Original Article

Assessment of Functional Status and Comorbidities among Elderly Admitted in Sub-Regional Hospital, Parsa

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Abstract

Introduction: Functional decline may be the first sign of changing health status and the prevalence of co morbidity is high among elderly affecting their functional ability and increases need of hospitalizations. The functional assessment is one of the trademarks of the geriatric assessment that measures the outcome of the treatment, determinant of end of life medical costs and helps to plan for further care needed for elderly. Numerous studies have shown an association between aging and higher risks of functional dependence as well as a high prevalence of functional disability in the older adult population. Hence, this study is to assess the functional status and comorbidities among elderly patient.

Method: A descriptive cross- sectional study was done among elderly patient admitted in different wards of the Narayani Sub-regional Hospital, Parsa. Data was collected through census method from 121 respondents by using interview schedule through interview method. Katz Index of Independence in Activities of Daily Living was used to assess the functional status of elderly. Descriptive and inferential statistics (chi square & odds ratio) were used for analysis.

Results: The study reveals more than half of the respondents (62.8%) were dependent in basic activities of daily living (BADLs). Among them, 57.9% were severely dependent followed by 42.1% moderately dependent in BADLs. Respondents were dependent in bathing (68.6%), toileting (59.5%) and transferring (43.8%). Regarding comorbidities with physical problems, each respondent has average six comorbidities with minimum two comorbidities (Mean 1.71). Among them, 8.1% respondents had chronic cough, hypertension (21.5%), diabetes (8.3%), vision problem (34.7%) and 29.8% had hearing impairment. The study also reveals that hypertension, age and BMI significantly affect the functional status of the elderly.

Conclusion: More than half of the respondents were dependent in BADLs especially in bathing, toileting and transferring. Each respondent had average two comorbidities. Hypertension, age and BMI significantly affect the functional status of the elderly. Therefore, functional status and comorbidities of the elderly must be assessed in regular basis to improve the quality of life.

Key words: Functional status, Comorbidities, Katz index of independence in ADL

Introduction

Rapid aging of population is of global concern including Nepal. The number of older persons those aged 60 years or over has increased substantially in recent years in most countries and that growth is projected to accelerate in the coming decades. Between 2015 and 2030, the number of people in the world aged 60 years or over is projected to grow by 56%, from 901 million to 1.4 billion.[1] It is estimated that 20% of old population will be concentrated in developing countries.[2] In Nepal, according to the 2011 census, there were 2.1 million elderly inhabitants, which constitute 8.1 percent of the

total population in the country.[3] Nepal is a developing country experiencing a rapid increase in the elderly population.[4] Chalise stated that population of Nepal is moving towards to elderly age. Modernization, increasing migration of young people from rural to urban areas and to big cities or foreign countries due to the expectation of high income and better education resulting disaster problems for the elderly in developing countries like Nepal [5] and they are facing health and social problems.[4]

The Activity of Daily Living (ADLs) is self-care activities/basic activities such as eating, bathing, dressing, toileting, and transferring that people must accomplish to survive independently. Patients who cannot perform the ADLs usually require caregiver support 12 to 24 hours per day.[6] Functional status refers to the individual's ability to live independently.[7] It includes functional capacity and functional performance.[8] Loss of functional status is associated with increased risk of institutionalization and falls and it is associated with a number of multidimensional factors[7] such as advanced age, cognitive impairment, and Instrumental ADLs impairments at admission.[8] Functional decline may be the first sign of changing health status. Normal aging changes and health problems frequently show themselves as declines in the functional status of elderly. The most common problem that impacts upon the health and quality of life of older people, leading to dependency and institutionalization, is functional disability.[9] The prevalence of functional disability in each basic ADL item was between 7% and 9.3%. In the basic ADLs, 9.3%, had difficulty in chair/bed transfers, followed by difficulty in bathing self (8.5%), difficulty in feeding (7.0%).[10] Among patient admitted to general medical hospital units, 40% have at least one ADL impairment and it is a stronger predictor of hospital outcomes (functional decline, length of stay, institutionalization, and death).[11] The elderly female group had a higher proportion of functional disability in each ADL than the male group.[10] One of the best ways to evaluate the health status of older adults is through functional assessment which provides objective data that may indicate future decline or improvement in health status, allowing the nurse to plan and intervene appropriately.[12]

