FACTORS ASSOCIATED WITH FALLS AMONG OLDER PERSONS IN LIMBANG DIVISION, SARAWAK

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Master of Public Health
2011
FACTORS ASSOCIATED WITH FALLS AMONG OLDER PERSONS IN LIMBANG DIVISION, SARAWAK

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A thesis submitted in partial fulfillment of the requirement for Master of Public Health

Faculty of Medicine and Health Sciences
UNIVERSITI MALAYSIA SARAWAK
2011
ACKNOWLEDGEMENTS

This dissertation would not have been possible without the guidance and the help of several individuals who in one way or another contributed and extended their valuable assistance in the preparation and completion of this study.

First and foremost, my utmost gratitude to Dr Sidiah ak John Siop, my supervisor, for her guidance and support throughout this dissertation.

Dr Norliza Jusoh, Divisional Health Officer Limbang, for her support in terms of resource and use of facilities in Limbang Division, without which this study would have been impossible.

All Professors, Senior lecturers and Lecturers and Staff of the Department of Community Medicine and Public Health, Faculty of Medicine and Health Sciences, UNIMAS, for their inputs and comments throughout this research.

Staff of the Limbang Divisional Health Office, for their assistance during this study.

Fellow colleagues for their inspiration and companionship.

Last but not the least, my wife, family and the one above all of us, the omnipresent God, for giving me the health and strength to complete this dissertation.
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ABSTRACT

FACTORS ASSOCIATED WITH FALLS AMONG OLDER PERSONS IN LIMBANG DIVISION, SARAWAK

Ageing brings with it numerous challenges and issues and an increase in degenerative and age related diseases. Degenerative changes due to ageing leads to reduced adaptability to sudden changes in environment or body position and this results in loss of balance and falls. Falls among the older persons is common and often result in serious morbidity and mortality. Falls among older persons are therefore an important public health problem and its true extent and factors associated with it needs to be studied.

This cross sectional study assesses the association between falls and socio-demographic factors, extrinsic risk factors, intrinsic risk factors, functional status and determined predictors of falls in this study population. A total of 187 community dwelling older persons were selected by multi-stage sampling of villages within government health clinic operational areas. Five government clinics out of 15 were randomly selected; subsequently five villages per clinic were again randomly selected. Finally, ten respondents were systematically identified from each village. This survey was carried out from November 2010 to February 2011 using face to face interviews. A questionnaire was developed that contained sections on socio-demographic variables and environmental fall risk factors, including falls and circumstances of falls, medical conditions and prescribed medications. Functional status assessment was carried out using a ten-item modified Barthel Index. Information on medical conditions and prescribed medications were obtained from homebased medical record or direct assessment by a trained healthcare worker. Data was analysed using descriptive statistics, Chi-square test for association between falls and risk
factors and finally multiple logistic regression for predictors of falls.

The prevalence of falls was 30.5% and majority (96.5%) of fallers had no injury. Most falls (84.2%) occurred during the day and 63.2% occurred outside the house. The main reason for falls was due to slips (73.7%) and trips (17.5%), and the remaining due to dizziness. Falls occurred almost equally among the age groups, males and females, those married and those without spouses, the ethnic groups, education levels, various income groups, and those staying alone or with extended family. Bivariate analysis showed no significant associations between falls and the socio-demographic variables. There were also no significant associations between falls and the medical conditions of hypertension, diabetes, heart disease, hearing impairment, cancer, gastritis and stroke and prescribed medications.

Bivariate analysis showed significant associations between falls and functional status, arthritis, asthma or chronic obstructive pulmonary disease, visual impairment and urinary incontinence. Finally, from the multivariate analysis, functional status was a predictor of falls among the study population.
ABSTRAK

FAKTOR-FAKTOR YANG BERKAITAN DENGAN KEJATUHAN WARGA-WARGA EMAS DI BAHAGIAN LIMBANG, SARAWAK


kerajaan yang dipegang pesakit atau melalui penilaian terus oleh pekerja kesihatan terlatih. Matlumat dianalisa menggunakan statistik deskriptif, ujian “Chi-square” untuk kajian kaitan antara kejatuhan dan faktor risiko dan akhirnya “multiple logistic regression” untuk prediktor-prediktor kejatuhan.

