

Relationship between activities specific balance confidence (ABC) scale with age and falls on elderly in Wanasraya Nursing Home Denpasar

Harkitasari S*

Neurology Department, Faculty of Medicine and Health Science, Warmadewa University, Bali, Indonesia

*saktiviharkitasari85@gmail.com

Abstract. Falls are a major health problem for elderly. Apart from the direct injuries resulting from falls, other long-term consequences may include disability, fear of falling, and loss of independence, which can have serious effects on people's health and quality of life. These risk factors are categorized into two distinct groups: intrinsic and extrinsic factors. Psychological factors, more commonly referred to the "fear of falling syndrome", have been linked to significant reductions of daily activities in fallers resulting in a loss of independence. The Activities-Specific Balance Confidence (ABC) scale was used to measure confidence in carrying out specific activities without falling or becoming unsteady. We conduct an analytic cross-sectional study to determine the association between ABC scale with age and falls in elderly. Elderly, age over 60 years, at Wanasraya nursing home Denpasar on January 2015 recruited to this study. All subjects were asked questionnaire of ABC scale and history of falls. Health status was taken from physical examination and medical records. Data were analyzed using SPSS. There were 52 elderly consisted of 26 (50%) men, 26 (50%) women, age range 61 – 90 years, mean 71.6 ± 6.5 years, and 17.3% of them have history of falls. Total ABC scale mean were significantly difference between women and men (81.2 ± 14.1 vs 90 ± 12.8 ; $p < 0.05$) and between faller and non-faller (73.5 ± 13.6 vs 88.2 ± 12.9 ; $p = 0.01$). The ABC scale with cut off 82.9% has significantly association with falls; $p = 0.01$; prevalence ratio = 7.0; 95%CI 1.6 – 49.8. As a conclusion we found lower total ABC scale has significantly association with falls in elderly.

1. Introduction

Fall is one of the most common problem in old age due to changes in organ function, disease, and environment. [1,2] Approximately 30% of the elderly have experienced falling every year. As a result of mild to severe such as: head injury, soft tissue injury to fractures. It is estimated that about 1% of elderly people falling from fractures of the femur columns, 5% have other bone fractures such as ribs, humerus, pelvis, etc., 5% have soft-tissue injuries and fractures [2]. Fracture of the femoral column is a major complication of fall at an advanced age, an estimated 200,000 of the elderly have experienced of fall in the United States per year, especially women [3].

The morbidity and mortality caused by fractures are generally caused by complications resulting from fractures and the immobilization they cause. Some of these complications are the occurrence of decubitus due to prolonged bed rest, bleeding, deep vein thrombosis, pulmonary embolism, pneumonia



infection or urinary infection due to prolonged bed rest, nutritional disorders, and so on. Due to fall not only leads to huge costs but also creates limitations in everyday activities and dependence on others [1-5].

There are many factors that contribute to the occurrence of falls in old age. Some of these factors are classified into 2, namely:

1. Intrinsic factor consists of sex, psychological status (fear of falling, depression, anxiety), decreased muscle strength, balance, mobility, physical and or cognitive function
2. Extrinsic factors (environmental factors).

In addition to the factors mentioned above, psychological factors such as fear of falling there is a significant relationship with decreased activity in old age who had fallen and caused dependence on others. Fear of falling experienced 25-40% of elderly people, most of them have not experienced of fall. [1-2] Fear of fall is a risk factor for functional disability. Fear of falling is also often associated with depression and social isolation [2].

The Activities-Specific Balance Confidence (ABC) scale is one of the measuring tools used to measure one's confidence in performing specific activities without falling down. [6-9] Measurements with this tool have not been routinely performed and particularly in the Wanasraya nursing home Denpasar has never been done.

2. Methods

This study used an analytic cross-sectional study design at an advanced age in Wanasraya nursing home Denpasar on January 2015. Health status was obtained from physical examination and medical interview. Conducted historical interviews of fall in the last 6 months and about confidence to do specific activities without falling based on the ABC scale.

The objective of the study was to know the relationship between the ABC scale with age and fall in old age at Wanasraya nursing home Denpasar. The hypothesis that there is a relationship between the ABC scale with age and fall. If there is a relationship between the ABC scale with age and fall it is advisable to perform an ABC scale check to reduce morbidity and mortality caused by a fall.