The world's population is ageing. With increasing age, objectively measured health and functional status decline, physical and cognitive capacities decrease, and the number of chronic diseases and the extent of disability in performing daily activities increases. The prevalence of comorbidity is high, with 80% of the elderly population having three or more chronic conditions requiring help in performing ADLs. Chronic diseases are the leading cause of illness and disability in those aged 65 years and over.[13] Multiple chronic health conditions are associated with decreased quality of life, functional decline (difficulty with ADLs), increased psychological distress, hospitalizations, and death.[14] People with three or four chronic conditions have a 25% increased risk of mortality compared to those with no chronic disease; while those with five or more chronic diseases have an 80% increased risk of dying.[15] Elsawy and Higgins reported the specific elements of physical health such as nutrition, vision, hearing, fecal & urinary continence, and balance need to be evaluated.[16] Dalton et al. reported the severity of hearing loss leads to functional disability.[17, 18]

Functional status is an important component of health status of the elderly.[10] In older adults, functional decline is a common presentation of many disease states having diverse causes and consequences.[8] Many studies have demonstrated that functional disabilities in ADLs are risk factors of hospitalization, institutional residence, increased healthcare expenditures, poor quality of life.[10] Similarly, studies have shown that comorbid conditions is associated with low well-being, functional status, health related quality of life, higher disability and mortality.[19] Maintaining good functional capacity is a crucial component of successful ageing [9] and early detection helps to prevent functional dependence in elderly.[7] Many studies on functional disability in older adults have been conducted in Western countries and very few have been reported in Asian countries. Therefore, the study was conducted to assess the functional status (Basic Activities of daily living) and comorbidities among elderly admitted patient.

Method

The study was conducted among elderly patient admitted in different wards of Narayani Sub-regional Hospital, Parsa. Census method was used to collect data from 121 respondents. The elderly patient with 60 years and above, who can communicate, conscious and willing to participate in the study were included. Elderly who had severe hearing impairment were not

included. Data was collected for 4 weeks in 2016 by using structure interview schedule through interview method which consisted two parts. First part contained demographic information, family information and health related information. While the second part consisted of the standardized instrument i.e. Katz Index of Independence in Activities of Daily Living for assessing the functional status. It is the most appropriate instrument for assessing basic functional status and also used for evaluating changes in response to illness. The Index ranks adequacy of performance in the six functions of bathing, dressing, toileting, transferring, continence, and feeding. Respondents were scored yes/no for independence in each of the six functions. A score of 6 indicates independence, 4 indicate moderate dependence, and 0-2 indicates severe dependent.

Data was collected after obtaining the ethical approval by Institutional Review Board, Tribhuvan University, Institute of Medicine and concerned authorities. A verbal informed consent was taken from each respondent after explaining the purpose of the study. Data was collected by face to face interview technique. Information about comorbidities and current diagnosis were collected based on self reported information and record review respectively. All the respondents were requested to participate voluntarily and they were informed they can withdraw from the study at any time if they wish. Data was analyzed by using descriptive statistics such as percentage, mean score & standard deviation and inferential statistics such as chi square test and odds ratio.

Results

Out of 121 respondents 61(50.4%) were between the age of 60-69 years. The mean age and standard deviation was 68.51 ± 8. More than half of the respondents 62 (51.2%) were male, 101(83.5%) were illiterate, 112 (92.6%) were married and 83(68.6%) respondents belongs to joint family. Majority of the respondents 100 (82.6%) were living with son followed by 7 (5.8%) were living alone and only 5(4.1%) respondents were living with their daughter. In terms of decision making, 67 (55.4%) respondents' decision was made by their son and only 37(30.6%) respondents made decision by them. Moreover, more than half of the respondents 69 (57%) took their meal twice, 50 (41.3%) respondents had loss of appetite. Regarding BMI, nearly half of the respondents 54 (44.6%) were undernourished i.e. BMI < 18.50 and 51 (42.1%) respondents were within normal limits.

