Defining a Fall and Reasons for Falling: Comparisons Among the Views of Seniors, Health Care Providers, and the Research Literature

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Purpose: The purpose of this study was (a) to obtain information about the perceptions held by seniors and health care providers concerning what constitutes a fall and potential reasons for falling, and (b) to compare these perceptions to the research literature. **Design and Methods:** As part of a larger telephone survey, interviewers asked 477 community-dwelling seniors to define a fall and to provide reasons for falling. In addition, we interviewed 31 health care providers from the community on the same topics. In order to capture patterns in conceptualized thinking, we used content analysis to develop codes and categories for a fall definition and reasons for falling. We reviewed selected articles in order to obtain a comprehensive overview of fall definitions currently used in the research and prevention literature. **Results:** A fall had different meanings for different groups. Seniors and health care providers focused mainly on antecedents and consequences of falling, whereas researchers described the fall event itself. There were substantial differences between the reasons for falling as reported by seniors and the risk factors as identified in the research literature. **Implications:** If not provided with an appropriate definition, seniors can interpret the meaning of a fall in many different ways. This has the potential to reduce the validity in studies comparing fallers to nonfallers. Research reports and prevention programs should always provide an operational definition of a fall. In communication between health care providers and seniors, an appropriate definition increases the possibility for early detection of seniors in greater need of care and services.

Key Words: Falls, Definition, Risk factors, Reasons for falling, Community, Survey

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To understand Homer, learn Greek.
To understand old people, learn their language.
(Isaacs, 1992, p. 19)

Everyone intuitively knows what a fall is; but, when asked to define it, people struggle for words. It seems difficult to translate this complex event into a concrete definition. People's concept of a fall seems to rest in the domain of tacit knowledge; some things are understood when experienced but are difficult to describe in words. The question is, if everyone tacitly knows what a fall is, do researchers need to define it at all? In a report of the Kellogg International Work Group on the Prevention of Falls by the Elderly (Kellogg, 1987; Appendix A, p. 14), Bernard Isaacs warns about the possibility for "faulty transmission of information between patient and physician and between researchers, with consequent lack of clarity" unless a fall is appropriately defined. Many researchers of falls do not define a fall and leave it to the senior to decide what is meant by a question like, "How many times have you fallen in the past 12 months?" However, these same researchers use the data they have collected in order to compare

"fallers" to "nonfallers" when explaining and predicting falls. It is likely that inconsistencies in what researchers and seniors define as a fall cause, in part, differences in risk factors and in the proportion of explained variance in prediction equations. Additionally, if health care practitioners hope to help seniors avoid falls, then all stakeholders should use the same language.

The Kellogg Report (1987) recognized the need (a) to define a fall in order to clearly identify which events could be included and which could not, and (b) to classify different types of falls in order to allow comparability between research results. The authors recommended that "falls be recorded as a disease entity in Index Medicus and in the International Classification of Diseases Xth Revision" (p. 1). Although the *ICD–10* (World Health Organization, 1992) does not define a fall, it offers a list of plausible fall types. Under the heading "External causes of morbidity and mortality—Other external causes of accidental injury" (Codes W00–W19) the *ICD–10* includes some fall categories applicable to older people. Since the publication of the Kellogg Report, researchers have focused mainly on understanding risk factors for falling and identifying of successful intervention programs. They have not continued to develop appropriate terminology and classifications of falls. The question remains: Do seniors, their health care providers, and researchers speak the same language when discussing falls? The fact that the terms *slips, trips,* and *falls* are often used interchangeably shows the confusion in the current situation. When properly defined, a slip (sliding of the support leg) and a trip (impact of the swinging leg with an external object or a body part) clearly represent different events with different causes for loss of balance. Both can cause a fall.

To our knowledge, no researcher has attempted to define a fall by asking seniors what they think a fall is or what they think causes it. Although some researchers have developed definitions with contributions from health care professionals, there is no evidence that anyone has asked a diverse group of stakeholders (including physicians, nurses, physical therapists, home care providers, or pharmacists) about what they believe constitutes a fall. Finally, it is not known whether these diverse groups define falls in the same way. Potential differences can cause two problems. If seniors participating in a research study do not understand what they are asked to report, they may interpret the meaning of the word *fall* differently, which could compromise the validity of the results. The other problem is that communication between seniors and their health care providers could be less effective. If seniors and their health care providers define a fall differently, there is a real probability that seniors will report only serious occurrences while ignoring or underreporting valuable warning signs— such as non-injurious falls, near falls, or missteps— that often signal increased need for intervention.

