

Risk Factors of Fear of Falling in Community- Dwelling Older Adults*

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Abstract

Fear of falling is a major health problem among the elderly living in communities. Understanding the risk factors related to fear of falling can help identify high risk groups and appropriately design future interventions and studies. This systematic review study was conducted based on a searching of PubMed and CINAHL. Key words for the search included fear of falling, risk factors, older adults, community, and community-dwelling in all possible combinations. Nine relevant studies were found. A concept synthesis of Walker and Avant's method was used (Walker and Avant, 2011). Five factors including demographic characteristics, history of falls, physical health, impact of mood, cognitive status, and environmental characteristics are considered as main risk factors of fear of falling among older adults. The findings from this literature review can be useful for early signs of fear of falling warning, assessment, and design of programs for fear of falling prevention. Further research should be conducted to examine risk factors of fear of falling in other races and to clarify environmental factors and develop an appropriate intervention program for older adults.

* This article is to present literature review that can be useful for health care personnel and elderly significant others.

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บทคัดย่อ

ความกลัวต่อการหกล้มเป็นปัญหาสุขภาพที่สำคัญของผู้สูงอายุที่อาศัยอยู่ในชุมชน ความเข้าใจปัจจัยที่มีผลต่อการกล้วการหกล้มจะช่วยให้ผู้ปฏิบัติงานสามารถระบุกลุ่มผู้สูงอายุที่มีความเสี่ยงและช่วยในการออกแบบการพยาบาลเพื่อป้องกันการหกล้ม การสังเคราะห์งานวิจัยครั้งนี้ดำเนินการโดยการค้นหาค้นหาบทความวิจัยจากฐานข้อมูล PubMed and CINAHL คำสำคัญที่ใช้ค้นหาบทความวิจัย ได้แก่ ความกลัวต่อการล้ม ปัจจัยเสี่ยงผู้สูงอายุ ชุมชน และผู้อาศัยในชุมชน บทความวิจัยที่เข้าเกณฑ์มีทั้งหมด 9 บทความ วิเคราะห์ข้อมูลโดยใช้การสังเคราะห์เนื้อหา (Walker and Avant, 2011). ปัจจัยเสี่ยงต่อความกลัวการหกล้มที่สำคัญ 5 ปัจจัย ได้แก่ ลักษณะส่วนบุคคลของผู้สูงอายุ ประวัติการหกล้ม สุขภาพทางกายผลกระทบทางอารมณ์ สถานภาพทางสติปัญญาและลักษณะทางสิ่งแวดล้อมในที่พักอาศัย ความรู้เกี่ยวกับปัจจัยเสี่ยงต่อการหกล้มสามารถนำไปใช้ในการเตือนเบี่ยงต้น การประเมินการล้ม และการออกแบบโปรแกรมสำหรับการป้องกันความกลัวต่อการหกล้ม ทั้งนี้ควรมีการทำวิจัยเพื่อศึกษาปัจจัยที่มีผลต่อความกลัวในกลุ่มชาติพันธุ์ต่างๆ รวมถึงการศึกษาหาปัจจัยด้านสิ่งแวดล้อมที่มีผลต่อความกลัว และพัฒนารูปแบบที่เหมาะสมต่อการป้องกันความกลัวต่อการหกล้มในผู้สูงอายุต่อไป

Introduction

Fear of falling is a major health problem among the elderly living in communities who have and have not experienced a fall (Jung, 2008). Fear of falling has a reported prevalence ranging from 25 to 85% of older adults; among these, 20 to 55% avoid physical activities as a result of their concerns (Murphy, Dubin, & Gill, 2003) and a total of 53.4% of community-dwelling older adults reported a fear of falling (Chang, Chen, & Chou, 2016). The fear of falling can be defined as an ongoing concern with falling that limits the ability of daily activities (Tinetti and Powell, 1993), an unhealthy lack of activity avoidance (Tidieksaar, 2002), or as low perceived self-efficacy at avoiding falls during activities of daily living (Tinetti, Richman & Powell, 1990) and refer to a lack of activity avoidance due to fear of falling (Tideisaar, 2002).

Fear of falling may lead to patients' loss of confidence in their balance activities, social deprivation (Akosile, Anukam, & Johnson, 2014), as a cause of gait disorder due to impairment in level of gait control (Herman, Giladi, Gurevich, & Hausdorff, 2005). The impact of this fear often leads to avoidance of activities. These in turn have been associated with the transition to physical frailty, resulting in a pattern of fear, fall and increased frailty, completing a pattern of deterioration, social isolation and decreased quality of life (Mann, Birks, Hall, Torgerson, & Watt, 2005).

