# **Original Research Article**

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20174214

# The prevalence of falls and its associated factors among elderly living in old folks home in Kuala Lumpur, Malaysia

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Received: 04 August 2017 Revised: 11 September 2017 Accepted: 12 September 2017

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# **ABSTRACT**

**Background:** Falls are common among the geriatric population, causing frequent morbidity and mortality. Identifying risk of falls among elderly living in old folks home can help in the care and prevention of falls in this population. The purpose of our study is to evaluate the prevalence of falls among elderly living in old folks home and its associated factors.

**Methods:** A cross-sectional study involving 50 elderly living in old folks home in Kuala Lumpur was selected by convenient sampling. History of falls revealed by participants, assisted questionnaires that consist of sociodemographic details and prevalence of falls within 6 months period were given. The association between the prevalence of falls and its associated factors were assessed by using chi-square test.

**Results:** The prevalence of falls among the respondents was 30%, but there were no significant association between the socio demographic and prevalence of falls. There were also no associations between activity of daily living, number of comorbidities, number of medication with falls.

**Conclusions:** Falls represent one of the public health problems among elderly living in old folks home in Kuala Lumpur, Malaysia with 30% prevalence of falls among the respondent. Our findings may assist public health authorities to implement programs of awareness and all prevention among elderly.

Keywords: Prevalence, Falls in elderly, Its associated factors, Old folks home, Kuala Lumpur

## INTRODUCTION

The aging population is a phenomenon observed quite frequently during our time. The phenomenon appears to affect many high- and middle-income countries, including Malaysia and poses a real challenge to their society and healthcare systems, especially with the remarkably increased in the burden of diseases suffered by the aging population nowadays. Aside from chronic diseases, falls are also attributable to the challenges that need to be tackled and managed, brought about by the aging population. Falls have been shown to cause

considerable morbidity and mortality and affect the quality of life of many elderly people. In Malaysia alone, the prevalence of falls was about 27.3% of the 516 participants. Meanwhile, in Brazil, the prevalence of falls was about 27.6% among the 6,616 elderly participated in the respected study. A somewhat lower prevalence of falls was observed in a study done in China, which showed the prevalence of falls was around 18% on average among the 1512 participants.

As falls remain a predicament even to the well-advanced societies, a multitude of inquiries has been done quite

considerably. Several factors have been posited for the increase in the prevalence of falls among elderly. Considerable efforts can be given to the respective factors which have been shown to affect the prevalence of falls which often involve the society, particularly those who are in charge of the aging population (health care workers, nearby relatives, etc.). Amongst the proposed factors which affect the prevalence of falls are age, gender, the activities of daily living, marital status, comorbidities, and medications. Previous studies conducted by the researchers, Azidah et al and Yeong et al found that the age group of more than 75 years of age gave the highest percentage of falls as compared to the other age groups, with the percentage of 37.5% and 30.3% respectively.<sup>3,4</sup> However, it is also worth mentioning that the results are not statistically significant. And it is further asserted that older adults are prone to falls largely due to the decline of physical, cognitive and affective capacities.<sup>4</sup> Females are also more likely than males to experience falls as shown by multiple studies and significant evidence has been found which shows that females are more likely than males to experience fallrelated injuries, including fractures.<sup>5,6</sup>

Moreover, the risk of falling also increases progressively with the severity of limitation in activities of daily living (ADL). The adjusted relative risk of falling more than once peaked for persons with severe limitation (ADL-III) compared to those with no limitation (ADL-0) as shown in that particular study. Speculations are therefore proposed as to why the limitation in activities gives rise to an increased risk of falling. Fear-related avoidance of ADLs is common and an independent predictor of falling as argued reasonably by one of the authors of the study. The number of medications also appears to be postulated as one of the risks of falls among the aging population. Numerous studies were conducted showing an increasing number of drug use leads to an increased risk of falling among elderly.<sup>6,8</sup> However, the possible limitation in one of the study is that it was conducted in the setting with high usage of drugs that appeared to increase the risk of falling. Notable examples of such drugs are different types of psychotropic drugs, such as sedatives, hypnotics, antidepressants and antipsychotic medications, which can cause sedation, impaired balance, and coordination. Therefore, it can be asserted that further studies are needed as to reduce the limitations of the previous studies. The association between comorbidities or specifically a number of comorbidities with the risk of falls has been well observed in previously conducted researches. Sibley et al and Damian et al show that an increasing number of diseases in an individual is strongly associated with risk of falling.<sup>9,10</sup> Furthermore, the study which is done by Sibley et al also displays findings that show, which diseases are strongly associated with the risk of falls. The two main diseases are chronic obstructive pulmonary disease and hypertension.

