

Prevalence and Factor Associated with Falling Among Older Adults in Ban Den San Sai Village, Thung Ko Sub-district, Wiang Chiang Rung District, Chiang Rai Province, Thailand

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ABSTRACT

Background: Falling is an important cause of morbidity and disability among the elderly. **Objective:** The study aimed to estimate prevalence of and determine factors associated with fall among older adults in Ban Den San Sai Village, Thung Ko Sub-District, Wiang Chiang Rung District, Chiang Rai Province, Thailand. **Methods:** An analytic cross-sectional study was conducted. The study setting was Ban Den San Sai Village, Chiang Rai Province. Data were collected between February and April 2020. The general and socio-demographic information were collected by using a validated questionnaire. Chi-square was used to detect the associations between variables at the significant level of $\alpha=0.05$. **Results:** Seventy older adults aged 60 years or above participated the study; 52.8% were female, 68.6% had no partner. The prevalence of fall in the past six months was 14.2%. Only those who were no-working was found to be associated with fall (p -value=0.001). **Conclusion:** Older adults who do not work need to be given the program of fall prevention.

Keywords: Fall, Older adults, Factors, Thailand

Introduction

Falls are the leading cause of injury-related visits to emergency departments in the United States and the primary etiology of accidental deaths in persons over the age of 65 years. The mortality rate for falls increases dramatically with age in both sexes and in all racial and ethnic groups, with falls accounting for 70.0% of accidental deaths in persons 75 years of age and older. Falls can be markers of poor health and declining function, and they are often associated with significant morbidity [1].

Approximately 28.0-35.0% of people aged of 65 and over fall each year increasing to 32.0-42.0% for those over 70 years of age [2]. The incidence of falls appears to vary among countries as well. For instance, a study in the South-East Asia Region found that in China was presented at 31.0% [3] while another, found that in Japan, 20.0% [4] of older adults fell each year. A study in the region of the Americas (Latin/Caribbean region) found the proportion of older adults who fell each year ranging from 21.6% in Barbados to 34% in Chile [5].

Thailand, it will be accounted for 27.0% of older adults falling in 2021 [6]. In a study on mortality rate of falling among older adults in Thailand, the results showed that Chiang Rai Province were ranked in the 5th and reported in the highest rate of fall mortality 22.2 per 100,000 population [7]. We aimed to determine the factors associated with fall among older adults in Ban Den San Sai village, Chiang Rai, Thailand. The results could be used for fall prevention and control measures development in later.

Methods

Study design

Analytic cross-sectional study was conducted. It was used to find the associations between variables. All older adult aged 60 or above who lived in Ban Den San Sai Village were invited to participate in the study. The duration of this study was 2 months; 1st February 2020 – 1st April in 2020.

Study setting

The study was conducted at Ban Den San Sai Village, Thung Ko Sub-district, Wiang Chiang Rung District, Chiang Rai Province, Thailand.

Study population

The study population were older adult aged 60 years or above who lived the study setting at least 12 months prior the study.

Study sample

An older adult aged 60 years or above lived the study setting between February and April 2020 were met the inclusion criteria.

Research instruments

Validated questionnaire was used to collect information of the participants such as age, sex, marital status, working status, BMI, smoking behavior, personal illness. The questionnaire was tested for validity by three experts in the field so called the item-objective congruence (IOC). The definition of “fall” was considered as a sudden loss of gait causing the hit of any part of the body to the floor that occurs within the past six months [8-10].

Data collection

Individuals aged 60 years or above lived in the study setting were invited to participate in the study. The verbal consent was obtained from all participants after completion the verbal explanation of the study purpose. Interview lasted for 15 minutes in each.

Data analysis

Data were double-entered into excel spreadsheet. All analyses were done by using the statistical package of the social science (SPSS) version 24. Descriptive statistics were used for explaining the general characteristics of participants. The associations between variables were analyzed by chi-square at significance level of $\alpha=0.05$.

Ethical consideration

All study protocols and procedures were following the Declaration of Helsinki. Verbal consent was obtained from all participants before the study commenced, after informing them on all essential information of the study. The participation was based on voluntary basis. The participants could stop their participation any time without any adverse consequences. The participations were treated privacy and respectful. Data gained were kept confidentially.