Researchers have sought to define a fall since the 1980s. Although there is still no universally accepted definition or consensus as to what a fall should be, some definitions (Kellogg, 1987) are more popular than others. In the early 1990s, Lach and colleagues (1991) observed that the research literature rarely provides operational definitions of falls, thereby preventing use of those data by other investigators. A decade later, Lord, Sherrington, and Menz (2001) suggested that the Kellogg definition was suitable for studies of sensorimotor impairments and balance, but that research concerning cardiovascular health required expansion of this definition to include syncope and dizziness, even though Nevitt, Cummings, and Hudes (1991) had already added syncopal and unexplained falls to the Kellogg definition. The Cochrane Review (Gillespie et al., 2002) recognized that many studies do not define a fall and that those that do use a variety of definitions. The Cochrane Review found that the most commonly used definition was that used for the Frailty and Injuries: Cooperative Studies of Intervention Techniques trials (Buchner et al., 1993). Not surprisingly, researchers often provide definitions for falls that reflect the needs of their particular studies.

Apart from the diversity of fall definitions present in the research literature, organizations that provide services to seniors also have a need to define a fall. Many tailor the definition to fit the characteristics of their target population (Canadian Institute for Health Information, 2002; Florida Hospital Association, 2001; Nurse Assist, 2005). The importance of the lack of an adequate definition in practice is illustrated by the "Q & A with Dr. Tideiksaar" archives at the Nurse Assist Web site, a feature in which Rein Tideiksaar answers questions from the nursing community. Between 2000 and 2005, the most frequent inquiries concerned the definition of a fall.

In preparation for the present analysis, we examined 30 fall definitions from a cross-section of research reports, books, fall assessment manuals, brochures, and Web sites published between 1987 and 2005 (Table 1). The literature review also revealed that the definition of a fall is frequently missing from the published article (American Geriatrics Society, 2001; Fletcher & Hirdes, 2000; Myers, Young, & Langlois, 1996; Talbot, Musiol, Witham, & Metter, 2005).

The purpose of this study was twofold: (a) to provide information about the perceptions of community-dwelling seniors and health care providers as to what defines a fall and what are the reasons for falling, and (b) to compare this information to the research literature.

Methods

Trained volunteers conducted a telephone survey prior to the implementation of a comprehensive

Table 1. Fall Definitions From Research and Prevention Literature Used for Content Analysis

Author	Year	Selected Fall Definitions
Kellogg Group	1987	"A fall is an event which results in a person coming to rest inadvertently on the ground or other lower level and other than as a consequence of the following: Sustaining a violent blow, Loss of consciousness, Sudden onset of paralysis, as in a stroke, An epileptic seizure." (p. 4)
Lach et al.	1991	"... an unexpected loss of balance resulting in coming to rest on the floor, the ground, or an object below knee level." (p. 198)
Buchner et al.	1993	"Unintentionally coming to rest on ground, floor, or other lower level; excludes coming to rest against furniture, wall, or other structure." (p. 301)
Means et al.	1996	"... any involuntarily change from a position of bipedal support (standing, walking, bending, reaching, etc.) to a position of no longer being support by both feet, accompanied, by (partial or full) contact with the ground or floor." (p. 1032)
Berg, Alessio, Mills, & Tong	1997	"... losing your balance such that your hands, arms, knees, buttocks or body touch or hit the ground or floor." (p. 262)
Canadian Institute for Health Information	2002	"... an unintentional change in position where the elder ends up on the floor or ground."
Carter et al.	2002	"... inadvertently coming to rest on the ground or other lower level with or without loss of consciousness and other than as the consequence of sudden onset of paralysis, epileptic seizure, excess alcohol intake or overwhelming external force." (p. 999)
Cesari et al.	2002	"... a sudden loss of gait causing the hit of any part of the body to the floor ..." (p. M723)
Tideiksaar	2002	"... any event in which a person inadvertently or intentionally comes to rest on the ground or another lower level such as a chair, toilet or bed." (p. 15)

Note: The most diverse fall definitions are presented in the table. Those not shown (Campbell et al., 1999; Campbell et al., 1997; Covinsky et al., 2001; Cummings et al., 1988; Feder et al., 2000; Florida Hospital Association, 2001; Gillespie et al., 2002; Kron et al., 2003; Lajoie & Gallagher, 2004; Lamb et al., 2003; Lamb et al., 2005; Li et al., 2005; Lord et al., 2001; McMurdo et al., 2000; Nevitt et al., 1991; Nurse Assist, 2001; Province et al., 1995; Salva et al., 2004; Tinetti et al., 1988; Tinetti et al., 1997; Tinetti & Speechley, 1989) were slight variations and their repetition was considered redundant.

community-based falls prevention program for older people. The small community in northern Ontario, Canada, where the program was to be based had approximately 13,000 inhabitants, with 42% of the population older than age 55 (Statistics Canada, 2004). The median age of residents was 12 years older than the Provincial median age. In the past 15 years the city had become a popular retirement destination among seniors due to its natural environment, affordable housing, and availability of services.