We also note a parallel trend observed between those that remain unmarried with the risk of falls in several previous studies. One study that is worth to be mentioned shows that participants who are single in both men and women have the highest rate of falls which is 27.0% and 36.1% respectively. However, no substantial evidence has been found in the study which showed an association between marital status and the risk of falls. Interestingly, it also appears that men are more likely than women to experience fall if they remain unmarried. The present study was carried out to determine the actual prevalence of falls among elderly living in old folks home and recognize its associated factors. It is significant to determine the magnitude and its associated factors, so that appropriate fall prevention programs, as well as educational programs regarding falls, could be devised and implemented to suit the local setting and needs which in the end proves to be beneficial for the society.

#### **METHODS**

A cross-sectional study was conducted in old folks home in Kuala Lumpur, Malaysia. A total of 50 elderly were recruited and interviewed using structured questionnaires that consists of socio-demographic details, health status, comorbidities, use of medications, activities of daily living as well as study on falls. The inclusion criteria include healthy elderly living in old folks while exclusion criteria include those who are bedridden and mentally unstable. Data collection was done during June 2017.

Questionnaires were adopted from 2 previous studies. 13,14 The questionnaires consist of 6 parts: Part A was about socio-demographic characteristics such as gender, age, race, marital status, educational level. Part B was about the health status include weight, height, BMI, blood pressure and random blood sugar. Part C was about the comorbidities affecting the respondent, which include diabetes mellitus, hypertension, poor vision, obstructive pulmonary disease, ischemic heart disease, stroke and osteoporosis. Part D was about the number medications used. Part E was regarding the independence in activities of daily living including bathing, dressing, toileting, transferring, continence and feeding. Part F was about the study of falls include the location of fall, reason of fall, type of injuries following the fall, number of days of hospitalization. The activities of daily living were then calculated based on Katz Index of independence in activities of daily living, in which any independence will be assessed by no supervision, direction or personal assistance, and will be given 1 point for each function.<sup>13</sup> Dependence will be assess by with supervision, direction, personal assistance or total care, and will be given 0 points for each function. All points scored will be sum up and categorized into full function (5-6 points), moderate impairment (3-4 points), and severe functional impairment (less than 2 points).

Data were analysed using SPSS version 23.0. Frequency and percentage were used for descriptive statistics while chi square was used for inferential statistics. Consent was taken from all respondents before participating in the study. Ethical approval was obtained from the

International Medical School, Management and Science University.

#### **RESULTS**

There were 50 respondents in total participate in this study with a response rate of 80%. 35 (70%) of them were female and 15 (30%) were male. The respondents were Indian, 17 (34%) while the remaining 33 (66%) were Chinese. The age of participant ranged from 66 to 104 years old with mean age of 80±1.24 SD with most of the respondents are single give the highest percentage which is 86% as shown in Table 1. In this study, it was found that the prevalence of falls for the last 6 month is 30% from the total respondent. 17 (34%) of them living in the old folks home do not have any comorbidities while another 33 (66%), have at least one comorbidities or more.

15 (30%) of the respondent had history of falls in the past 6 month with 13 (86.7%) are afraid of falls. 6 (40%) of them reported to fell on one level, while others during getting out of bed or chair, during shower and in the garden. Slipped and legs gave way are the most commonly occur during fell which shares the highest percentage about 26.7% respectively. 10 (66.7%)

respondent out of 15 of them who had history of fell suffered from injuries. This cause half of them about 5 (50%) respondent need to be admitted as to receive the treatment as well as the medication. 4 (80%) of them who had been hospitalized can only be discharged after more than 3 days while the remaining only takes less than 2 days for the treatment in the hospital.

There is no relationship found between age and fall among elderly living in old folks' home (p=0.104). Similar results were revealed for all the associated factors in this study. The results are as follow. There is no association between gender and fall among elderly living in old folks' home (p=0.502). There is no connection between marital status and fall among elderly living in old folks' home (p=0.654). There is no relation between race and fall among elderly living in old folks' home (p=0.558). There is no association between educational level and fall among elderly living in old folks' home (p=0.552). There is no relationship between activities of daily living and fall among elderly living in old folks home (p=0.464). Also, there is no interconnection between number of medication and fall among elderly living in old folks' home (p=0.924). Lastly, there is association between number of comorbidities and fall among elderly living in old folks's home (p=0.111).

