International Journal of Science and Research (IJSR)
ISSN: 2319-7064
ResearchGate Impact Factor (2018): 0.28 | SJIF (2018): 7.426

Functional Status and Fall Risk Assessment among Older Adults Residing at Geriatric Homes, Devghat

Sara Thapa[1], Bedantakala Thulung[2], Jaya Prasad Singh[3]

[1]Assistant Professor, School of Nursing, Chitwan Medical College, Bharatpur, Chitwan, Nepal

[2]Associate Professor, School of Nursing, Chitwan Medical College, Bharatpur, Chitwan, Nepal

[3]Assistant Professor, Community Medicine, Chitwan Medical College, Bharatpur, Chitwan, Nepal

Abstract: ***Ageing is a natural process of growing old, as it grows there is also increase chance of fall. A descriptive cross sectional study was carried out to assess functional status and fall risk among older adults. Total 117 older adults were selected by using enumerative sampling technique. Face to face interview method was used with 'Katz Index of Independence in Activities of Daily Living' to assess functional status and Time Up and Go (TUG) test used to assess fall risk. Data was collected from 10th of September, 2019 to 24th September 2019 and analyzed by using descriptive and inferential statistic. Majority (42.7%)) of elderly fell under the age group of <80 years, female (89.7%) and married (86.3%) in which 77.8 % older adults had full functional even though they had decreased vision (69.2%) and hearing (60.7%). Most of (80.3%) older adults had fall risks and found significant association with blood pressure (p=0.042) only. These findings might be due to their resilient nature not to depend on others, or the situation of organization they are required to perform most of their tasks themselves. Therefore more supportive hands are required to maintain comfort and safety for quality of life of elderly.***

Keywords: Functional status, fall risks, Older adult

1. Introduction

Ageing is a natural process of growing old which starts from the birth and ends with demises. This process is associated not only with physical but also with social and psychological changes. Nowadays, the older population has been increased in both developed and developing countries. People aged 60 years and above are defined as the senior citizen according to The Senior Citizens Acts of Nepal. Since life expectancy soared from 27 years in 1951 to 66.16 years in 2011, the population of elderly over 65 years reached 12,78880, according to the 2011 census of Nepal, comprising 4.4 percent of the total population. [1]

A fall is defined as an event which results in a person coming to rest inadvertently on the ground or floor or other lower level [2] & it is also defined as accidental events in which a person falls when his/her center of gravity is lost and no effort is made to restore balance or when this effort is ineffective. [3] The elderly people sustain injuries frequently after fall which is mostly unintentional and the cost of treatment is high. [4] Bruising, lacerations, fractures of the extremity and intracranial bleeding in severe cases can be resulted due to falls. These falls can lead to grave health consequences. [5, 6, 7] The number of elderly persons above 60 years of age is fast growing. In India 76.6 million people (7.7% of total population) are over the age of 60. Recurrent falls considered as "Geriatric Giants" are important cause of morbidity and mortality and are a marker of poor physical and cognitive status. There are many risk factors for falls like muscle weakness, use of four or more medications, arthritis, depression, impairments in gait, balance, cognition problem, decreased vision and unable to perform activities of daily living. [8]

In elderly population, deterioration occurs in vision, hearing, muscles bulk, joints, lungs, heart, kidneys, brain and immune system. [9] About 30% of people over the age of 60 may have experiences at least one fall per year. Most of the cases of fall need hospital admissions which are about 14% of total emergency admission and 4% all hospital admission for trauma.[10]

In Thailand elderly comprises 16.5% of the population in 2016, which is the second highest population of elderly in the Southeast Asia region.[11] In elderly population more than 600,000 fatal falls occur annually, making it the second leading cause of unintentional injury related deaths after road traffic injuries.[2] Falls occur more frequently among old females, those with short financial gain, those who suffer from cognitive impairment, elderly who have poor ability to perform activities of daily living (ADL), those who have gait and balance problems, those with visual impairments, who use multiple medication or sedatives, who live alone and use walking assistive devices. [12]

2. Materials and Methods

A cross-sectional study was carried out to assess functional status and fall risk among 117 older adults residing at three different old age homes (Rotary Karunalaya Briddhashram, Devghat Samaj Kalyan Kendra Briddhashram, Galeshwor Ashram), selected by using enumerative sampling technique. Face-to-face interview carried out for socio-demographic information and Functional assessment by using structured standard tool "Katz's Functional Assessment (ADLs). Similarly the fall risk screening and balance tests observed by using Time Up and Go (TUG) test researcher herself. The data were collected from 10th September, 2019 to 24th September, 2019. Prior to data collection, ethical approval was taken from Chitwan Medical College-Institutional Review Committee (CMC-IRC). All participants were informed about the purpose of the study and verbal informed consent was obtained from the patients.

