

## INTRINSIC RISK FACTORS RELATED TO FALLS IN ELDERLY PEOPLE, THAILAND<sup>1</sup>

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### Abstract

This study aimed to explore the risk rate of falls and intrinsic risk factors related to falls in elderly people in northeastern Thailand. The sample group consisted of 1,609 people who were 60 years old and above. They were from provinces having an index of aging between 100.0 -119.9 ( Ubon Ratchathani and Khonkaen, two communities each) and that of 80.0 – 99.9 ( Maha Sarakhan, Udon Thani, Nakhonratchasima, and Surin, two communities each). General data records from and geriatric screening forms were used for data collection from April – May 2018. Obtained data were analyzed by using frequency, percentage, mean, standard deviation and inferential statistics. Also, the chi-square test, Fisher's exact test and multiple logistic regression were employed for analyzing the relationships. The relationship value was presented by the Odds ratio and 95% reliability.

The results of the study revealed that 478 elderly people in this study (30%) were risky to falls. It was found that an increase in age had an opportunity to be risky to falls for 1.2 times (95% CI = 1.1 – 1.3,  $p < .01$ ). Elderly people reading a newspaper at a distance of 1 foot had no opportunity to be risky to falls for 1.8 times (95% CI = 1.4 – 2.4,  $p < .01$ ). Elderly people having a deficiency in knowing how to think had an opportunity to be risky to falls for 2.3 times (95% CI = 1.7 – 3.1,  $p < .01$ ). Also, elderly people who had a knee ache had an opportunity to be risky to falls for 1.6 times (95% CI = 1.3 – 2,  $p < .01$ ). The following were suggestions, elderly people should check their eyesight at least once a year; those having a knee ache should see a doctor and must follow his suggestions, and medical staff should check the brain of elderly people every time they go to the hospital. This aims to prevent internal risk factors related to falls in elderly people.

**Keywords:** Related factors, Falls, elderly people

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## Introduction

Falling down is an important problem causing loss of life to elderly people across the world. According to the World Health Organization (2012), there were 424,000 people who died of falling down per year (1,160 people per day on average) and there was a tendency to increase continually. This is particularly on those who are 80 years old and above (3 times increase) and 60-79 years old (2 times increase) (Policy and strategy section, Ministry of Public Health, 2014). It was found that the causes of falling down in elderly people are mostly related to slipperiness, stumbling and misstopping (60%) and falling down the staircase (5.80%) (Office of Epidemiology, Department of Disease Control, 2014). Causes assessment of falling down can be classified into 1) environment risk factors (slippery floor, uneven floor and inadequate light 2) intrinsic risk factors (transformation happened to various body systems having an effect on control of the body such as sensory input, central processing and muscular activity (Muangpaison, 2017). For the latter, an increase in age is more risky to fall than young men/women for 4-5 times. Interestingly, the female is risky to fall two times (Greenber, M.R., Moore, E.C., and Kane, B.G., 2016).

According to Stubbs, et.al. (2014), elderly people having a problem in foot ache are risky to falls (two times of those having no foot ache). Elderly people having problems in walking and body remaining are risky to falls 3 times (Rubenstein, L.Z. and Josephson, K.R., 2006). Elderly people having a problem in watching are risky to fall: (2.5 times increase) (Lorel, S.R., 2006). An elderly person who used to fall down once and above will be risky to fall down in the following year for 3 times (Deindrea, S., et.al., 2010). Elderly people having a decreased capability in doing daily life activities and must rely on others are risky to falls for two times compared with normal elderly people. A decrease in movement ability has a positive relationship with falling down in elderly people (Bloch, et.al., 2013). Elderly people who are more than 80 years old have a decrease glomerular infiltration rate for 50 percent. Besides, there is a dementia of the sphincter and decrease the flexibility of muscle-making a decrease in bladder control so they have to often go to the toilet (Dong & Seung, 2013). Hence, it is risky to falls like in the case of chronic illness. This is particularly on brain system disease (such as Parkinson, Chronic renal failure and emphysema). Also, the impacts of stroke make walking or movement be defective which is a risk to fall in elderly people (Genever, Downes, and Medcalf, 2005). In addition, complications due to diabetes (e.g. numbness of hands/ feet and blurry vision) more risky to falls in elderly people. (Burly & Garwood, 2010). Results of the study on intrinsic risk factors related to falls in elderly people will be a guideline for preventing falls in elderly people.

## Objectives of the study

Specifically, this study aimed to investigate

- 1.) Risk rate on falls in elderly people in northeastern Thailand
- 2.) Intrinsic factor related to falls in elderly people in northeastern Thailand

## Research Methodology

This quantitative study selected communities from the index of aging which was used for measuring a level of aging of population [(60 years old and above / Below 15 years old) X 100]. Two provinces having an index of aging between 100.0 – 119.9 were obtained: Ubon Ratchatani and Khonkaen provinces, two communities each. Besides, four provinces having an index of aging between 80.0-99.9 were obtained: Maha Sarakham, Udon Thani, Nakhonratchasima and Surin provinces, two communities each. The sample group of each area (60 years old and above) lived in the locale of the study. They were computed by setting an error of conclusions at 0.05. The standard value from the table of standard normal distribution was set at 1.96  $p=0.05$ . The sample group of 1,605 elderly people was obtained.

## Research Instrument

Geriatric screening form for health promotion sub-district hospital and community hospital was employed to estimate the elderly people who were screened and found deflection or risk. It was prepared by the Institute of Geriatric Medicine Department of Medical Service, Ministry of Public Health.

