

# Research progress on influencing factors and preventive measures of falls in senile dementia patients

JIAO Xinhan

Suzhou Health Vocational and Technical College, Suzhou Jiangsu 215009, China

**【Abstract】** To review the influencing factors and preventive measures of falls in the elderly with dementia. The main factors affecting falls of the elderly with dementia were summarized, including age, gender, inability to move alone, intellectual impairment, environmental risk factors and psychological factors. This paper discusses the preventive measures for the elderly with dementia, including the ACMMM management model, the knowledge, belief and practice intervention model, the fall prevention sensory treatment, the fall prevention drug treatment, and the patient protection measures, and comprehensively analyzes the effects and limitations of these preventive measures, so as to provide a reference for the further development of the prevention plan for the elderly with dementia.

**【Key words】** Fall; The elderly; Dementia; Nursing

Fall refers to people falling to the ground or below the initial position after unintentional sudden stop, and is the fourth largest cause of death of Chinese people due to accidental injury <sup>[1]</sup>. In 2005, the Ministry of Health of the People's Republic of China took the prevention of patient falls as an important indicator to evaluate the quality of care <sup>[2]</sup>. The proportion of patients falling down in hospital adverse events is as high as 40%, and the high-risk group is the elderly, while the elderly patients who are hospitalized and need long-term care in the community health service center account for about 95% of all patients <sup>[3]</sup>. All organs of the elderly are degraded, and all functions are reduced, which is prone to fall. Especially for the elderly with dementia, the incidence of unsafe events is higher, resulting in more medical disputes <sup>[4-6]</sup>, which also aggravates the economic burden of the patient's family and society to a certain extent. This article summarizes the influencing factors and preventive measures of falls in the elderly with dementia, and provides reference for further formulating the fall prevention plan for the elderly with dementia.

## 1 Influencing factors of falls in the elderly with dementia

### 1.1 Age

Age is one of the main factors that lead to falls in patients with Alzheimer's disease. Chen Xueming <sup>[7]</sup> believes that from the perspective of biology, the level of muscle strength in the elderly population has decreased, the main joints of the body have degenerative changes, and some patients have loose ligaments, which leads to a high risk of falls when walking and moving. In addition, the balance ability and coordination ability of the elderly population are insufficient, and their vision, hearing and reaction ability are low, which makes it difficult to effectively cope with falls. Therefore, the incidence of falls in elderly patients with mental disorders

is high <sup>[8]</sup>. In addition, mental disorders need long-term medication. The elderly patients' metabolism slows down and their sensitivity to drugs increases, so the possibility of adverse drug reactions is higher. This is also the reason why the elderly patients with mental disorders have a higher incidence of falls compared with other patients.

### 1.2 Gender

Li Xinhua, Li Feng <sup>[9]</sup> Research shows that the incidence of falls in female elderly patients with mental disorders is twice as high as that in men, which is closely related to the fact that women's coordination and motor function are lower than those of men. Cheng Jianping <sup>[10]</sup> found in the study that the incidence of falls in female elderly patients with mental disorders was about 14.90%, while that in male patients was 15.30%. There was no significant difference between the two. Whether gender has an impact on the fall of Alzheimer's patients needs further study.

### 1.3 Cannot move alone

You Liming, Zhang Jun, Liu Keyan et al. <sup>[11]</sup> found that "unable to move alone" and "living alone" are risk factors for falls in the elderly. People who can't move alone often fall at home, and falls are mostly related to physical factors <sup>[11]</sup>. The elderly with dementia have mental retardation, often unable to move alone, and need to be accompanied by nursing staff or family members. At the same time, the elderly patients with dementia may not be able to exercise alone due to other physical diseases, age, psychology and other factors. The related factors of the elderly with dementia who can't move alone need to be further explored.