The sample is all advanced aged residents of Wanasraya nursing home Denpasar who meet the inclusion and exclusion criteria. The inclusion criteria are all patients over the age of 60 who are willing to take the study. Exclusion criteria were patients with handicaps, uncooperative patients.

3. Results

Sample consist of 52 subjects, 26 (50%) male and 26 (50%) female, age from 64 years until 87 years old with average age was 71.6 ± 6.5 years. The prevalence of history of fall was found to be 17.3% (67% female vs 33% male).

Table 1. Sample characteristics data.

Variabel	n	(%)
Age (mean \pm SD)	71,6 \pm 6,5	
Sex		
Male	26	50
Female	26	50
History of Hypertension	47	90,4
History of Diabetes Mellitus	28	53,8
History of Osteoarthritis	19	36,5
History of Parkinson	1	1,9
History of Fracture	3	5,8
History of Fall		
1 time	6	11,5
More than 1 times	3	5,8

The mean total ABC scale was significantly different in female compared with male (81.2 ± 14.1 vs 90 ± 12.8 $p < 0.05$). Female were lower than male.

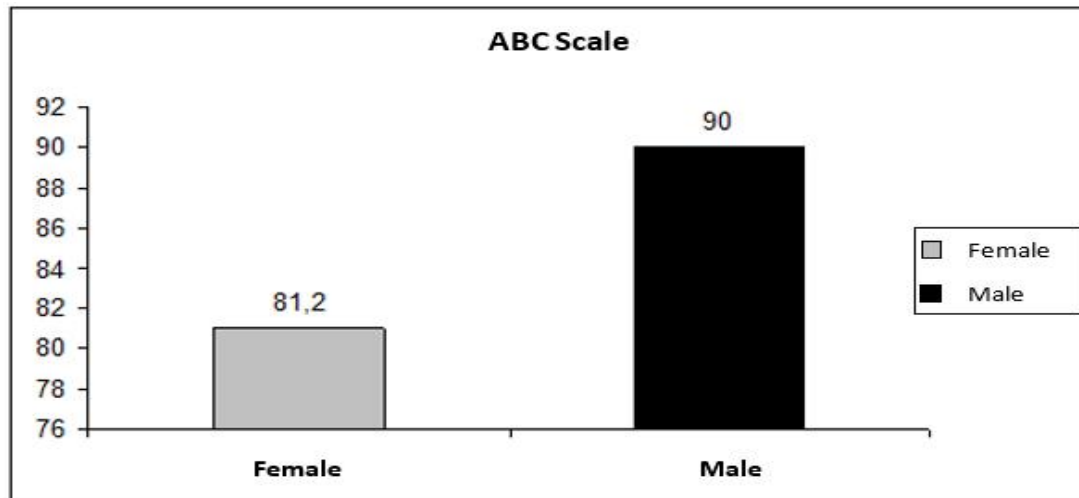


Figure 1. ABC scale average by sex.

In subjects with a history of fall having a total ABC scale lower than without a history of fall (73.5 ± 13.6 vs. 88.2 ± 12.9 ; $p = 0.01$). By using a total cut off ABC scale of 82.9%, there was a significant correlation between total ABC scale with history of fall ($p = 0.01$; prevalence ratio = 7.0; 95% CI 1.6 - 49.8).