Data was analyzed by using descriptive and inferential statistics like frequency, percentage, median, standard deviation & chi-square.

3. Results

Table 1: Socio-demographic Characteristics of Respondents, n=117

Variables	Frequency	Percentage
Age (in years)		
60-69	27	23.1
70 – 79	40	34.2
80 and above	50	42.7
Median=14, Q1=13, Q3=15, min=13, max=18		
Gender		
Male	57	48.7
Female	60	51.3
Marital status		
Married	101	86.3
Unmarried	16	13.7
Center		
Samajkalyan	36	30.8
Karunalaya	32	27.4
Galeswor	49	41.8
Address		
Province 1	7	6.0
Province 2	5	4.3
Province 3	53	45.3
Province 4	45	38.4
Province 5	7	6.0
Education		
Illiterate	105	89.7
Literate	12	10.3
If_literete (n=12)		
Primary	5	41.6
Secondary	4	33.4
Higher secondary or more	3	25.0
Person who brought		
Self	46	39.3
Others	71	60.7

Table 1 shows the demographic characteristics of the older adults in which 42.7% were from the age group< 80 and numbers of female were high; most of them were married, and least number of elderly were literate. Among three residential centers, higher percentages of elderly residing at Galeshwor Ashram (NRN), maximum number of elderly were from province-3 and majority had been brought to centers by other people of the society

Table 2: Respondents' Functional status, n=117

Variables	Independent		Dependent	
	Frequency	Percentage	Frequency	Percentage
Bathing	107	91.5	10	8.5
Dressing	110	94	7	6.0
Toileting	116	99.1	1	0.9
Transferring	81	69.2	36	30.8
Continence	104	88.9	13	11.1
Feeding	111	94.9	6	5.1

Table 2 shows that the functional status, among six ADLs; about 30.8 % older adults were dependent on transferring the goods/things but almost (99.1%) were independent on the toileting activities. Only least number of older adults were dependent on rest of other functions.

Table 3: Respondents' Health Status, n=117

Variables	Frequency	Percentage	Frequency	Percentage
	Normal		**High**	
Blood pressure	94	80.3	23	19.7
Pulse	110	94.0	7	6.0
	Intact		**Altered**	
Taste	104	88.9	13	11.1
Smell	105	89.7	12	10.3
	Normal		**Decreased**	
Vision	36	30.8	81	69.2
Hearing	46	39.3	71	60.7

Table 3 shows that majority of the older adults had normal blood pressure, pulse rate, intact taste and smell but more than half of them had decreased visual and hearing ability.

Table 4: Respondents' Level of Functional Status

Level of functional status	Frequency	Percentage
Full function	91	77.8
Moderate Iimpairment	26	22.2
Total	117	100.0

Table 4 show s that out of 117 older adults, only 22.2% had moderately impaired functional status.

Table 5: Respondents' level of fall risk

Fall risk	Frequency	Percentage
No risk	23	19.7
Fall risk	94	80.3
Total	117	100.0

Table 5 shows that 80.3% older adult had fall risk but 19.7% had no risk.

Table 6: Association between Respondents' level of Fall Risks and Socio- demographic Variables

Variables	Level of fall risks		χ 2	p-value
	No risk	**Fall risk**		
Sex				
Male	12(21.10)	45(78.90)	.137	.711
Female	11(18.30)	49(81.70)		
Age				
60- 69	6(22.20)	21(77.80)	.836	.659
70- 79	6(15.00)	34(85.00)		
80 & above	11(22.00)	39(78.00)		
Blood pressure				
Normal	22(23.40)	72(76.50)	-	.042*
High	1(4.30)	22(95.70)		
Pulse				
Normal	22(20.00)	88(80.00)	-	1.000*
Abnormal	1(14.30)	6(85.70)		
Vision				
Normal	8(22.20)	28(77.80)	.216	.642
Decreased	15(18.50)	66(81.50)		

Significance level at < 0.05, Fisher's exact test*

Table 6 shows that there is only significant association between fall risks and blood pressure but no association with other variables.