Regarding respondents' functional status and their level of dependency in activities of daily living, more than half of the respondents 76 (62.8%) were dependent in BADLs. Among the dependent respondents, more than half of them 44 (57.9%) were severely dependent followed by 32 (42.1%) were moderately dependent. Twothird of the respondents 83 (68.6%) were dependent in bathing followed by toileting 72 (59.5%) and transferring 53 (43.8%). Similarly, in terms of independency in activities of daily living, majority of the respondents were independent in continence and feeding i.e. 99 (81.8%) and 98 (81%) respectively and 70 (57.9%) were independent in dressing.

In relationship between functional status and comorbidities with physical problem, 42 (34.7%) had low vision, hearing impairment 36 (29.8%) and chronic cough 34 (28. 1%). Equal number of the respondents had hypertension and dental problem i.e. 21.5% and 4.1% respondents equally had pulmonary T.B., arthritis and urinary problem. Each respondent had maximum 6 different comorbidities with physical problem with average 2 comorbidities. Moreover, it shows that hypertension is significantly associated with functional dependency and those who have hypertension are 3.055 times more likely to have dependency.

Association between functional status with demographic characteristics revealed that about 66.7% respondents between the age of 70-79 and female respondents (67.8%) were dependent. Similarly, 65.3% illiterate respondents & having abnormal BMI 50(71.4%) (having low and above normal) were more dependent in their ADLs. This finding highlights that age and BMI significantly affect the functional status of the elderly. Furthermore, the association between BMI and functional status shows that bathing and toileting are significantly associated with BMI (*P=<0.05*). Respondents having abnormal BMI were more dependent in comparison with normal BMI and they were 2.182 times and 2.125 times likely to be dependent in bathing and toileting. In conclusion, BMI is the only associated with bathing and toileting at 95% confidence interval and all other factors are statistically insignificant.

Table 1: Socio- Demographic Characteristics of the Respondents

n=121

Variables	Frequency	Percentage (%)
Age (in years)		
60-69	61	50.4
70-79	48	39.7
80 and above	12	9.9
Mean age and SD 68.51 ± 8		
Sex		
Male	62	51.2
Female	59	48.8
Educational Status		
Illiterate	101	83.5
Literate	12	9.9
Primary	5	4.1
Secondary	3	2.5
Marital Status		
Married	112	92.6
Widow	9	7.4
Types of family		
Nuclear	38	31.4
Joint	83	68.6
Living with		
Son	100	82.6
Daughter	5	4.1
Son in law	3	2.5
Alone	7	5.8
Spouse	6	5.0
Decision maker		
Son	67	55.4
Daughter	4	3.3
Son in law	4	3.3
Self	37	30.6
Husband	9	7.4

Table 2: Respondents' Responses regarding Meal Timing, Changes in Appetite and Body Mass Index (BMI)

n=121

Variables	Frequency	Percentage (%)
Meal timing		
Twice	69	57.0
Thrice	40	33.1
as wish	12	9.9
Change in appetite		
Nausea	18	14.9
Vomiting	5	4.1
loss of appetite	50	41.3
Normal	48	39.7
BMI		
< 18.50	54	44.6
18.50 - 24.99	51	42.1
25.00 - 29.99	7	5.8
30.00+	2	1.7
Unable to measure	7	5.8

Table 3: Respondents' Functional Status and Level of dependency as per Katz Index of Independence in Activities of daily living

n=121

Functional status	Frequency	Percentage
Dependent	76	62.8
Independent	45	37.2
If dependent (n=76)		
Severe dependence	44	57.9
Moderate dependence	32	42.1