Prevalen kejatuhan adalah 30.5% dalam kajian ini dan majoriti (96.5%) yang terjatuh tidak mengalami kecederaan. Kebanyakan (84.2%) terjatuh pada siang hari dan 63.2% terjadi di luar rumah. Sebab-sebab utama untuk terjatuh ialah tergelincir (73.7%) dan tersangkut (17.5%) dan yang lain disebabkan pening. Kejatuhan terjadi hampir sama di kalangan kumpulan-kumpulan umur, lelaki dan wanita, yang berkahwin atau yang tanpa pasangan, kumpulan kaum-kaum, tahap perbelajaran, di antara kumpulan-kumpulan pendapatan berlainan, dan di antara mereka yang tinggal seorang atau dengan keluarga. Kajian dwi-pembolehubah (bivariate) tidak menunjukkan kaitan signifikan di antara kejatuhan dan pembolehubah-pembolehubah sosio-demographik. Juga, tidak ada kaitan signifikan di antara kejatuhan dan keadaan perubatan hipertensi, kencing manis, penyakit jantung, kekurangan pendengaran, kanser, gastritis dan stroke dan ubat preskripsi.

Daripada kajian dwi-pembolehubah (bivariate), didapati ada kaitan signifikan antara kejatuhan dan status keupayaan diri, artritis, asma atau penyakit obstruktif paru-paru kronik (COPD), kekurangan penglihatan dan inkontinen urinari. Akhirnya, daripada kajian “multi-variate”, status keupayaan diri adalah prediktor atau peramal kejatuhan di kalangan populasi kajian tersebut.
CHAPTER 1

INTRODUCTION

1.1 Introduction

This section includes information regarding background of the study, statement of the problem, research questions, objectives, hypotheses, scope of the study, and operational terminology.

1.2 Background

Ageing is the chronological process of growing old and along with it, a degenerative process to all organs and systems of our body. These degenerative processes affect all parts of our body and the changes it brings externally and internally is used to divide the population into young or old. However, individual variations in the ageing process and different societal perception of "old" make it difficult to correctly define someone as young or old. An accepted standard agreed by most countries of the United Nations for elderly is 60 years in chronological age (UN, 2002). It has even been suggested that for Africa the chronological age for older persons should be 50 years, due to differences in African societie's perception of "old" as well as due to social and functional capacity in many parts of Africa (WHO, 2008). The Malaysian National Policy for the Elderly defines the age of 60 as elderly (Ministry of Women, Family and Community Development, Malaysia, 2001).
Based on the age criteria of 60 years and above, the estimated numbers of older persons worldwide is 737 million (UN, 2009) and for Malaysia, the estimated number of elderly is 2.135 million or 7.3% of the population in 2010 and this is estimated to increase to 3.44 million or 9.9% of the population by 2020 (Department of Statistics, Malaysia, 2003). In Sarawak, older persons above the age of 60 totals 186,600 out of 2.35 million population or 7.9% of the population in 2008 (Department of Statistics, Malaysia, 2008). The population of older persons continues to increase worldwide as developing countries race towards developed status and a consequence of that is prolonged life expectancy and decline in fertility in the population demographics of these countries. This is also known as demographic transition (Leonid and Patrick, 2003).

The increase in the number of older persons in any society brings with it an increase in the incidence and prevalence of age related illnesses. A recent study in Malaysia found that 53.4% of older people above 65 had knee osteoarthritis (Veerapen et al., 2007). The National Eye Survey in 1996 reported that the age adjusted prevalence of bilateral blindness and low vision was 0.29% (95% CI, 0.19 to 0.39), and 2.44% (95% CI, 2.18 to 2.69) respectively for the general population (Zainal et al., 2002), but another study in a rural village in Selangor, Malaysia found that among adults above 40 years old, the prevalence of visual impairment and blindness was higher at 18.9% and 2.9% respectively (Reddy et al., 2004). This indicates visual impairment increases in prevalence with age.

Mental health problems among the elderly are also more common. Prevalence of depression among elderly outpatient attendees in Malaysia was 13.9% (Imran et al., 2009). However, another study among outpatient attendees in the general population, it was only
6.7% (Taha et al., 2005). Diabetes prevalence also increases with age, from 2.6% among adults aged 20-39, to 23.1% for adults aged 60 and above (CDC, 2007).

Besides degenerative related illnesses, the degenerative process also affects all organs of the body. Muscles, nerves, tissues and joints also age and this results in less adaptability of the body to the environment in relation to movement and leads to a loss of balance (Melzer et al., 2010). A study of community dwelling older persons in Thailand found a self reported prevalence of balance disorder of 29% (Prasansuk et al, 2004). Loss of balance often leads to falls especially among older persons.