4. Discussion

When we compared the data we collected we found out that the majority of the elderly (42.7%) were <80 years of age and most (86.3%) were married. In addition to this, higher

number of older adults (89.7%) was female, among which more than half of them (51.6%) were uneducated. These findings were similar when compared to a study conducted in Thailand [13] where the majority of the population (81.2%) were female, and were aged 76 and above. However, the results varied when it came to their education level as it showed that 59.4% had the education level of at least secondary school or above.

According to the study, the results showed that the elderly were highly dependent majorly on the six daily living activities. The highest percentage (30.8%) were dependent when it came to transferring the objects, then for continence (11.1%), bathing (8.5%), dressing (6.0%), (5.1%) feeding and toileting activities (0.9%) respectively. However, this contradicted with the findings by various studies [14] that showcased a different variation of the data. It reported that the elderly were the most dependent on feeding (40.3%), then for toileting (26.7%), dressing (19%), continence (17.6%), transferring (12.2%) and for bathing (11.8%) respectively. Another study [15], among elderly the ADL tasks, also found that the most challenging task for the older people to perform was to bath, while other activities like dressing, transferring, toileting and eating were less likely to be difficult on a daily basis.

Another conclusion from our study was that 69.2% of the older adults had impaired vision while 60.7% also had decreased hearing. However, a similar study at BPKMC showcased that only 40.7% had visual impairment which is comparatively lower than our percentage. When we started finding the level of functional status among the older adults, we found out that 22% of them had moderately impaired functional status. But the results from the study [16] had a different conclusion where 62.8% respondents had high dependent or status impairment. Another similar research [17] reported that 63% of the residents had full functional status.

When the fall risks were calculated, we found out that 80.3% older adults had fall risk while the remaining 19.7% did not. Conflicting this finding, the study [18] from Penang, Malaysia found that among 357 total populations, only 13.3% of the elder lies there were considered to be at moderate or high risk of fall. Our study also found there to be a significant association between fall risk and blood pressure (p=0.042) however, there were no immediate relation to other variables. Contradicting this result, the study conducted at Sharjah and Dubai, United Arab Emirates conducted [19] showed statistically significant association was observed between the prevalence of falls and gender (p<001), age (p<0.001), education level (p<0.001).

5. Conclusion

Based on the finding of the study, it is concluded that the majority of the population were to be female, married and also below the age of 80. More than half of the respondents also had very little educational background or were uneducated. In addition to this, more than half of the respondents were found to have impairment on their vision and hearing.

However, the major finding here is the significant association between fall risk and blood pressure which was p=0.042. According to the answers, we also figured out that only a minority (22.2%) of them had impaired functional status, while the older adults under the fall risk (80%) was significantly higher. This showed that even though there was a significant risk of fall, high rate of independent and had the full function. While it may seem that they are in full functional status, it might be due to their resilient nature not to depend on others, or the situation of organization they are required to perform most of their tasks themselves. Therefore more supportive hands are required to maintain comfort and safety for quality of life of elderly.

6. Acknowledgement

Researchers are very grateful to Chitwan Medical College-Institutional Research Committee for approval to conduct this research. The researchers' sincere gratitude and love to extend heartfelt thanks to Mr. Raj Kumar Mehta for his immense support to complete our study.

References

[1] Central Bureau of Statistics Nepal demographic profile (2011). Retrived from www.indexmundi.com (accessed 20 Nov 2011)
[2] World Health Organization . Falls(2018). Available from: http://www.who.int/news-room/fact-sheets/detail/falls. Accessed June 10, 2019.
[3] Ungar A, Rafanelli M, Iacomelli I, Brunetti MA, Ceccofiglio A, Tesi F, Marchionni N,2013. Falls in the elderly: assessment of prevalence and risk factors. https://doi.org/10.18549/PharmPract.2018.03.1206. file:///D:/fall%20risk/fall%20in%20elderly(Spain).pdf
[4] Rai,BK . Chaudhari, R, Yadav,A & Rai .B .A cross-sectional study of fall injuries in senior people attending emergency ward in BPKIHS, a tertiary level hospital, Dharan, eastern region of Nepal Department of General Practice and Emergency Medicine. Health Renaissance 2015;13(1): 77-85
[5] Herman M, Gallagher E & Scott V. The evolution of seniors' falls prevention in British Columbia. British Columiba, Ministry of Health; 2006. Available from:

