

Research Status of Fall Risk Perception in Older Adults and Its Implications for Proactive Fall Prevention in Older Adults: Postprint

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Abstract

Falls represent a significant cause of morbidity and mortality among older adults. Although clinical healthcare professionals have emphasized fall management, compliance with fall interventions remains suboptimal, and the incidence of falls remains at a high level. Examining older adults' understanding of fall risk from their perspective may be key to fall interventions, particularly active fall prevention. This article summarizes the concept, behavioral consequences, and influencing factors of fall risk perception among older adults from the perspective of "primary responsibility for one's own health," revealing that current research on fall risk perception is limited both domestically and internationally, and that the conceptual connotation requires further exploration. Older adults' subjective perception of fall risk can lead to different patterns of fall risk coping behaviors, thereby influencing fall risk. Influencing factors of fall risk perception primarily focus on emotional-psychological, physiological, sociocultural, and physical environmental aspects, with the influence process operating through subjective cognition. Future research could combine the formation process of risk perception and employ empirical studies to further validate the psychological-cognitive mechanisms of fall risk perception, providing empirical evidence for active fall prevention.

Full Text

Preamble

Current Status of Research on Fall Risk Perception and Its Implications for Active Fall Prevention in Older Adults

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Abstract Falls are a leading cause of morbidity and mortality among older adults. Despite clinical attention to fall management, intervention adherence remains suboptimal and fall incidence persists at high levels. Examining how older adults themselves understand fall risk may be key to fall prevention, particularly active prevention. From the perspective of “the first person responsible for health,” this paper reviews the concept, behavioral consequences, and influencing factors of fall risk perception in older adults. Current research on fall risk perception is limited both domestically and internationally, and the conceptual connotation requires further exploration. Older adults’ subjective cognition of fall risk leads to different patterns of fall risk coping behaviors, thereby influencing fall risk itself. Influencing factors primarily focus on emotional-psychological, physiological, social-cultural, and physical environmental aspects, all operating through subjective cognition. Future empirical research should validate the psychological-cognitive mechanisms of fall risk perception in conjunction with the risk perception formation process, providing evidence for proactive fall prevention.

[Key words] Falls; Risk perception; Aged; Health services for the aged; Review

Falls represent a critical health threat for older adults, with fatal and severe outcomes that have prompted numerous intervention guidelines. Although health-care workers have implemented various fall management measures, fall incidence remains high [1-2]. JAMA notes that while scientifically effective fall prevention measures exist, older adults’ participation and adherence are concerning [1,3], posing a major challenge to prevention efforts. Research shows that low participation and adherence correlate with biased fall risk perception [4-7]. On one hand, many older adults view falls as a normal, unpredictable part of aging [6], lacking confidence in prevention and believing that “no movement means no falls” [8]. On the other hand, some perceive falls as a sign of lost dignity and self-care ability, leading them to deny personal risk and engage in risky activities [9]. This highlights the crucial role of fall risk perception in activity decision-making. Prevention efforts should therefore shift from traditional expert-driven perspectives to older adults’ own interpretations of fall risk, moving from “passive acceptance of fall guidance” to “active fall prevention” to improve adherence and effectiveness. This aligns with the person-centered approach advocated in the recent World Guidelines for Falls Prevention and Management in Older Adults [10-11].

Given that previous research primarily addressed fall risk from healthcare professionals’ perspectives [2], how older adults perceive their own risk and its influencing factors remains underexplored. This study synthesizes the concept, behavioral consequences, and influencing factors of fall risk perception to pro-

vide new perspectives for addressing fall management challenges.

1.1 Concept of Fall Risk Perception in Older Adults

Risk perception originated as a psychological concept introduced by Harvard professor Raymond Bauer to study consumer behavior [12]. The Royal Society defined it in 1992 as “beliefs, attitudes, judgments, and feelings related to threat and benefit, as well as broader cultural and social dispositions.” The widely accepted definition by American scholar CUNNINGHAM describes risk perception as “individuals’ perception of objectively existing risks through their sensory systems,” emphasizing two prerequisites: uncertainty about adverse event occurrence and uncertainty about severity [12]. With the rise of patient-reported outcomes and patient involvement in safety management [2,13], risk perception has gained attention in healthcare, with preliminary explorations in cancer [14], cardiovascular disease [15], and Alzheimer’s disease [16] management.