### 1.4 Intellectual impairment

Alzheimer's disease is a primary and degenerative disease with unknown etiology. It has latent onset, progressive aggravation, slow and irreversible course. It is often manifested as progressive deterioration of memory, understanding, judgment, self-control and other abilities and sustained intellectual impairment <sup>[12]</sup>. The study found that <sup>[11]</sup> widowhood and "intellectual impairment" may be indirect risk factors for falls. The School of Nursing of Guangzhou Sun Yat-sen Medical University <sup>[11]</sup> investigated 415 elderly people aged 60 years and above, collected data by means of interview, observation and medical records, conducted single and multiple factor analysis on various factors, and analyzed the relevant characteristics of the selected risk factors. It is concluded that "intelligence impairment" in intelligence test is a risk factor for falls, but it fails to enter the logistic regression model. However, since the survey was conducted in 2001, it is still to be further investigated whether the impact of intellectual impairment on the fall has increased in recent years.

### 1.5 Environmental hazards

The study found that <sup>[11]</sup> environmental risk factors are important factors for falls, and nearly half of falls are related to environmental factors. This may be related to the wet bathroom, uneven and dry floor, and dim indoor light. At the same time, inappropriate clothing and shoes of the elderly with dementia may also be the cause of falling.

### 1.6 Psychological factors

The psychology and spirit of senile dementia patients are one of the important factors that lead to falls. Chen

Xueming <sup>[7]</sup> believes that anxiety, fear and delirium are the strongest factors that cause falls among many bad emotions and mental states. Among them, anxiety patients have a high proportion of falls in their daily life and during hospitalization. Patients are prone to fall because of anxiety, which results in a decline in their ability to concentrate and coordinate. Fear generally exists in some patients with mild mental disorders, especially some patients with the fear of falling. The fear of falling in their daily life is too high, which makes them not dare to participate in daily activities and exercise, which accelerates the rate of body degradation, and then increases the risk of falling. After delirium, the elderly patients with mental disorders are in a state of consciousness disorder, abnormal behavior, and difficulty to concentrate. At this time, the possibility of falling is very high.

## **2. Prevention measures for falls of the elderly with dementia**

### **2.1 ACMMM management model**

ACMMM management model includes five aspects <sup>[13]</sup>: assessment (A), communication (C), monitoring (M), patient (M) and environment (M). ACMMM management model is a new management model proposed by China Hignett <sup>[14]</sup> in 2010. Since its clinical application, it has achieved good application results. Nansha et al. <sup>[15]</sup> applied it to the prevention of falls in the elderly. The results showed that ACMMM can reduce the incidence of falls and promote the improvement of nursing quality.

#### **2.1.1 Assessment**

Accurate assessment of fall risk is the prerequisite for effective prevention of falls. After the patient is admitted to hospital, the nursing staff should assess the fall risk of the patient as soon as possible. If the patient's ability to live is low, it is necessary to increase the risk assessment of balance, gait and fear of falls to provide basis for nursing work <sup>[1]</sup>.

#### **2.1.2 Communication**

Chen Xuehong et al. <sup>[16]</sup> believed that the communication of the elderly with dementia could be strengthened from four aspects: strengthening psychological communication, informing of unsafe factors, application and education of medical equipment, and strict shift handover. During psychological communication, nurses, family members and other nursing staff can go to the patient's side for "face-to-face" communication, feel the patient's current emotional state, and take targeted psychological counseling to improve treatment confidence. At the same time, hospital nurses and community nurses can introduce the unsafe factors of patients to patients and their families in detail to prevent the occurrence of unsafe events <sup>[17]</sup>. In the ward, nurses can strengthen the application education of medical equipment, introduce the use and use methods of various instruments and equipment in the ward to patients and their families, and mark the unsafe factors of patients in detail during the shift handover process, and inform the handover nurses <sup>[18]</sup>.

#### **2.1.3 Monitoring**

First of all, if the patient is complicated with basic diseases and needs to take medicine, the nursing staff should understand the drugs, pharmacological effects and adverse reactions taken by the patient, guide the patient to take medicine, and strengthen the observation and inspection of the changes in the patient's vital signs. Secondly, strengthen the safety monitoring of patients, and set up a video monitoring system in the public areas

of the ward, such as corridors, stairs, and corners, to monitor the activities of patients at any time, so as to quickly rescue in case of danger.

#### 2.1.4 Patients

Do a good job of correct medication guidance and health knowledge education, strengthen night patrol, and help patients with mobility difficulties or fractures to implement rehabilitation training, so as to improve the status of patients.