Table 1: Demographic profile of respondent from old folks.

| Variable                             |          |                            |         | Frequency (n) | Po     | ercentage (%)      |  |
|--------------------------------------|----------|----------------------------|---------|---------------|--------|--------------------|--|
| Dagg                                 |          | Indian                     |         | 17.0 34.0     |        | 4.0                |  |
| Races                                |          | Chinese                    |         | 33.0          | 0 66.0 |                    |  |
| Candan                               |          | Female                     |         | 35.0 70.0     |        | 0.0                |  |
| Gender                               |          | Male                       |         | 15.0 30.0     |        | 0.0                |  |
|                                      |          | 60–74                      |         | 12.0 24.0     |        | 1.0                |  |
| Age in years                         |          | 74–84                      |         | 24.0 48.0     |        | 3.0                |  |
|                                      |          | ≥ 85                       |         | 14.0          | 0 28.0 |                    |  |
|                                      |          | Illiterate or no education |         | 17.0 34.0     |        | 1.0                |  |
| Education lavel                      |          | Primary school             |         | 17.0          | 34.0   |                    |  |
| Education level                      |          | Secondary school           |         | 14.0          | 28     | 3.0                |  |
|                                      |          | University                 |         | 2.0 4.0       |        | 0                  |  |
| Marital status                       |          | Single/Divorced            |         | 43.0 86.0     |        | 5.0                |  |
|                                      |          | Has partner                |         | 6.0 12.0      |        | 2.0                |  |
| Body mass index (kg/m <sup>2</sup> ) |          | < 18.5 (underweight)       |         | 2.0 4.0       |        | 0                  |  |
|                                      |          | 18.5-22.9 (Normal)         |         | 13.0          |        | 5.0                |  |
|                                      |          | 23.0-27.4 (Overweight)     |         | 9.0           |        | 3.0                |  |
|                                      |          | >27.4 (Obesity)            |         | 10.0          |        | 20.0               |  |
| Variables                            |          |                            | Minimum | Maximum       | Mean   | Standard deviation |  |
| Weight (kg)                          |          |                            | 36.90   | 98.70         | 57.35  | 13.94              |  |
| Height (cm)                          |          |                            | 138.00  | 170.00        | 151.95 | 9.08               |  |
| Blood pressure<br>(mmHg)             | Systolic | blood pressure             | 90.00   | 170.00        | 128.56 | 16.86              |  |
|                                      | Diastoli | c blood pressure           | 50.00   | 100.00        | 67.78  | 11.82              |  |
| Random blood<br>sugar (mmol/L)       |          |                            | 4.30    | 18.90         | 8.33   | 2.79               |  |

Table 2: Frequency and percentage of falls and factors associated with falls among respondent of old folks.

| Variable   |                          | Frequency | Percentage (%) |
|--|--------------------------|-----------|----------------|
| Afraid of falls (and of 15 more and and rule of all) | Yes                      | 13.0      | 86.7           |
| Afraid of falls (out of 15 respondent who fell)      | No                       | 2.0       | 13.3           |
|  | On one level             | 6.0       | 40.0           |
|  | Getting out of bed/chair | 4.0       | 26.7           |
| Place of falls                                       | Using shower/bath        | 2.0       | 13.3           |
|  | Using toilet             | 2.0       | 13.3           |
|  | In the garden            | 1.0       | 6.7            |
|  | Tripped                  | 3.0       | 20.0           |
|  | Slipped                  | 4.0       | 26.7           |
| How the fall happened                                | Lost balance             | 1.0       | 6.7            |
|  | Legs gave way            | 4.0       | 26.7           |
|  | Not sure                 | 3.0       | 20.0           |
| Any injuries   | Yes                      | 10.0      | 66.7           |
| Any injuries   | No                       | 5.0       | 33.3           |
|  | Bruises                  | 3.0       | 30.0           |
| Types of injuries suffered                           | Cuts/grazes              | 2.0       | 20.0           |
| (out of 10 respondent who had injury)                | Broken hips/wrist/hips   | 4.0       | 40.0           |
|  | Back pain                | 1.0       | 20.0           |
| Need to be hospitalized                              | Yes                      | 5.0       | 50.0           |
| (out of 10 respondent who had injury)                | No                       | 5.0       | 50.0           |
| Day of hospitalization (out of 5 respondent who      | 1-2                      | 1.0       | 20.0           |
| need hospitalization)                                | 3 or more                | 4.0       | 80.0           |
| Need of medical care (out of 10 people who had       | Yes                      | 6.0       | 60.0           |
| injury)  | NO                       | 4.0       | 40.0           |

Table 3: The association between age and fall among elderly living in old folks home.