As a common geriatric syndrome and important patient safety indicator, falls lack a clear risk perception definition. We propose that fall risk perception represents the application of risk perception to the fall domain. Integrating the Royal Society and CUNNINGHAM’s definitions, fall risk perception can be specifically defined as older adults’ subjective judgment about fall probability and consequence severity during daily activities, encompassing physical, psychological, and social dimensions arising from this uncertainty. Unlike objective risk assessment by healthcare providers, fall risk perception emphasizes the older adult’s perspective, focusing on comprehensive self-assessment and authentic feelings, highlighting subjective initiative in self-management, and better predicting activity behavior and fall outcomes [2,17]. This concept aligns with the “first person responsible for health” philosophy and may offer a new approach to fall risk management.

1.2 Characteristics of Fall Risk Perception in Older Adults

Compared to other fall-related psychological concepts, fall risk perception involves subjective judgment of both fall likelihood and consequence severity, distinct from unidimensional concepts like fear of falling and fall self-efficacy. Fear of falling represents the emotional manifestation of consequence severity—anxiety and activity avoidance due to fear of adverse outcomes [18]. Fall self-efficacy, derived from Bandura’s theory, refers to confidence in avoiding falls during daily activities [19], reflecting assessment of fall likelihood. The former emphasizes consequence severity, the latter occurrence probability. Thus, fall risk perception encompasses a comprehensive cognitive process evaluating both adverse outcome severity and fall probability.

Compared to chronic disease risk perception (e.g., cancer), fall risk perception exhibits commonality and complexity. Regarding commonality, because falls relate closely to daily activities (walking, stair climbing) that occur automatically and repeatedly, these activities become natural or instinctive, making older

adults prone to overlooking or failing to detect associated risks. This leads to normalized deviations—“I do this often, I won’t fall”—underestimating everyday activity risks. The concept of “familiarity breeds contempt” supports this phenomenon, suggesting individuals underestimate frequently encountered risks compared to occasional ones like cancer or cardiovascular disease [21].

Regarding complexity, fall risk perception is complicated by the unpredictability of recurrent falls and their consequences. Fall outcomes vary widely—from no injury to fractures or death [22]—with unpredictable severity and socioeconomic burden. Research shows fall risk perception exists in both fallers and non-fallers [23], affecting physical activity, function, and quality of life [24]. Consequently, older adults often find unpredictable falls and outcomes more frightening than falls themselves [25-26].

2 Behavioral Consequences of Fall Risk Perception in Older Adults

Fall risk perception reflects older adults’ comprehensive assessment and authentic feelings about fall probability and consequence uncertainty, closely related to activity behavior and fall outcomes [2,17]. Research indicates that overestimation or underestimation of fall risk leads to different coping behavior patterns [5,27].

Underestimation of fall risk manifests as overconfidence—believing one cannot fall—leading to risky activities beyond physical capacity [5]. Studies show inappropriate risk behaviors (e.g., toileting alone) due to overestimated abilities are common fall causes [22]. This “refusing to acknowledge aging” mentality also results in poor prevention adherence, creating a cycle of repeated education without long-term compliance [7]. Thus, underestimation may increase fall risk through risky activities and low adherence.

Overestimation of fall risk manifests as fear of falling, causing excessive activity restriction and reliance on caregivers, eventually leading to muscle atrophy, functional decline, and increased fall risk [27]. Many older adults with fall concerns adopt adaptive strategies like “shuffling slowly,” altering gait parameters (step length, speed, width, double support time) [28]. Since gait variability independently predicts falls, this self-adaptation may paradoxically increase risk. Additionally, fall risk perception affects behavior through cognitive-emotional pathways. Compared to level walking, older adults on 0.6m-high walkways sacrifice forward visual scanning to focus on immediate steps due to fear, impairing visuomotor control [29]. In Parkinson’s patients, fall-related anxiety correlates with non-motor gait disorders [30], increasing activity-related fall risk. Fear and anxiety create cognitive overload, reducing attentional resources for posture and gait stability, limiting mobility [29]—the empirical basis for dual-task training in fall prevention guidelines.

3 Influencing Factors of Fall Risk Perception in Older Adults

Research on influencing factors remains exploratory. We categorize factors into individual (emotional-psychological, physiological status) and environmental (social-cultural, physical environment) domains to reflect the psychological construction process and subjective cognition across psychological, physical, and social dimensions.