#### 2.1.5 Environment

After the patient is admitted to the hospital, the nursing staff should introduce the environment of the ward and ward in detail, prompt the places that are prone to fall, and arouse the attention of the patient and his family; The nursing staff should ensure that the floor of the sick area and the ward is flat and dry, and remove obstacles. The toilet should be placed with anti-slip mats; The nursing staff should regularly check the fixation of tables, chairs and beds in the ward and the lighting facilities, and adjust the lighting to the appropriate state; If the patient has mental disorder or orientation disorder, he/she should inform his/her family members to accompany him/her and strengthen the patrol of the patient; The nursing staff should also inform the patient to wear pants with appropriate length and shoes with proper fit to eliminate the risk factors of falling. The study found that <sup>[11]</sup> nearly half of falls are related to environmental factors. Nurses and family members need to do a good job of anti-skid in the bathroom, keep the floor flat and dry, and keep the indoor light suitable and family members to accompany, so as to prevent falls.

#### 2.2 Knowledge, trust and practice intervention mode

The research results <sup>[19]</sup> showed that according to the knowledge, belief and practice intervention model, after one-to-one health education guidance, the incidence of falls in the secondary and tertiary high-risk inpatients decreased significantly. First of all, we can give a lecture on knowledge popularization at the place where the community members gather, distribute relevant books, audio-visual products to them during the lecture for better understanding and learning, educate family pensioners and their families or caregivers in the form of printed knowledge manuals, and introduce the knowledge about fall prevention. Then, strengthen the health awareness of dementia patients and their families and the self-confidence to prevent falling. Finally, strengthen fall prevention and fall prevention techniques, urge family nursing staff to insist on giving patients physical exercises such as limb balance training, lower limb strength training, functional training, Otango training, Taijiquan, etc. , and use rational drugs to prevent the elderly from falling. However, in the late stage of Alzheimer's disease, due to the reason of disease, the patient's intelligence is damaged, and it is difficult to implement cognitive training for the patient to prevent falls. Therefore, it is not realistic to prevent falls for the elderly with severe dementia by the intervention mode of knowledge, belief and practice.

#### 2.3 Prevention of falls Sensory treatment

Sensory treatment and stimulation was born in the 1970s, and is popular in Central Europe and Australia. This method is mainly used to provide olfactory, visual, auditory and tactile stimulation for elderly patients with mental disorders. This treatment method is to place the above-mentioned sensory stimulation devices in the

same room, and the patients enter the room and give them single, double and multiple sensory stimulation through system settings, using light, sound, touch, smell Balanced training in multiple ways <sup>[20]</sup>. Although the above methods can improve the balance and coordination of patients to a certain extent, and reduce the incidence of falls in elderly patients with mental disorders, this method requires more resources. Therefore, the cost and difficulty of universal application are high and difficult to achieve.

#### 2.4 Fall prevention medication

At present, psychotic drugs are one of the reasons that lead to the risk of falls in patients. Therefore, rational use of drugs can reduce the proportion of falls. Wang Hong and Xing Gaishu <sup>[21]</sup> carried out an investigation and study on the elderly patients with mental disorders who were treated in the hospital. After a comprehensive evaluation of the condition of 150 patients, their antipsychotic drugs were reduced as appropriate, and they were treated continuously for half a year. During the treatment period, the fall rate of patients was reduced by 51%. After the test was stopped, the patients continued to use drugs according to the conventional treatment method, and the fall rate increased by 43% after 1 month. Although in clinical practice, patients can be prevented from falling by reducing antipsychotic drugs. However, it is very difficult to reduce the drug dose for a long time or permanently, which has a high impact on the treatment effect of patients with mental disorders. Therefore, this way of preventing falls needs further study.

#### 2.5 Protective measures for patients

The previous article is mainly based on the fall prevention care and management for early senile dementia patients. However, some senile dementia patients develop with the prolongation of the course of disease, and it is difficult to prevent falls through the above methods at this time. For this kind of senile dementia patients, it is necessary to intervene and manage, strengthen the protection of patients, and prevent patients from being injured after falling. Senile dementia patients with osteoporosis may fracture after falling, which has a great impact on their life safety and quality of life. Calcium or vitamin D can be used as appropriate after detecting the bone density of patients to prevent fractures. In addition, external hip joint protectors can be used for the protection of patients' hip joints. This protector is mainly used to prevent patients from femoral neck fracture or hip joint fracture after falling. More new inventions of protective devices for the elderly with dementia are needed in clinical practice.