Participants

Trained volunteers conducted a telephone survey of 477 community-dwelling adults aged 55 years or older in order to collect information about perceptions of falls, exposure to major risk factors, and awareness about falls prevention programs. In addition, we performed in-person interviews with a convenience sample of 31 health care providers who served the community. This group included 3 physicians, 3 pharmacists, 1 optometrist, 2 community-care coordinators, 4 therapists (occupational, physical, recreational, and rehabilitation), 11 nurses, 5 personal support workers, and 2 health administrators. One participating physician had some training and special interest in geriatrics, but there were no geriatricians in this community. However,

because of the large population of seniors, all of the health care providers worked with a significant number of seniors. The providers worked in the local hospital, the community-based long-term care facility, a personal support service, the public health unit, a community-care access center, an optometrist's office, two pharmacies, and a family health center. Nine (29%) provider participants were men.

Procedure

We trained a group of 27 volunteers (22 of them seniors) to conduct telephone interviews and record open-ended answers with as much detail as possible and without interpretation. Because of time constraints, we permitted the interviewers to use point form in order to record the key phrases used by interviewees in response to the open-ended questions. For example, "Trip over rug and go down and injure yourself," "Anytime you land on a floor is a fall, when you are off your feet you are falling ...," "Suddenly change position without wanting to," "Slip, sudden reaction, miss step, bending," and "Panic, don't know what to do" were typical definitions of a fall captured in point form. An onsite coordinator supervised the interviewers. The coordinator selected telephone numbers by using systematic random sampling from the community telephone directory. The survey began with the

interviewer determining whether one or more eligible participants lived in the household. In cases where two eligible respondents resided together, the interviewer invited both to participate. There were 28 (6%) multiple respondents in the households surveyed. The interviewer introduced the respondent to the falls prevention project, invited him or her to participate in the survey, and assured that all information provided would be kept strictly confidential. Interviewers considered a respondent's agreement to answer the survey questions as consent to participate. We calculated the response rate according to the method outlined by Aday (1996, p. 165–168) for telephone interviewing (i.e., dividing the number of successfully completed interviews into the number of eligibles). In order to calculate the number of eligibles, the equation uses (a) total number of phone calls, (b) known number of ineligibles (e.g., out of service or discontinued number, respondents who did not meet the age or gender criteria); (c) estimated number of ineligibles (e.g., no answer, answering machine, busy signal); and (d) non-interviews (e.g., refusals, unsuccessful callbacks, assumed eligibles who were not interviewed). The response rate was 36.4%. The information reported here is anonymous secondary data extracted from a database that the community established in preparation for the falls prevention program.

Survey

The actual survey was much broader than what is reported here and included questions about the perception of falls, fall history, personal risk, fear of falling, health, medications, physical activity, footwear, alcohol consumption, home safety, awareness about falls prevention programs, and demographic information. We report here only results from questions about perceptions of falls. There were two open-ended questions:

Q$_1$: "How would you describe or define a fall?"
Q$_2$: "What do you think are the three main reasons for falling?"

The interviewers used two prompts for Q$_1$ ("What are the important characteristics of a falling event?" and "Please describe what happens in a fall") and one prompt for Q$_2$ ("Any others?") only if the respondent had difficulty answering the question. After the first question, the interviewer asked the respondent for the remainder of the survey to think of a fall as "an unexpected event in which some part of a person's body comes to rest on the ground or some lower level, like a bed or chair."

Analysis

We tabulated all open-ended answers, transcribed all in-person interviews, and used content analysis

in order to capture conceptualized thinking. Two investigators independently read a random sample (30%) of all responses looking for patterns in answering the question "What were seniors thinking when asked to define or describe a fall?" We then discussed independently developed preliminary coding schemes and refined them until we produced the final version. We resolved all differences by consensus. We asked two independent researchers to code 30% of the fall definition answers in order to check clarity and comprehensiveness of codes. We used their comments in order to refine the wording of the codes. The first author then used the final version of the coding scheme to code all answers.