Understanding the risk factors related to fear of falling will help identify high risk groups and appropriately design future interventions and studies. Therefore, the purpose of this review is to identify the risk factors related to fear of falling in community-dwelling older adults and discuss how results of previous studies may guide nursing practice and further research studies.

This article was conducted based on a searching of PubMed and CINAHL databases using specific terms. Key words for the search included fear of falling, risk factors, older adults, community, and community-dwelling in all possible combinations. The studies were included if they were written in the English language, and included the key words listed. Articles discussing the risk factors of fear of falling were also included. Exclusion criteria included articles that focus on general fear movement, fear of falling in older adults with specific diseases and intervention studies that focus mainly on preventing risk factors rather than focusing on the specific risk factors of fear of falling. Fifteen articles were met the criteria. Two investigators (first and second authors) read the full articles and assess their ability to answer the research questions. Nine articles were found providing relevant information for the research questions. Most of articles (7 in 9) were conducted with western participants including Canadian, American, British. Two articles were conducted with Japanese and Taiwanese. Three investigators (first and second and third authors) analyzed those articles using a concept synthesis of Walker and Avant's. (Walker and Avant, 2011). Concept synthesis was employed by reading nine articles about factors of fear of falling carefully. Second, categorizing and combining data of factor of fear of falling into an appropriate new group. Third, writing and describing data of fear of falling. Last, suggesting implication for future research and nursing practice. Nine articles showed the multiple risk factors that have been reported to effect fear of falling. The risk factors can be illustrated in Figure 1 and described as follows:

Risk Factors of Fear of Falling

1. Demographic characteristics

Demographic characteristics showed age over 65 and female associated with fear of falling. Other factors consist of gender, education, income and lived alone as relationship between fear of falling. The average age of participants was 74.07 years old. Age has been related to fear of falling, however findings have been inconsistent. Generally, as age increases, beyond 65 year of age fear of falling also increases (Bertera & Bertera, 2008; Chang, Chen, & Chou, 2016; Lach, 2005; Filiatrault, Desrosiers, & Trottier, 2009; Uemura, Shimada, Makizako,

Doi, Tsutsumimoto, et al., 2015). Lach (2005) studied fear of falling reported that nearly half of older adults as participants were over the age of 80. According to Uemura et al.'s study, (2015) it was found that one of the developed factors of fear of falling was significantly an older age. Bertera & Bertera, (2008) reported that the fear of falling increased with age. Chang, et al., (2016) confirmed that older age was associated with the factor of fear of falling. Both male and female aged over 75 years reported fear of falling. In addition, Filiatrault, et al., (2009) showed that fear of falling were presented more than one third of the seniors.

Gender is one significant variable in fear of falling. Most of participant in the nine articles were female (5 in 9 articles). Previous studies (5 in 9) showed that females were more likely to be fearful than males (Bertera & Bertera, 2008; Chang et al., 2016; Filiatrault et al., 2009; Lach, 2005; Oh-Park, Xue, Holtzer, & Verghese, 2011). Bertera & Bertera, (2008) found that women were more likely to fear falling everyday compared with men. Lach (2005) found that fear of falling continued to be more common in women. Chang et al., (2016) found that the rate of fear of falling was higher in female at 63.1%. Additionally, Filiatrault et al., (2009) found that females were statistically significantly associated with fear of falling. Oh-Park, et al., (2011) showed that females have much more significant for fear of falling. However, males show no significant factor for fear of falling.

On the other hand, there are other demographic characteristics that are the factors of fear of falling such as education, income and living alone. The study of Bertera & Bertera, (2008) showed that older adults who had less than a high school education, had low income, and had lived alone were reported to relate to fear of falling. Moreover, Uemura et al (2015) found that living alone was one of the factors of fear of falling in older adults.

2. History of Falls

Previous history of falling (6 in 9 articles) is one major factor that may develop a fear of falling (Bertera & Bertera, 2008; Chang et al., 2016; Lach, 2005; Mann et al., 2006; Oh-Park et al., 2011; Uemura et al, 2015). According to Lach (2005), who studied incidence and risk factors for developing fear of falling, found that older adults who experienced two or more falls had more than four times the likelihood of reporting fear of falling than those who experienced only one or no falls. Bertera & Bertera, (2008) found that those who experienced two or more falls or five falls in the past year are more likely to fear falling. Moreover, Uemura et al, (2015) showed that older adults with mild cognitive impairment and having experience with falling tended to fear of falling. On the one hand, Chang et al., (2016) confirmed that falls in the previous year was correlated to fear of falling for both male and female. Falls during the previous years also was the risk factors for fear of falling (Mann et al., 2006; Oh-Park et al.,

2011). However, there were also individuals who had not fallen who reported being fearful of falling. According to Lach, (2005) there were found that 18 % of older adults who had not fallen, reported being fearful of falling.