To sum up, the incidence of falls in the elderly with dementia is high. Researchers need to further explore the risk factors that lead to falls in the elderly with dementia, take positive countermeasures against age, gender, inability to exercise alone, intellectual impairment, environmental risk factors, psychological factors and other factors, and explore more effective and feasible prevention methods to reduce the incidence of falls in the elderly with dementia.

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## 老年痴呆患者跌倒的影响因素及预防措施的研究进展

焦焮焯

苏州卫生职业技术学院, 江苏苏州 215009

**【摘要】**对痴呆老人跌倒的影响因素及预防措施进行综述。总结归纳了影响痴呆老人跌倒的主要因素,包括年龄、性别、不能独自活动、智力损害、环境危险因素、心理因素6个方面。探讨了痴呆老人的预防对策,包括ACMMM管理模型、知信行干预模式、预防跌倒感官治疗、预防跌倒用药治疗、患者的保护措施,并综合分析了这些预防对策的效果和局限性,为进一步制订预防痴呆老人方案提供参考。

**【关键词】**跌倒;老人;痴呆;护理

跌倒(fall)是指人非故意地突然停顿后倒于地面或低于初始位置的地方,是我国人民因意外伤害死亡的第4大原因<sup>[1]</sup>。我国卫生部于2005年将预防患者跌倒作为评价护理质量的一个重要指标<sup>[2]</sup>。在医院不良事件中病人跌倒的所占比例高达40%,高危人群是老年人,而社区卫生服务中心中住院和需要长期照顾的老年患者在所有患者中占约95%<sup>[3]</sup>。老年人身体各器官发生退化,各项功能均减退,容易发生跌倒,尤其是痴呆的老人,其不安全事件的发生率更高,因此导致的医疗纠纷也较多<sup>[4-6]</sup>,同时也在一定程度上加重了患者家庭及社会的经济负担。本文对痴呆老人跌倒的影响因素及预防措施进行综述,为进一步制订预防痴呆老人跌倒方案提供参考。

### 1 痴呆老人跌倒的影响因素

#### 1.1 年龄

年龄是导致老年痴呆患者跌倒的主要因素之一,陈雪明<sup>[7]</sup>认为从生物学方面研究,老年群体肌肉力量水平下降,全身各主要关节发生退行性变化,部分患者韧带松弛,从而导致其行走、活动时跌倒风险较高,加之老年人群平衡能力及协调能力有所不足,其视力、听力、反应能力较低,在发生跌倒时难以有效应对,因此,老年精神障碍患者跌倒发生率高<sup>[8]</sup>。另外,精神障碍疾病需要长期用药治疗,老年患者身体新陈代谢速度减慢,对药物的敏感性增强,因此发生药物不良反应的可能性较高,这也是老年精神障碍患者与其他患者相比,其跌倒发生率更高的原因。

## 1.2 性别

李新华、李风雨<sup>[9]</sup>研究表明,女性老年精神障碍患者跌倒发生率是男性的2倍,与女性自身协调性及运动功能低于男性群体具有密切关系。程建萍<sup>[10]</sup>在研究中发现女性老年精神障碍患者跌倒发生率约为14.90%,而男性为15.30%,二者不具备明显差异。性别对老年痴呆患者跌倒是否有影响有待进一步研究。

## 1.3 不能独自活动

尤黎明,张军,刘可研等<sup>[11]</sup>究发现“不能独自活动”和“独居”为老年人跌倒的危险因素。不能独自活动者多在家中跌倒,且跌倒多与身体因素有关<sup>[11]</sup>。而痴呆老人存在智力障碍,往往不能独自活动,需要护理人员或者家属的陪伴。同时痴呆老年患者可能因其他身体疾病,年龄,心理等因素无法独自活动。关于痴呆老人不能独自活动的相关因素还有待进一步探索。