| Variable        |                        | Falls, n (%) |           | X <sup>2</sup> | P value |
|-----------------|------------------------|--------------|-----------|----------------|---------|
|                 |                        | Yes          | No        | Λ-             | r value |
|                 | 60-74                  | 6 (50.0)     | 6 (50.0)  |                |         |
| Age             | 75-84                  | 4 (16.7)     | 20 (83.3) | 4.537          | 0.104   |
|                 | ≥85                    | 5 (35.7)     | 9 (64.3)  |                |         |
| Gender          | Male                   | 3 (20.0)     | 12 (80.0) | 1.020          | 0.502   |
|                 | Female                 | 12 (34.3)    | 23 (65.7) | 1.020          | 0.302   |
| Marital status  | Single/divorced        | 14 ( 31.8)   | 30 (68.2) | 0.577          | 0.654   |
|                 | Has partner            | 1 ( 16.7)    | 5 (83.3)  | 0.377          | 0.034   |
| Race            | Indian                 | 6 (35.3)     | 11 (64.7) | 0.344          | 0.558   |
|                 | Chinese                | 9 (27.3)     | 24 (72.7) | 0.344          | 0.556   |
| Education level | Iliterate/no education | 5 (29.4)     | 12 (70.6) |                |         |
|                 | Primary school         | 7 (41.2)     | 10 (58.8) | 1.960          | 0.552   |
|                 | Secondary school       | 3 (21.4)     | 11 (78.6) | 1.500          | 0.334   |
|                 | University             | 0            | 2 (100.0) |                |         |

#### **DISCUSSION**

The main finding of the current study prevalence of fall among elderly is 30% which is almost similar to a study done by Rizawati and Mas Ayu at Melaka, Malaysia as it was 27.3% among the participants were recorded with history of fall.<sup>1</sup>

We also found out that age is not a significant determinant of an elderly to have the risk of fall. This

goes against a study done by Azidah et al whom reported that elderly of more than 75 years old showed the highest percentage of fall compared to other age group. <sup>3</sup> Gender is the second element that shows no relationship with falls. This contradicts with studies done by Bekibele and Gureje and also Dhargave and Sendhilkumar which states that women are more likely to experience fall rather than men. <sup>5,6</sup>

In this study, fall is also proven not to be associated with elderly's functional status of daily living. However,

according to study done by Henry-sánchez et al, the risk of falling increases progressively with increase severity of functional impairment. Besides that, this study also reveals that there is also no association between the number of comorbidities domain which relates to chronic illnesses such as diabetes mellitus, hypertension and chronic obstructive pulmonary disease and fall. This

deviates from the study done by Damian et al and Sibley et al which shows prevalence of falling increased in individual with comorbidities compared to no comorbidities. 9,10 Also there is no association seen between the number of medications and fall which supported by previous study done in Sweden. 14

Table 4: The association between number of comorbidities, number of medication and activities of daily living with fall among elderly living in old folks home.

| Variable                   |                              | Falls, n (%) |           | — X <sup>2</sup> | P value |
|----------------------------|------------------------------|--------------|-----------|------------------|---------|
|                            |                              | Yes          | No        | $\Lambda^{-}$    | r value |
| Number of comorbidities    | 0                            | 1 (16.7)     | 5 (83.3)  |                  |         |
|                            | 1                            | 1 (7.7)      | 12 (92.3) | 5.682            | 0.111   |
|                            | 2-3                          | 10 (41.7)    | 14 (58.3) | 3.062            | 0.111   |
|                            | ≥4                           | 3 (42.9)     | 4 (57.1)  |                  |         |
| Number of medication       | 1 or less                    | 3 (25.0)     | 9 (75.0)  |                  |         |
|                            | 2-4                          | 8 (33.3)     | 16 (66.7) | 0.319            | 0.924   |
|                            | 5 or more                    | 4 (28.6)     | 10 (71.4) |                  |         |
| Activities of daily living | Full function                | 6 (25.0)     | 18 (75.0) |                  |         |
|                            | Moderate impairment          | 3 (50.0)     | 3 (50.0)  | 1.598            | 0.464   |
|                            | Severe functional impairment | 4 (33.3)     | 8 (66.7)  | 1.336            | 0.404   |

There are few factors that are taken into consideration as our study limitations. Small sample size is the major boundary with a total of only 50 out of 70 respondents. This is because not all elderly in the old folks home are eligible to take part in this study due to their unstable condition such as bedridden and wheelchair bound. Communication barrier among students and the elderly during the course of research also does not allow us to obtain accurate information.

#### **CONCLUSION**

The prevalence of falls among elderly in old folks home in Kuala Lumpur, Malaysia in 2017 is high which is 30% in 50 respondents. However, there is no association between the sociodemographic profile with falls. There are also no association between activity of daily living, number of comorbidities, number of medication with falls.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the International Medical School Ethics Committee

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Cite this article as: Ghazi HF, Elnajeh M, Abdalqader MA, Baobaid MF, Rosli NSR, Syahiman N. The prevalence of falls and its associated factors among elderly living in old folks home in Kuala Lumpur, Malaysia. Int J Community Med Public Health 2017;4:3524-9.