Interviewers asked seniors to give three reasons for falling and health care providers to give five. When a respondent had given fewer than the required number of reasons, we coded the missing answers as N/A. As we had done for the definitions, we coded all reasons into categories and assigned them a descriptor (e.g., Motor Control included slips, trips, stumbles, missed steps, and so on). If the reason for falling appeared fewer than 5 times across all respondents it did not qualify as a useful category and we included it in the category Other. If a respondent mentioned two reasons that belonged in the same category (e.g., we coded mats and pets into the category Indoor Obstacles), we coded the second and third reference into the category Repeated. Interrater reliability for the fall definition, based on 30% of the answers, was more than 90% for all categories except body position change (86%) and motor control (67%). For the reasons for falling, interrater reliability ranged between 82% and 93%. We used SPSS (2001) in order to analyze the data.

Results

Characteristics of the Sample

Table 2 presents the demographic characteristics and the most frequent health problems of the senior participants. Participants' average age was 70 (SD = 8, range 55–92) years, and the majority were married, owned their homes, and had obtained education beyond high school.

The majority of seniors (77%) considered their health to be good, very good, or excellent. Among the 80% taking prescription medications, the average was 4 (SD = 3, range 1–15) different medications per day (20% of the respondents took no medications). More than 40% of the seniors took 4 or more prescription medications daily. A total of 39% of the seniors self-reported at least one fall in the past year; of these, 17% reported having fallen more than once. Slightly more than half (57%) of the seniors rated their risk of falling as low, and 76% described their balance as good, very good, or excellent. Only 34% of seniors reported having no fear of falling. A large

majority (78%) of the seniors said that regular physical activity was very or extremely important in preventing falls, but, on average, 52% of the seniors did not do any strenuous, moderate, or mild physical activity.

Definitions of a Fall

Development of the coding scheme for the definition of a fall revealed two distinct categories of higher-level meaning: antecedents to and consequences of falling. Antecedents occurred prior to the fall event and indicated why, where, and how a fall might happen. Consequences described the change in body position, landing, or injury. Figure 1 provides all of the categories identified in the seniors' definitions and their frequencies. Most commonly, seniors included motor control (slip, trip, stumble), followed by loss of balance, injury, environmental landing point (when the participant explicitly stated the place of landing [e.g., pavement or sidewalk]), weather, body position change (when the participant did not explicitly specify the landing site [e.g., from up to down, not vertical]), and obstacles.

During the in-person interviews, we encouraged health care providers to mention as many characteristics as they could that would define or describe a fall. For this reason, frequencies for health care providers are not comparable with those for seniors. More than half of the health care providers included motor control, environmental landing point, loss of balance, and the body position change in definitions of falls. More than 30% of the providers also mentioned injury, health, unexpectedness, and anatomical landing point. The least frequently cited characteristics of a fall were environmental factors such as obstacles, weather, and surface-related conditions. Only two health care providers mentioned psychosocial factors. It is important to note that no senior and only one health care provider gave a definition of a fall as specified in the research literature (Buchner et al., 1993; Kellogg, 1987).

Content analysis of the fall definitions selected from the research and prevention literature (Table 1) and those provided by seniors generated 10 distinct constructs, composed of multiple descriptors (Table 3). There were many similarities in the definitions provided by seniors and researchers, but seniors talked more about the antecedents to falling and fall consequences, whereas researchers focused mainly on the description of the event itself and on exclusion criteria.

Reasons for Falling

We identified 30 categories of reasons for falling. As is shown in Figure 2, the reasons for falling most frequently mentioned by seniors were balance, weather, inattention, medical conditions, indoor obstacles, surface hazards outside, slip-trip-stumble,

Table 2. Demographic and Health Characteristics of the Seniors Interviewed

Characteristic	N (%)
Age group	477
55–64	150 (31.5)
65–74	179 (37.5)
75+	148 (31.0)
Gender	477
Female	263 (55.1)
Male	214 (44.9)
Marital status	470
Single	32 (6.8)
Married	279 (59.4)
Widowed	103 (21.9)
Separated	18 (3.8)
Divorced	27 (5.8)
Common-law	11 (2.3)
Residence	477
Owns	314 (65.8)
Rents	163 (34.2)
Education	470
None	8 (1.7)
Public school	141 (30.0)
High school	178 (37.9)
College	104 (22.1)
University degree	38 (8.1)
Other education	1 (0.2)
Most frequent self-reported health problems	476
Arthritis	291 (61.1)
High blood pressure	200 (42.0)
Back, spine, or neck problems	183 (38.4)
Reduction of muscular strength	172 (36.1)
Hearing problem	114 (23.9)
Poor circulation in limbs	114 (23.9)
Dizziness or light-headedness	113 (23.7)
Problems with vision	106 (22.2)
Chronic pain	106 (22.2)
Diabetes	97 (20.4)
Take prescription medication	475
Yes	380 (80.0)
No	95 (20.0)

dizziness, attitude, and muscle weakness. The order of the most frequently cited reasons for falling among seniors was quite different than that among health care providers, who most often mentioned medical condition, balance, medications, indoor obstacles, vision, attitude, weather, assistive devices, inattention, and slip-trip-stumble (Figure 2). Old age, stairs, general poor health, indoor hazardous surfaces, chance event, and fear of falling were not mentioned at all by health care providers.