## 1.4 智力损害

老年痴呆是一种病因未明的原发性、退行性疾病,潜隐起病,进行性加重,病程缓慢且不可逆。常表现为记忆、理解、判断、自我控制等能力发生进行性退化和持续性智能损害<sup>[12]</sup>。研究发现<sup>[11]</sup>寡(鳏)居”和“智力损害”可能为跌倒的间接危险因素。广州市中山医科大学护理学院<sup>[11]</sup>调查60岁及以上的老人415例,运用访谈、观察和查阅病历的方法收集资料,对各种因素进行单因素和多因素分析,并分析被筛选出的危险因素的相关特征。得出结论,智力测验中的“智力损害”为跌倒的危险因素,但未能进入logistic回归模型。但是由于调查的时间为2001年,关于近几年智力损害对跌倒的影响是否加重还有待进一步调查。

## 1.5 环境危险因素

研究发现<sup>[11]</sup>环境危险因素是跌倒的重要因素,近一半的跌倒与环境因素有关。这可能与卫生间潮湿,地面不平坦干燥,室内光线昏暗等有关,同时痴呆老人的衣着,鞋子不合适也可能是导致跌倒的原因。

## 1.6 心理因素

老年痴呆患者心理及精神是导致其发生跌倒的重要影响因素之一,陈雪明<sup>[7]</sup>认为焦虑、恐惧及谵妄是诸多不良情绪及精神状态之中致跌倒最强的因素,其中,焦虑患者在日常生活及住院治疗期间发生跌倒的比例较高,患者因焦虑造成其专注能力及协调能力下降,故易发生跌倒事件。恐惧一般多存在于部分轻症精神障碍患者之中,尤其是部分伴有跌倒恐惧的患者,日常生活中对自身发生跌倒的恐惧感过高,致其不敢参与日常生活活动及锻炼,加速了其机体退化速度,进而增加跌倒风险。老年精神障碍患者发生谵妄后处于意识障碍、行为异常、注意力难以集中的状态,此时发生跌倒可能性极高。

## 2. 痴呆老人跌倒的预防措施

### 2.1 ACMMM 管理模型

ACMMM管理模型包括五个方面内容<sup>[13]</sup>:评估(assessment, A)、沟通(communication, C)、监测(monitors, M)、患者(modify patient, M)和环境(modify environment M)。ACMMM管理模型是Hignett<sup>[14]</sup>于2010年提出的新型管理模型,自临床应用以来,取得了较好的应用效果。南莎等<sup>[15]</sup>将其应用于老年跌倒的预防中,结果显示,ACMMM可降低跌倒的发生率,促进护理质量的改进。

#### 2.1.1 评估

精确评估跌倒风险是对跌倒进行有效预防的前提,患者入院后,护理人员应尽早对患者进行跌倒风险的评估,若患者生活能力低下,需增加平衡、步态及害怕跌倒等方面的风险评估,为护理工作提供依据[1]。

### 2.1.2 沟通

陈雪虹等<sup>[16]</sup>认为可以从加强心理沟通,不安全因素告知,医疗设备的应用宣教,严格交接班4个方面来加强痴呆老人的沟通。在心理沟通时,可以由护士、家属、其他护理人员到患者身旁进行“面对面”的交流沟通,感受患者当前的情绪状态,并针对性采取心理疏导,提高治疗信心。同时对于患者所存在的不安全因素医院护士和社区护士可以向患者及家属进行详细介绍,从而预防不安全事件的发生<sup>[17]</sup>。在病房中,护士可以加强医疗设备的应用宣教,对患者及家属进行病室内各种仪器设备的用途及使用方法介绍,同时在交接班过程中,对患者不安全因素进行详细标注,并告知交接的护士<sup>[18]</sup>。

### 2.1.3 监测

首先,若患者合并基础疾病需要服药治疗,护理人员需了解患者服用的药物、药理作用及不良反应,指导患者用药,并加强对患者的生命体征变化的观察及巡视。其次,加强对患者的安全监测,在病区公共区域如走廊、楼梯、拐弯处等设置视频监测系统,随时监测患者活动,以便在发生危险时迅速施救。