The older person with multiple illnesses and degenerative changes therefore has a higher risk of falls and serious injuries resulting from falls. Prevalence of falls is high among older persons. A World Health Organisation (WHO) report in 2007 noted that approximately 28% to 35% of adults above 65 years fall each year (Yoshida, 2007). In Singapore, the prevalence of falls among community dwelling older persons above 60 years of age was 17.2% (Chan et al., 1997). In Malaysia, the prevalence was as high as 47% among older persons attending an outpatient clinic in the year 2004 (Shariff Ghazali, 2005).

Falls often result in injuries among older persons and can lead to high morbidity. In a Canadian study, the rate of fall injuries (serious enough to limit normal activities) was 47.7 per 1000 population (Yoshida, 2007). Falls lead to 20-30% of mild to severe injuries, and is the underlying cause of 10-15% of all emergency department visits and more than 50% of injury related hospitalizations among people over 65 years and older worldwide (WHO, 2007). The main cause of hospitalizations are hip and limb fractures and traumatic brain injury. In Malaysia, the incidence of hip fractures is 90 per 100,000 populations among
elderly above 65 years of age (Lee & Khir, 2007). This translates to 25,200 hip fractures among the elderly per year based on Malaysia's current population of 28 million (Department of Statistics Malaysia, 2010).

Following a fall, the older person might develop a fear of falling and this can affect social functioning and psychological well-being (Friedman et al., 2002). Falls can also lead to death. Fall fatality rate for people aged 65 and older in United States of America (USA) was 36.8 per 100,000 population (46.2 for men and 31.1 for women) whereas in Canada mortality rate for the same age group was 9.4 per 10,000 population (WHO, 2007). There is a paucity of data for fall fatalities among the elderly due to falls in Malaysia.

1.3 Statement of the problem

Falls among the older persons are common and often result in serious injury. According to the World Health Organization (WHO) 28-35% of people aged 65 and older fall each year (WHO, 2007). Falls are defined as “inadvertently coming to rest on the ground, floor or other lower level, excluding intentional change in position to rest in furniture, wall or other objects” (WHO, 2007). In the United States, falls among persons 65 years and above accounted for 559,000 hospital admissions in 2008 (CDC, 2010).

It was reported in Singapore that the prevalence of falls among older community dwelling elderly is 17.2% (Chan et al., 1997). In Malaysia, prevalence of falls among community dwelling older persons in a semi-rural setting was reported as 27.3% (Rizawati & Mas Ayu, 2008). A study by Ng and Khoo (2003) found a prevalence of falls of 13.4% among
community dwelling older persons in an urban area. A cross sectional study among elderly polyclinic attendees in Sabah recorded a prevalence of falls of 47 % (Shariff Ghazali, 2005).

Risk factors for falls also need to be identified and studied. Among the known risk factors for falls, a Barthel score of less than 20, poor vision, hypertension and taking two or more drugs has been associated with risk of falling among older persons in Singapore (Chan et al., 1997). Barthel score measures functional capability and independence in personal care and mobility (Mahoney & Barthel, 1965). Other significant factors include high depressive symptoms, diabetes, urinary incontinence and arthritis (Reyes-Ortiz et al., 2005). A systematic review of studies involving falls among Chinese older persons in Macau, Taiwan, Singapore, Hong Kong and China identified 132 risk factors for falls (Kwan et al., 2011).

There are many known predictors of falls among community dwelling older persons. One study found that female gender, living alone, psychoactive drug use, osteoarthritis, previous falls, and a change in the position of the arms during the one-leg balance (OLB) test are positive predictors of falls (Bongue et al., 2011). Another study found that urinary incontinence, impaired mobility, use of analgesics, and use of antiepileptic drugs are predictors of recurrent falls among older persons (Tromp et al., 1998). Knowledge of predictors allow for targeted intervention for prevention of falls and injury among older persons via focussed health education.

The State of Sarawak in Malaysia is divided into 11 administrative divisions, one of which is Limbang Division. This study was conducted in Limbang division, which is located in
the northernmost part of Sarawak and borders Sabah, Brunei and Indonesia. Limbang division has an area of 7790 square kilometres (Pejabat Residen Limbang, 2011). The main ethnic groups in Limbang are Iban, Kedayan, Lun Bawang, Chinese and Bisaya. The interior parts are populated mostly by Ibans and Lun Bawang while Kedayans are in the coastal areas and the Chinese mainly in town (Pejabat Residen Limbang, 2011). The main economic activity is farming and logging. The Department of Statistics, Malaysia (2008) estimated that the percentage of older persons in Sarawak is 7.94% in 2008. Limbang division has a population of 83,000, therefore based on the percentage of older persons in Sarawak of 7.94%, it would have an estimated 6,590 persons above 60 years of age.