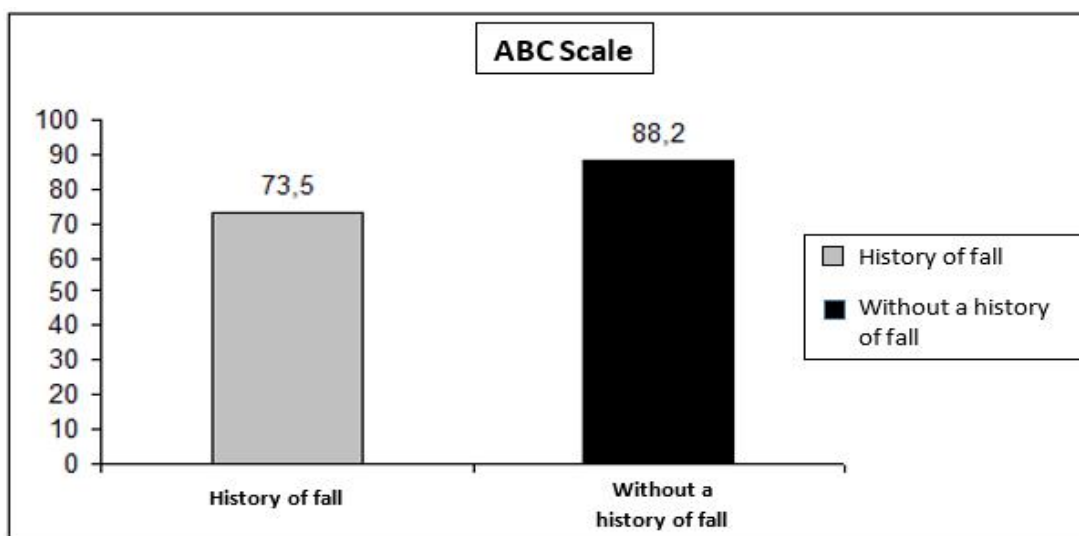


Figure 2. ABC scale mean based on history of fall.

4. Discussion

In this study, the prevalence of history of fall was 17.3%, women more than men. Laessoe U, et al. got about 30% age over 65 years have experienced a fall incident once a year and increased 40% at the age above 80 years and more common in women. [7] This study had a lower results due to the exclusion criteria of subjects with severe disease or severe physical limitations not included in the study. Besides that, it is also possible because recall biased in remembering the incident of fall 6 months earlier.

Total ABC scale in female was lower than men significantly (81.2 ± 14.1 vs 90 ± 12.8 ; $p < 0.05$). Fear of falling syndrome has implication significantly against dependence on others and reduce

confidence in daily activities. Lajoei Y, et al. got more women experience a history of fall so that confidence to perform activities will be reduced [3].

Total ABC scale in subjects with a history of falls significantly lower than without a history of falls. Studies from Lajoei Y, et al. got the same result that subjects with a history of fall will experience fear of falling again and for that they limit their activity. [3] Studies from Janine H, et al. got a difference but are not significant. [6] Using a cut off ABC scale of 82.9% found a significant association with history of fall ($p = 0.01$; prevalence ratio = 9.04; 95% CI 1.6 - 49.8).

ABC scale measurement as one predictor of future incidence in elderly patients appears to be possible and routinely recommended in older age care centers to prevent fallout and complications.

5. Conclusion

The result of this study indicate that a lower ABC score is associated with the incidence of falls in the elderly.

References

- [1] Setiati S 2006 Gangguan keseimbangan, jatuh, dan fraktur. In: Sudoyo AW, Setiyohadi B, Alwi I, Simadibrata M, Setiati S, editors. Buku ajar ilmu penyakit dalam jilid II. 4th ed. Jakarta: Pusat Penerbitan Departemen Ilmu Penyakit Dalam Fakultas Kedokteran Universitas Indonesia pp 1378-87.
- [2] Andayani RR 2006 Jatuh. In: Darmojo RB, editor. Buku ajar geriatri. 3rd ed. Jakarta: Balai Penerbit FKUI pp 160-71.
- [3] Lajoei Y and Gallagher SP 2004 Predicting falls within the elderly community: comparison of postural sway, reaction time, the Berg balance scale and the Activities-specific Balance Confidence (ABC) scale for comparing fallers and non-fallers. *Arch Gerontol Geriatr.* **38** pp 11-26.
- [4] Kulmala J, Sihvonen S and Kallinen M 2007 Balance confidence and functional balance in relation to falls in older persons with hip fracture history. *Journal of Geriatric Physical Therapy.* **30**(3) pp 114-20.
- [5] Parry SW, Steen N and Galloway SR 2001 Falls and confidence related quality of life outcome measures in an older British cohort. *Postgrad Med J.* **77** pp 103-8.
- [6] Janine H, Kathleen MG and Leslie GP 2003 Determinants of balance confidence in community-dwelling elderly people. *Physical Therapy.* **83**(12) pp 1072-9.
- [7] Laessoe U, Hoeck HC and Simonsen O 2007 Fall risk in an active elderly population-can it be assessed? *Journal of Negative Results in BioMedicine.* **6**(2) pp 1-11
- [8] Liu AT, Davis JC and Nagamatsu LS 2010 Changes in executive functions and self-efficacy are independently associated with improved usual gait speed in older women. *BMC Geriatrics.* **10** pp 25-9.
- [9] Beninato M, Portney LG and Sullivan PE 2009 Using the international classification of functioning, disability and health as a framework to examine the association between falls and clinical assessment tools in people with stroke. *Phys Ther.* **89** pp 816-25.