### 2.1.4 患者

做好正确的用药指导及健康知识宣教,加强夜间巡视,帮助行动不便或骨折等患者实施康复训练,从而改善患者的现状。

### 2.1.5 环境

患者入院后,护理人员需向其详细介绍病区和病房的环境,提示易导致跌倒的场所,引起患者及其家属的重视;护理人员需确保病区和病房地面的平坦和干燥,并清除障碍物,卫生间需放置防滑垫;护理人员需对病房内桌椅和病床固定情况及照明设施进行定期检查,并将照明灯光调至适宜状态;若患者神志障碍或有定向障碍,需告知家属陪伴,并加强对患者的巡视;护理人员还需告知患者穿着长短适宜的裤子和合脚的鞋子,消除跌倒的风险因素。研究发现<sup>[11]</sup>近一半的跌倒与环境因素有关,护理人员和家属需要做好卫生间防滑,保持地面平坦干燥,室内光线适宜和家属陪伴等,从而预防跌到的发生。

## 2.2 知信行干预模式

研究结果<sup>[19]</sup>表明依据知信行干预模式,在一对一的健康教育指导后,二级和三级高危住院患者的跌倒发生率显著下降。首先,可以在社区人员聚集的地方进行知识科普讲座,在讲座期间给他们发放相关的图书、音像制品以便于更好地理解和学习,以印刷知识手册的形式教育家庭养老金领取者及其家人或看护人,并介绍有关预防跌倒的知识。然后,加强痴呆患者及家属的健康意识和预防跌到的自信心。最后,加强预防跌倒和防摔技术,督促家庭护理人员坚持给患者体育锻炼例如肢体平衡训练、下肢力量训练、功能性训练、奥探戈训练、太极拳等,合理用药,达到预防痴呆老人跌到的目的。然而在老年痴呆的后期,由于疾病的原因,患者智力损害,对于患者预防跌倒的认知训练实施困难,所以对于病情严重的痴呆老人知信行干预模式预防跌倒并不现实。

## 2.3 预防跌倒感官治疗

感官治疗及刺激诞生于上世纪70年代,以中欧及澳大利亚等地区较为流行,该种方式主要针对老年精神障碍患者予以嗅觉、视觉、听觉、触觉刺激,该种治疗方式是将上述各感官刺激设备放置于同一房间之中,患者进入房间后通过系统设置给予其单项、双项及多项感官刺激,运用光线、声音、触感、气味、平衡的多种方式进行训练<sup>[20]</sup>。上述方法虽然可以在一定程度上提高患者的平衡力及协调力,使老年精神障碍患者跌倒发生率降低,但是,该方法所需资源较多,因此,普及应用的成本和难度都较高,难以实现。

#### 2.4 预防跌倒用药治疗

目前临床中精神障碍药物是导致患者发生跌倒风险的原因之一,因此,通过合理用药可降低跌倒发生比例。王弘、邢改淑<sup>[21]</sup>对在院治疗的老年精神障碍患者实施调查研究,将150例患者病情全面评估后,酌情降低其抗精神病药物,连续予以半年治疗,治疗期间患者跌倒发生率降低51%,试验停止后,患者继续按照常规治疗方式进行用药,1个月后其跌倒发生率提升43%。虽然临床中可通过降低抗精神病药物来防止患者发生跌倒事件。但是,长期或永久性减少药物剂量难度极大,对患者精神障碍治疗效果的影响较高,因此,该种防止跌倒方式还需进一步予以研究。

#### 2.5 患者的保护措施

前文主要基于早期老年痴呆患者予以跌倒预防护理及管理,但是,部分老年痴呆患者随着病程时间的延长,其病情随之发展,此时难以通过上述方式予以跌倒预防。针对此类老年痴呆患者,需予以干预及管理,加强对患者的保护,避免患者在跌倒后受到伤害。老年痴呆患者伴有骨质疏松症,在跌倒后可能发生骨折,对其生命安全及生活质量的影响较大,可在检测患者骨密度后酌情应用钙剂或维生素D予以治疗,防止患者发生骨折。另外,针对患者髌关节可采用外用髌关节保护器实施防护,该种保护器主要针对患者跌倒后髌关节受力产生作用,防止患者发生股骨颈骨折或髌关节骨折。临床有待更多针对痴呆老人保护器具的新发明。

综上所述,痴呆老人跌倒发生率较高,研究者需要进一步探究导致痴呆老人跌倒的危险因素,针对年龄、性别、不能独自活动、智力损害、环境危险因素、心理因素等因素采取积极的应对措施,探索更多有效可行的预防方法,减少痴呆老人跌倒的发生。

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