3. Physical health

Participants (3 in 9 articles) described their physical health as fair or poor or worse subjective health (Chang et al., 2016; Lach, 2005; Mann et al., 2006), gait abnormality and mobility (Mann et al., 2006; Oh-Park et al., 2011) and poor self- reported vision (Donoghue, Finucane, Savva, Cronin, Kenny, et al., 2014). Lach, (2005) found that older adults with fair or poor health were 1.72 times more likely to develop fear of falling than older adults with good health. Additionally, Chang et al., (2016) reported that worse subjective health showed in both genders. The results showed diabetes mellitus and stroke and the accessibility of medical help in an emergency that were the risk factors of fear of falling in men, while cardiovascular diseases were a risk factor in women. Mann et al., (2006) found that older adults who experienced bone fracture was related to risk factors of fear of falling. Donohue et al., (2014) studied and found the relationship between fear of falling and mobility with visual function among older adults. Poor self- reported vision was associated with fear of falling and fear-related activity restriction.

On the other hand, Chang et al., (2016) found that insomnia was one factor of fear of falling in physical health that may relate to dizziness, unsteady gait and weakness, chronic conditions, and psychoactive medication. Mobility was another significant predictor of risk factor for fear of falling. Mann et al. (2006) explored fear of falling in community-dwelling women aged over 70 and found that there was a need to use both arms to push up to rise from a chair in this group. This condition was related to fear of falling. Oh-Park et al., (2011) studied incidences and risk factors of fear of falling in community-dwelling older adults in Korea. They found that clinical gait abnormality as walking up and down a hallway was reported as a predictor for transient and persistent fear of falling.

4. Impact of mood on fear of falling

In terms of mood on fear of falling, neuroticism, depressive symptom and feeling unsteady (3 in 9 articles) were confirmed as risk factors of fear of falling (Lach, 2005; Mann et al., 2006; Oh-Park et al., 2011). Mann et al., (2006) studied the relationship between fear of falling and neuroticism in community-dwelling women aged over 70. The researchers found that neuroticism related to depression and stress that confirmed risk factors for fear of falling. Especially women with higher neuroticism scores are more likely to experience fear of falling. Park et al. (2011) studied the incidence of fear of falling and risk factors in community-dwelling

older adults and found that the incidences of fear of falling group had a significantly higher depression. So, depressive symptom was one factor to predict fear of falling. Moreover, Lach, (2005) found that older adults felt unsteady when they lost their balance or fell. The feeling of unsteadiness may leads older adults to think that they are going to falls. Older adults who felt unsteady were 1.88 times more likely to report fear of falling than those who felt steady.

5. Cognitive status

Cognitive status (3 in 9 articles) is a crucial influence on fear of falling in older adults that were shown to have depression, mild cognitive impairment and global cognitive impairment (Chang et al., 2016; Uemura et al., 2014; Uemura et al., 2015). Chang et al. (2016) studied factors associated with fear of falling among older adults in Taiwan. The researchers found that depression was associated factor of fear of falling for both genders. Additionally, Uemura et al. (2014) studied effects of mild and global cognitive impairment on the prevalence of fear of falling in community-dwelling older adults in Japan. Mild cognitive impairment (MCI) can be described as having subjective memory complaints, having objective cognitive decline, having intact general cognitive function, MMSE score of 24 or lower, having no criteria of dementia and being independent in activities of daily living. Global cognitive impairment (GCI) was defined as deficit in general function; MMSE score of 24 or lower. They found that mild cognitive impairment and Global cognitive impairment in community-dwelling older adults affected the prevalence of fear of falling in different manners. It was highest with mild cognitive impairment and lowest with Global cognitive impairment. Another study of Uemura et al., (2015) showed the effects of mild cognitive impairment on the development of fear of falling in older adults. They found that mild cognitive impairment were significant factors that predicted the development of fear of falling.