http://www.health.gov.bc.ca/library/publications/year/2006/falls_report.pdf (accessed October 15, 2017). 4
[6] Soriano TA, De Cherrie LV, Thomas DC. Falls in the community-dwelling older adult: A review for primary-care providers. Clin Interv Aging. 2007;2(4):545-554.
[7] Woolcott JC, Richardson KJ, Wiens MO, Patel B, Marin J, Khan KM, Marra CA. Meta-analysis of the impact of 9 medication classes on falls in elderly persons. Arch Intern Med. 2009;169(21):1952-1960. doi: 10.1001/archinternmed.2009.357
[8] Krishnaswamy B, Usha G. Falls in older people. Madras Medical College Chennai. 2003. [Accessed June 8, 2015]. Available from: http://www.who.int/ageing/projects/SEARO.pdf.
[9] Murtagh . J. AM(2012). Murtage General Practice, 6th Edition, chapter 8, page no 56, McGraw-Hill Australia Pty Ltd publishers, 2012.

[10] Hausdorff. JM., Rios .DA & Edelber HK (2001). Gait variability and fall risk in community-living older adults: Archives of Physical Medicine and Rehabilitation. 2001; 82(8):1050-6.
[11] Foundation of Thai Gerontology Research and Development Institute IfPaSR, Mahidol University. Situation of the Thai Elderly in 2016. Bangkok: Foundation of Thai Gerontology Research and Development Institute; 2017. Available from: http://www.ipsr.mahidol.ac.th/ipsrbeta/ en/BookReport.aspx?Year=2017 3.
[12] Sophonratanapokin, B. Sawangdee, Y & Sophonratanapokin, K (2012). Effect of the living environment on falls among the elderly in Thailand. Article *in* The Southeast Asian journal of tropical medicine and public health 43(6):1537-47 · November 2012. https://www.researchgate.net/publication/235645933_Effect_of_the_living_environment_on_falls_among_the_elderly_in_Thailand
[13] Maneeprom, N. Taneepanichskul, S & Panza .A (2018). Falls among physically active elderly in senior housings, Bangkok, Thailand: situations and perceptions. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6211305/
[14] Peetambram, A., Nalik, P.R., & Pracheth, R.(2015). Functional assessment of elderly population: a community-based cross-sectional study. *International Journal of Medical Science and Publice Health* , 5(03), 438-442. Retrieved from: DOI: 10.5455/ijmsph.2o16 .1607201578
[15] Sharma, D., Parashar, A., &Mazta, R.S.(2014). Functional status and its predictor among elderly population in a hilly state of North India. *International Journal Health Allied Science*, 3(3), 159-163. Retrieved from: DOI :10.4103/2278-344X.138593.
[16] Shrestha, KD., & Gautam, R.(2017). Assessment of Functional Status and Commorbidities among Elderly Admitted in Sub-Regional Hospital, Parsa. Journal of Institute of Medicine, 39-3. Retrieved from: C: Users/dell/Documents/Downloads/1035-1129-1-PB.pdf
[17] Gupta, R.D., Loha, A., & Roy, S.(2015). Morbidity pattern and health-seeking behavior among the senior citizens in a selected urban area of Bangladesh: A cross-sectional study. *South East Asia Journal of Public Health*, 5(2), 43-49. Retrieved from: DOI:http://dx.doi.org/10.3329/seaiph.v5i2.28312.
[18] Sheng, Hui Kioh., & Abdul, Rashid. (2018). The prevalence and the risk of falls among institutionalised elderly in Penang, Malaysia . Med J Malaysia Vol 73 No 4 August 2018 Department of Public Health, Faculty of Medicine, Penang Medical College, Penang, Malaysia.
[19] Suleiman I. Sharif, Alaa B. Al-Harbi, Alaa M. Al-Shihabi, Dana S. Al-Daour, and Rubian S. Sharif. Falls in the elderly: assessment of prevalence and risk factors. Pharm Pract (Granada). 2018 Jul-Sep; 16(3): 1206.