Score 0-2 severe dependence, 4 moderate dependence and score 6 independence

Table 4: Respondents' Responses on Functional Status as per Katz Activities of daily living

n=121

Basic ADLs	Dependence (F / %)	Independence (F / %)
Bathing	83 (68.6)	38 (31.4)
Dressing	51 (42.1)	70 (57.9)
Toileting	72 (59.5)	49 (40.5)
Transferring	53 (43.8)	68 (56.2)
Continence	22 (18.2)	99 (81.8)
Feeding	23 (19.0)	98 (81.0)

Table 5: Relationship between Functional Status and Respondents' Comorbidities with Physical Problems

n=121

Comorbidities with Physical Problems	Functional Status					
	F	(%)	Dependence	Independent	OR	95% CI
Low vision	42	34.7	29 (69.0%)	13 (31.0%)	1.519	0.687 to 3.359
Hearing impairment	36	29.8	26 (72.2%)	10 (27.8%)	1.820	0.780 to 4.248
Chronic cough	34	28.1	23 (67.6%)	11 (32.4%)	1.341	0.580 to 3.100
Hypertension	26	21.5	21 (80.8%)	5 (19.2%)	3.055	1.062 to 8.790*
Dental problem	26	21.5	19 (73.1%)	7 (26.9%)	1.810	0.694 to 4.721
Catract	13	10.7	11 (84.6%)	2 (15.4%)	3.638	0.768 to 17.230
Diabetes	10	8.3	9 (90%)	1(10%)	5.91	0.723 to 48.299
Constipation	6	5.0	5(83.3%)	1 (16.7%)	3.099	0.350 to 27.403
Pulmonoary TB	5	4.1	2 (40.0%)	3(60%)	0.378	0.061 to 2.356
Arthritis	5	4.1	2 (40.0%)	3(60%)	0.378	0.061 to 2.356
Urinary problem	5	4.1	4 (80.0%)	1 (20.0%)	2.444	0.265 to 22.578
No. of Comorbidities						
Maximum 6, minimum 0						
Mean ± SD = 1.72 ± 1.36						

***Significant**

Table 6: Association between Functional Status with Demographic Characteristics

n=121

Variables	F	Functional Status		x^2	*P* Value
		Dependence	Independent		
Age in years					
60-69	61	33 (54.1%)	28 (45.9%)	6.565	0.038*
70-79	48	32 (66.7%)	16 (33.3%)		
80 and above	12	11 (91.7)	1 (8.3%)		
Sex					
Male	62	36 (58.1%)	26 (41.9%)	1.226	0.268
Female	59	40 (67.8%)	19 (32.2%)		
Educational status					
Illiterate	101	66 (65.3%)	35 (34.7%)	2.611	0.195
Literate	20	10 (50.0%)	10 (50.0%)		
BMI					
Abnormal BMI	70	50 (71.4%)	20 (28.6%)	5.281	0.022*
Normal BMI	51	26 (51.0%)	25 (49.0%)		

***P <0.05 significant**

Table 7: Association between Functional Status with BMI

n=121

Variables		BMI		x^2	P Value	Odds ratio	CI
		Abnormal BMI	Normal BMI				
Bathing	Dependent	53 (75.7%)	30(58.8%)	3.907	0.048	2.182	1 to 4.764*
	Independent	17(24.3%)	21 (41.2%)				
Dressing	Dependent	31(44.3%)	20 (39.2%)	0.311	.577	1.232	0.592 to 2.566
	Independent	39 (55.7%)	31(60.8%)				
Toileting	Dependent	47 (67.1%)	25 (49.0%)	4.022	0.045	2.125	1.012 to 4.462*
	Independent	23 (32.9%)	26 (51.0%)				
Transferring	Dependent	35 (50.0%)	18 (35.3%)	2.592	0 .107	1.833	0. .874 to 3.847
	Independent	35 (50.0%)	33(64.7%)				
Continence	Dependent	15 (21.4%)	7(13.7%)	1.177	0. 278	1.714	0. .643 to 4.571
	Independent	55(78.6%)	44(86.3%)				
Feeding	Dependent	16 (22.9%	7 (13.7%)	1.598	0. 206	1.862	0. .704 to 4.929
	Independent	54 (77.1%)	44 (86.3%)				