6. Environmental Characteristics

Environmental Characteristics are linked to fear of falling as residential area, living arrangement as home with spouse or partner, support from spouse or partner, and use of public transport (Faliatrault et al., 2009). Only one article indicated this risk factor. Faliatrault et al. (2009) studied “An exploration study of individual and environmental correlates of fear of falling among community-dwelling seniors”. The study reported that individual and environmental characteristics influenced fear of falling. They also found that older adults who could not rely on the support of a spouse or partner when needed were more likely to be fearful than those who could rely on such support. Moreover, older adults living in smaller cities or rural areas were more likely to be afraid of falling than older adults living in metropolitan areas or large cities. Interestingly, being a female as well as living in a smaller city

or rural area was shown to be risk factors for fear of falling while the availability of support from a spouse or partner was a protective factor.

Implication for nursing

These previous research studies reported multiple risk factors of fear of falling that may result in avoidance activities and psychosocial problems. To prevent these health problems, interventions could improve mobility, disability and eventually overcome disability. Preventive programs should target at-risk older adults and consider relevant risk factors, such as being a woman, being older and previous falls. Prevention programs could assess early signs of fear of falling before older adults develop severe fear of falling. Moreover, prevention programs could help older adults at risk of developing fear of falling by teaching them, caretakers or family members, for example, how to deal with their fears early, make their homes and environment safer, how to identify and modify risky behaviors, such as living alone or walking without a device.

Implication for further research

The studies collected data of the risk factors relate to fear of falling in Caucasian and Asian groups. Further research should assess the risk factors of fear of falling in other races such as African or Hispanic groups gaining knowledge that may describe risk factors of fear of falling more widely. Moreover, environmental characteristics are one factor that showed lack of finding or knowledge in risk factors relates to fear of falling. Researchers should conduct environmental characteristic factors as spouse or partner support in other races, other settings such as hospitals, long term care or home, rural and urban area.

In addition, previous studies showed exercise programs that improve lower limb strength, endurance, balance and stability that have less fear of falling in older adults (Binda, Culham & Brouwer, 2003; Kwok & Pua, 2016; Nitz & Choy, 2004; Schoenfelder & Rubenstein, 2004; Tennstedt et al, 1998; Wolf et al, 1996; Yamada, Tanaka, Nagi, Aoyama & Ichihashi, 2010). In addition, a meta-analysis review reported combined exercise programs that were more than exercise programs alone (Jung et al, 2008). The researchers should develop combined exercise intervention programs to decrease fear of falling among older adults. Those exercises should apply to the interest of older adults such as dance, Tai-chi, martial arts that may be helpful for older adults to exercise continuously in their daily lives. The appropriate exercise programs can improve their balance, level of activities, fear level and social engagement.

In addition, risk factors of fear of falling are not only physical health factors but it also included cognitive factors and environmental factors. Moreover healthcare providers should encourage community-dwelling older adults, caretakers or family members to promote interventions to increase activity levels and environmental modification. Several interventions have been reported to reduce fear of falling, including programs, exercise interventions including strength training, balance, endurance, mobility such as Tai Chi, and hip protectors (Binda, Culham & Brouwer, 2003; Kwok& Pua, 2016; Nitz& Choy, 2004; Schoenfelder& Rubenstien, 2004; Tennstedt et al, 1998; Wolf et al,1996; Yamada, Tanaka, Nagi, Aoyama & Ichihashi, 2010). Moreover, combined exercise programs such as exercise programs combined with education and cognitive interventions were more effective than exercise alone.

Conclusion

Fear of falling is a major health problem leading to unhealthy behaviors or patterns of older adults. Some major risk factors related to fear of falling have been identified and can be managed to prevent unwanted fear and behaviors in older adults. Physical health factors such as gender, age, history of falls, poor health, limited mobility and gait imbalance were identified. Cognitive factors include neuroticism depression and stress, feeling unsteady, and mild cognitive impairment. Environmental factors are the support of spouse and living in a rural area. Nurses should be concerned with these factors and apply to appropriate interventions such as early assessment of signs of fear of falling, exercise programs for reducing fear of falling. As the development of training to provide knowledge in various fields is the need of older adults (Jadpol S.,2013), consideration of training to provide knowledge on fear of falling will be benefit for fall prevention. Integrated intervention between health service and social welfare management will have positive relation with the quality of life of the elderly (Jadpol S.,2013).

Moreover the researchers should conduct the research for risk groups and focus on environmental characteristic factors such as spouse or partner support in other races, and in other settings such as hospitals, long term care or home, rural and urban area. In addition, combined exercise intervention programs should be promoted for decreasing fear of falling among older adults in further research. Those will decrease fear of falling and activity avoidance that can improve quality of life of older adults.

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