Results

A total of 70 older adults participated in this study; 52.8% were female, 68.6% had no-partner, 68.6% aged >70 years, and 52.9% had normal BMI, 17.1% were smoking, 38.5% were no exercise, 67.1% were

working, and 27.1% were mobility problem. 14.2% reported having fall in the past six months (Table.1).

Only working status was found to be significant

Table 1 General characteristics, risk behavior, and fall of participants (N = 70)

Characteristic	n	%
Sex		
Male	33	47.1
Female	37	52.8
Marital status		
No partner	48	68.6
With partner	22	31.4
Age group (years)		
≤69	48	68.6
>70	22	31.4
BMI (Body mass index)		
Abnormal	37	52.9
Normal	33	47.1
Smoking		
Yes	12	17.1
No	58	82.9
Working status		
Yes	47	67.1
No	23	32.8
Mobility problem		
Yes	19	27.1
No	51	72.8
Fall (past 6 months)		
Yes	10	14.2
No	60	85.7

associated with fall (p-value=0.001). While other factors including sex, age, marital status, BMI, smoking, and individual illness were not found the significant association with fall.

Discussion

In our study, it was found that the prevalence of fall among the older adults in Ban Den San Sai Village was 14.2% which is different from the study of Rongmueng et al. [11] which was reported at 26.2%. This maybe because the difference of environmental factors and a large proportion of the elderly in this study were active person. Moreover, in our study we defined fall as losing the balance such that hands, arms, knees, buttocks or body touch or hit the ground or floor that participants would report only serious occurrences but ignoring or underreporting on any non-injurious fall, near falls, or missteps.

The study showed that working status is only a factor that associated with fall in older adults. There were some previous studies showed similar result, which were presented that fall was closely related to inactivity of daily living. Means that those the elderly people who had low daily activity tended to have a greater chance of fall while comparing with those who had high daily activity such as regularly walk around their home, and exercise [12]. This may be attributed

Table 2 Factor associated with fall among participants.

Variable	Falling present (n = 10) n (%)	Falling absent (n = 60) n (%)	Total	χ^2	P-value
Gender					
Male	4 (12.1)	29 (87.9)	33	0.241 ^a	0.739
Female	6 (16.2)	31 (83.8)	37		
Age					
≤69	8 (16.7)	38 (83.3)	48	0.758 ^a	0.488
>70	2 (9.1)	22 (90.9)	22		
Marital status					
No partner	5 (22.7)	17 (77.3)	22	1.867	0.172
With partner	5 (10.4)	43 (89.6)	48		
BMI					
Abnormal	5 (13.5)	32 (86.5)	37	0.038	0.845
Normal	5 (15.2)	28 (84.8)	33		
Smoking					
Yes	1 (8.3)	11 (91.7)	12	0.469 ^a	0.681
No	9 (15.5)	49 (84.5)	58		
Working status					
No	8 (34.8)	15 (65.2)	23	11.753 ^a	<u>0.001^b</u>
Yes	2 (4.3)	45 (95.7)	47		
Mobility problem					
Yes	4 (21.1)	15 (78.9)	19	0.914 ^a	0.443
No	6 (11.8)	45 (88.2)	51		

^aFisher's exact test; ^bSignificant at $\alpha=0.05$

to the frequent or more movement of the lower limbs greatly aids the blood flow and pressure that maintains adequate perfusion of the brain by assisting in the venous return process and by maintaining the important reflexes that compensate for changes in posture [13]. Moreover, the natural ageing process combined with inactivity can gradually lead to decreased physical performance with the result that many older adults are at increased risk of fall [14].

Conclusions

The prevalence of fall among older adults in Ban Den San Sai Village is high while comparing to some other populations. Inactive working status is indicated as a risk factors of fall. Therefore, older adults with low activities and do not work need to be provided falling prevention program by health professionals.

Limitations

There are some limitations in this study. Participants were invited from one specific community which might not be able to generalize to other older adult populations. A cross-sectional study provides a snapshot of the risk profile of those with fall, then to find the associations between variables may not too much strong. Some variables such as biological factors, socioeconomic status, and environment factors were not considered in this analysis.

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