was a association between level of dependency and gender [25]. The significant age by gender interaction effect for ADL process ability can be because younger women obtained higher ADL process ability than did younger men. There were nearly twice as many women as men in the older age group who required assistance to live in the community, it stands to reason that the older women may have been more disabled than their male peers yet, their overall ADL motor and ADL process abilities did not differ[26]. The possibility exists, therefore, that if the men and women had been matched for overall functional level, the researchers would have found that older women, like younger women, have more ADL process ability than age-matched men [27].

Conclusion

Based on the findings of the study, it was concluded that dependency of the institutionalized elderly population was high. The caregivers need to assess the unmet needs of the elderly.

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