3.1 Emotional-Psychological Factors

Emotions consume cognitive resources, affecting fall risk perception [30]. SLOVIC [31] identified fear as a fundamental element of risk perception in the psychometric paradigm, triggering avoidance decisions and pessimistic risk perception [32]. HADJISTAVROPOULOS et al.'s model and subsequent research [33] demonstrate that anxiety influences fall risk perception by inducing fear of falling. According to attentional control theory, fall-related anxiety impairs goal-driven attention systems, occupies cognitive resources, reduces processing efficiency, and creates perception bias [34]. Depression also affects risk perception—depressed African American diabetic patients perceive higher health risks than non-depressed counterparts [35]. Depression-related cognitive decline, particularly slowed processing speed, reduces cognitive resources for judgment [36], promoting fall risk perception bias [2,5]. In summary, emotions (fear, anxiety, depression) play crucial roles, likely indirectly affecting perception through cognitive resource depletion. Fall prevention should consider the interaction between emotional-psychological factors and cognitive function, recommending concurrent assessment and intervention for those with poor intervention outcomes.

3.2 Physiological Status

Physiological status influences fall risk perception paradoxically. Physically compromised older adults may underestimate their abilities due to self-protective adaptation, overestimating fall risk. However, research shows those with poor objective physical status more likely underestimate fall risk [37-39]. SAKURAI et al. [37] found older adults with lower stepping ability overestimated their mobility and had lower fall risk perception. MIHALJCIC et al. [38] measured physiological function using the Functional Independence Measure and Timed Up and Go test, finding lower function correlated with lower risk perception. This may occur because declining health requires significant adaptation, but older adults lack sufficient cognitive resources for efficient information processing, leading to unreasonable risk perception [38]. HUGHES et al. [40] found better self-rated health correlated with lower fall risk perception, confirming that objective physiological status must be cognitively processed into self-rated status to influence perception. This underscores subjective cognition's mediating role. Older adults with sudden physiological

deterioration may experience perception bias due to cognitive overload, particularly hospitalized patients facing environmental changes. Clinicians should prioritize fall risk assessment for this population, providing health education and psychological counseling to correct misconceptions and rebuild reasonable risk perception.

3.3 Social-Cultural Factors

As fall risk perception subjects, older adults face social stereotypes labeling them as frail, slow, mobility-impaired, and cognitively declining [41]. In collectivist cultures, Chinese older adults are susceptible to others' evaluations [42], potentially internalizing aging stereotypes during judgment and decision-making, reinforcing these stereotypes [43], and overestimating personal fall risk. Conversely, aging stereotypes may provoke strong aversion, prompting opposite cognitions and behaviors to resist stereotyping [44], manifesting as risk underestimation and excessive risk-taking. Thus, while aging stereotypes likely influence fall risk perception, their directional effects remain unexamined.

Self-esteem plays a crucial role. In cultures emphasizing dignity and independence, autonomous mobility represents usefulness and self-worth, while dependency signifies burden and loss of dignity [45]. Some older adults prioritize maintaining independence over fall prevention, avoiding embarrassment and managing incontinence [20], potentially reducing cognitive resource allocation to fall risk and creating perception bias. This suggests self-esteem may affect perception by diminishing consequence severity awareness. Clinically, for those overestimating fall risk, emphasizing positive messages about maintaining dignity while minimizing negative fall-related information may improve prevention adherence.

3.4 Physical Environment

Accurate assessment of physical environmental hazards (e.g., age-friendly facilities, assistive devices) influences fall risk perception [39]. Some older adults attribute falls more to environmental factors (uneven surfaces) than physiological ones (dizziness, muscle weakness) [21], affecting prevention implementation. This attribution may reflect self-esteem's role [45] and insufficient understanding of fall risk factors. With technological advances, assistive devices now include traditional canes, walkers, wheelchairs, and smart technologies, all potentially influencing perception. Mobility devices can enhance security and compensate for functional decline, but stigma (implying disability, frailty, aging) leads some to deny high fall risk [46]. Negative experiences with smart devices (frustration, feeling incompetent) further discourage risk acknowledgment and device use [47]. This suggests fall education should assess knowledge of risk factors while addressing stigma and device-related discrimination. Additionally, older adults perceiving poor neighborhood environments report more fall concerns, restricting activity and social connection [48]. Improving age-friendly infrastructure and promoting assistive device use can reduce fall worries, increase activity, and

support healthy aging. Familiarity with home and surroundings also affects risk construction [21]—older adults may recognize loose carpets as hazardous yet believe “being more careful should be fine” [21], demonstrating the tendency to underestimate familiar risks.

Author Contributions

NIE Zuoting and YANG Rumei conceptualized and designed the article. NIE Zuoting, CHEN Long, ZENG Kai, and TAO Lu drafted, revised, and polished the manuscript. YANG Rumei performed quality control and final review.

Conflict of Interest

The authors declare no conflict of interest.

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