Limbang Division was chosen for this study because among the 11 Divisions in Sarawak, it is among the least developed divisions in Sarawak (Pejabat Residen Limbang, 2011). Rural to urban migration of working age adults due to better employment opportunities at major cities such as Kuching and Miri has led to mostly older persons being left behind in the villages and communities in Limbang. Although there is no specific data on the percentage of elderly in Limbang Division, the Divisional Health Office of Limbang Division has intensified its elderly care program with the construction of 9 community based elderly care centres (Pejabat Kesihatan Bahagian Limbang, 2011). This indicates that the health of older persons is an important issue for the Divisional Health Office.

Falls among older persons are an important public health problem and its true extent needs to be studied. There is paucity of information on prevalence of falls among community dwelling older persons in Malaysia. Although risk factors and predictors of falls among older persons have been studied in other countries, these factors may not be similar in our country.
1.4 Research Questions

i. What is the prevalence of falls among community dwelling older persons in Limbang Division?

ii. What are the risk factors associated with falls among community dwelling older persons in Limbang Division?

iii. What are the factors that predict falls among community dwelling older persons in Limbang Division?

1.5 Objectives

1.5.1 General objectives

The purpose of this study is to determine the prevalence of falls among community dwelling older persons in Limbang division, Sarawak, and associated risk factors and predictors.

1.5.2 Specific objectives

i. To determine the prevalence of falls among community dwelling older persons in Limbang division.

ii. To examine risk factors for falls among community dwelling older persons in Limbang division.

iii. To determine predictors of falls among community dwelling older persons in Limbang Division.
1.6 Research hypotheses

\( H_0 \) Falls among community dwelling older persons in Limbang Division are not associated with socio-demographic factors, extrinsic or intrinsic risk factors.

\( H_1 \) Falls among community dwelling older persons in Limbang Division are associated with socio-demographic factors, extrinsic and intrinsic risk factors.

1.7 Scope of the study

This study on prevalence of falls and its risk factors and predictors is limited to community dwelling populations in Limbang division. Due to this limitation, the findings of this study are valid internally but not necessarily externally valid. This study may be useful to policy makers in planning for injury prevention programs for the older population and it can also serve as baseline data for future research.

1.8 Operational terminology

1.8.1 Older persons

The United Nations World Assembly on Ageing defines an older person as one with a chronological age of 60 years and above (UN, 2002), and thus this study adopts this definition.
1.8.2 Falls

Falls is defined as inadvertently coming to rest on the ground, floor or other lower level, excluding intentional change in position to rest in furniture, wall or other objects (WHO, 2007).

1.8.3 Community dwelling

Community dwelling in this study is defined as older persons that are not institutionalised, hospitalised or in a nursing or special care facility.

1.8.4 Medical conditions

Medical conditions are defined in this study as any medical illness or any reduced function in certain systems of the body. This information was obtained from the patient’s medical records and verified by a trained healthcare worker conducting the interview.

In this study, the diagnosis of hypertension, diabetes mellitus, asthma/chronic obstructive pulmonary disease (COPD), cancer, gastritis, heart disease are based on patient records available as home-based patient cards. A home based card is a medical record for the patient and used by the all government health facilities in Sarawak.

1.8.5 Visual impairment

Visual impairment is any visual acuity decline below that of recorded 6/18 to 6/60 on Snellen’s chart (CDC, 2011a). For this study, visual impairment is verified by a trained healthcare worker conducting the interview.
1.8.6 Hearing impairment

Hearing impairment is reduction in auditory perception and is verified by a trained healthcare worker conducting the interview.

1.8.7 Urinary incontinence

Urinary incontinence is loss of bladder control including partial or absolute loss of control. In this study, it is a clinical diagnosis by a trained healthcare worker conducting the interview. This study does not differentiate the different types of urinary incontinence.

1.8.8 Arthritis

Arthritis or osteoarthritis is defined as chronic pain involving weight-bearing joints characterized by morning stiffness lasting around 30 minutes, presence of crepitus, bony tenderness, bony enlargements with osteophytes and no detectable warmth of joint to touch (CDC, 2011b). Diagnosis is obtained from patient’s record or from a clinical diagnosis by a trained healthcare worker conducting the interview.

1.8.9 Medications

Medications in this study are the type of medications taken daily over the past one year. Information was obtained from the patient’s home-based card. This does not include short-course treatments.