P=<0.05 significant

Discussion

Functional status is an important component of health status of elderly. The most common problem that impacts upon the health and quality of life of older people leading to dependency and institutionalization is functional disability. The study reveals the mean age and standard deviation was 68.51 ± 8. More than half of the respondents 62 (51.2%) were male, 83.5% were illiterate. Similar and contradictory finding was reported by Chalisea and et al. [9] which shows the mean age of respondents was 68.8 (77.7) years and 45.6% were literate. The present study shows majority of the respondents 100 (82.6%) were living with son, 4.1% were living with daughter and only 5.8% were living alone. These findings are supported by the literature as cited in Adhikari which showed more than 80% of elderly in Nepal live with their children. Only 2.7% of the elderly are living with their daughters which may be due to the cultural taboos that prevent parents from living with married daughters.[20] Similarly, another study stated that only 3% of the individuals are staying alone, while 62% are living with spouse and children.[21]

Regarding respondents' functional status and their level of dependency in activities of daily living, more than half of the respondents (62.8%) were dependent in ADLs. Among them (57.9%) were severely dependent followed by 32 (42.1%) were moderately dependent. They were dependent in bathing 83(68.6%), toileting 72 (59.5%) and transferring 53(43.8%) which are similar to the study conducted by Chalisea and et al. [9] that reveals the mean functional ability score was 4.8 (70.9) for ADL. Among the participants, 4.27% had at least one disability. Bathing was the most frequently reported and feeding was the least frequently reported disability. Disabilities were significantly associated with female gender, older age, unmarried status, living with family, illiteracy, poor economic status, chronic illnesses, and feelings of loneliness.[22] In present study more than half of the female respondents (67.8%) were dependent and similar findings was reported by other studies in which more number of females showed reduced ADL score.[21,10] Though, women have a higher proportion of functional disability in ADL than men but did not show statistically significant difference in basic ADL between men and women which are similar with the present study.[10]

In terms of comorbidities**,** (28.1%) respondents had chronic cough, followed by hypertension (21.5%) and diabetes (8.3 %.) and each respondent had average six comorbidities with minimum two comorbidities (Mean 1.71). In contradictory to this study, Khanal and Gautam

mentioned that more than half of the residents were diagnosed with at least one chronic health problem, hypertension 35 (13%), gastritis 38(14%) arthritis25 (9%), COPD 12(4.5%), eye problem 11(4%), diabetes 7 (2.5%) etc.[4] In terms of physical problems, present study reveals 34.7% respondents had vision problem and 29.8% had hearing impairment. The study highlighted hypertension is significantly associated with functional dependency. With respect to morbidity status, other study reported that respondents had hypertension, musculoskeletal disorders, low vision, diabetes, hearing impairment and impaired ADL.[23] Visual impairment has a major effect on older persons making increasingly difficult in daily activities of reading, shopping and walking. Hearing loss is the third most common chronic disorder that can profoundly impact daily functioning in the elderly[24,18] It was the neglected disability though it may leads to isolation of old people by reducing communication. [21] Comorbidity in general to be associated with mortality, quality of life, and health care. Hence, health care workers need to take comorbid diseases into account in monitoring and treating patients. [25]

Conclusion

The study reveals more than half of the respondents were dependent in basic activities of daily living and among them; half of them were severely dependent in bathing, toileting and transferring. They had in average two comorbidities in each respondent and hypertension, age & BMI were significantly associated with functional dependency. Comorbidity is common in elderly persons and maintaining good functional status is a crucial component of successful ageing as functional decline in hospitalized older adults can have devastating consequences. Therefore, it can be recommended that functional assessment is very crucial and should be assessed in regular basis to render need base quality nursing care to elderly admitted patient.

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