**Sample group advocacy:** This study was recognized by the Research Ethics Committee, Surin Boromarajonnani College of Nursing (P-EC 09-02-60)

**Data collection:** The following were done after the recognition by the Research Ethics Committee:

- 1.) Research assistants were explained about steps of research details of data collection (Geriatric Screening form) to understand in the same direction.
- 2.) Data were collected from April – May 2017 and completeness/correctness of data was checked for further analysis.

**Data analyses:** STATA program was used for data analyses.

- 1.) Description statistics for the geriatric screening form (frequency, percentage, mean and standard deviation).
- 2.) Inferential statistics were used for finding relationships among various independent Variables and risk of falls in elderly people (Multivariable Logistic Regression, Regression model showing Adjusted OR, and 95% reliability of Adjusted OR).

## Results of the Study

The sample group of 1,609 elderly people consisted of females (61.1%) and males (38.9%) with an average age of 70.49 years. Regarding their ability in daily life activities, it was found that most of them (96.40%) were included in the sociable group or they could rely on themselves and they also could help others. The rest were those who were at home all the time (3.00%) or they sometimes could be relied on themselves. The other 0.60 percent could not rely on themselves (the elderly bedridden or disables). More than one-third of the elderly people (478 persons) in the sample group were risky to falls (31% female and 28% male).



Table 1: Relationships between intrinsic risk factors and risk of falls in elderly people: an analysis of many factors each time (n=1,609).

<b>Vision: Correct counting fingers within the distance of 3 meters (Less than <math>\frac{3}{4}</math> times)</b>			
No	1		
Yes	1.82	1.28 – 2.34	0.00
<b>Vision: Able to read the first page of the newspaper within the distance of one foot</b>			
No	1		
Yes	2.55	2.00 – 3.24	0.00
<b>Abbreviated Mental test (AMT)</b>			
Normal thought	1		
Abnormal thought	3.34	2.51 – 4.48	0.00
<b>Psychotic depression screening (2Q)</b>			
Normal	1		
Risky	1.48	1.03 – 2.30	0.03
<b>Risky to cardiovascular disease</b>			
Little risky	1		
Much Risky	1.25	0.97 – 1.61	0.08
<b>Clinical osteoarthritis screening</b>			
No opportunity	1		
There is an opportunity to have osteoarthritis	2.18	1.93 – 2.74	0.00
<b>Urinary incontinence</b>			
No	1		
Yes	2.07	1.33 – 3.08	0.00

A statistical significance level at 0.05

According to table 1, it was found that the risk of falls in females was higher than males for 1.6 times. An increase in age had an effect on falls in the age range of 70-79 years for 1.68 times and 80 years and above form 2.57 times when compared with the age range of 60-69 years. The elderly people who sometimes could take care of themselves were risky to fall for 6.97 times when compared with those who could take care of themselves and help others. The elderly people who



could not rely on themselves (disabled) were risky to falls for 0.31 times less than those who could rely on themselves. The elderly people having a blurry vision problem both near and far distances were risky to falls for 1.83 and 2.55 times, respectively. Abnormal thought in elderly people was risky to falls for 3.34 times. The elderly people who were in psychotic depression were risky to falls for 1.48 times when compared with normal elderly people. The elderly people having a chance to have osteoarthritis were risky to falls for 2.18 times. Besides, the elderly people having a problem with urinary incontinence were risky to falls for 2.07 times when compared with normal elderly people.

Table 2: Relationships between intrinsic factors and risk of falls in the elderly people: an analysis of many factors each time (N=1,609)

Variable	Adjusted OR	95% CI	P value
Age			
60-65 years	1		
> 70 years	1.35	1.16 – 1.58	0.00
Reading the first page of the newspaper within the a distance of one foot	1.80	1.39 – 2.33	0.00
Abbreviated mental test (AMT)	2.29	1.89 – 3.11	0.00
Risky to osteoarthritis	1.77	1.39 – 2.25	0.00

A statistical significance level at 0.05

According to Table 2, it was found that intrinsic factors having a relationship with risk to falls in the elderly people (70 years) and above was risky to falls for 1.35 times of those who were below 70 years old (OR<sub>adj</sub> = 1.35; 95% CI = 1.16 – 1.58). The elderly people having a problem in blurry vision in a near distance were risky to falls for 1.80 times of those having normal vision (OR<sub>adj</sub> = 1.80; 95% CI = 1.39 – 2.33). The elderly people having abnormal thoughts were risky to falls for 2.29 times of the normal elderly people (OR<sub>adj</sub> = 2.29; 95% CI = 1.69 – 3.11). Besides, the elderly people who were risky to be osteoarthritis were risky to falls for 1.77 times of those who were not (OR<sub>adj</sub> = 1.77; 95% CI = 1.39 – 2.25).

## Discussions

The results of the study showed that the rate of risk to falls in the female elderly people was higher than males for 1.16 times (31 and 28%), respectively. This is because of the rapid changes in muscle mass of menopause. Moreover, they seldom do activities or play sports to strengthen their muscle when they are getting old (World Health Organization, 2007). Regarding intrinsic risk factors having relationships with falls in the elderly people in northeastern Thailand, it is found that females are risky to falls for 1.16 times when compared



with males. The elderly people of 70 years old and above were risky to falls for 1.35 times of those who are below 70 years old (Greenber, M.R., Moore, E.C., and Kane, B.G., 2016). This conforms to a study of Saftari, L.N. and Kwon, O. (2018) which was found that elderly people having a problem in blurry vision in a near distance are risky to falls for 1.80 times of those having normal vision. It also conforms to a study of Greenber, M.R., Moore, E.C., and Kane, B.G., (2016) which was found that elderly people who are risky to osteoarthritis are risky to falls for 1.77 times to those who are not.

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