Table 4 allows for comparison of the most frequently reported reasons for falling by seniors and health care providers with the risk factors identified in the research (represented by the summary results of a univariate analysis of the most common risk factors for falls [American Geriatrics Society, 2001]). We rank-ordered the 11 most frequent in each
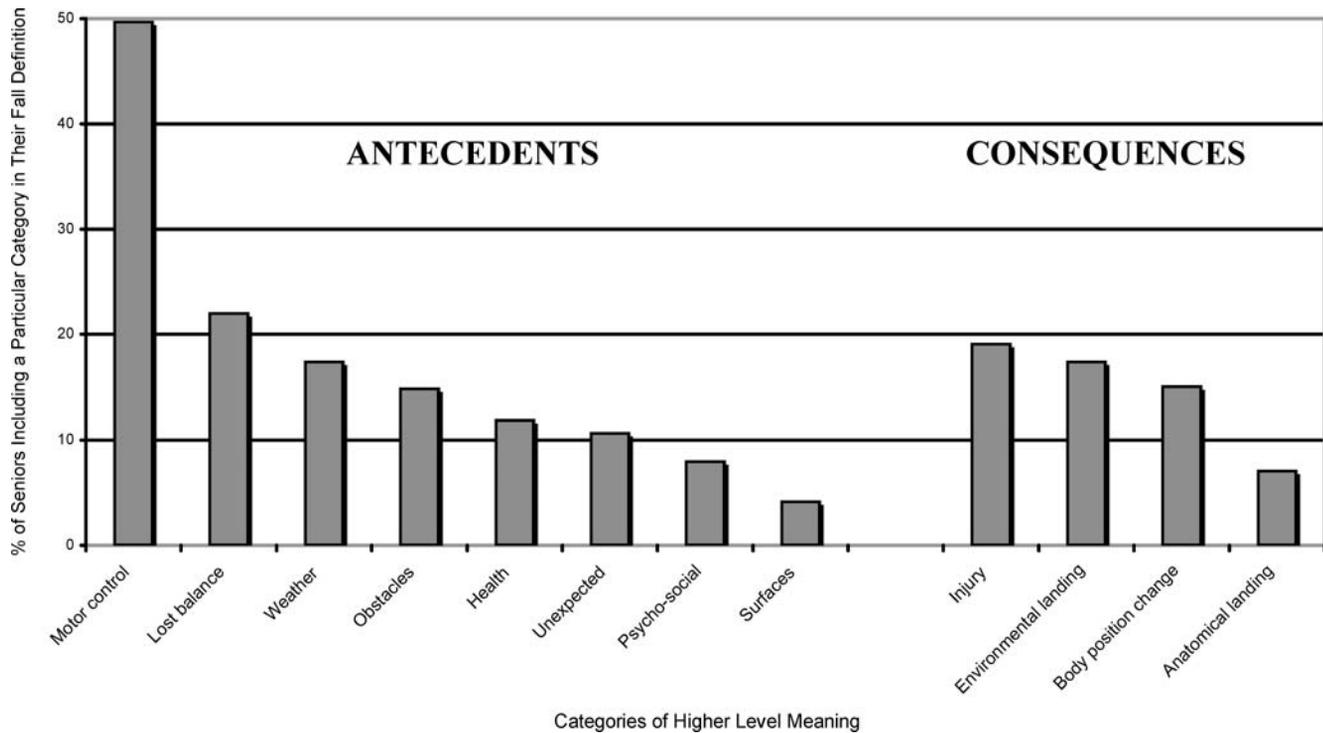
Figure 1. Categories of higher level meaning identified in the definitions of a fall provided by seniors.

category in order to evaluate differences. Only balance and vision appear in all three columns. There is substantial overlap (60%) in reasons reported by seniors and health care providers (some of this perhaps due to a coding bias). Several risk factors identified in the research literature are specific health conditions that could be included in the general category Medical Conditions, which was acknowledged by both the seniors and health care providers.

Discussion

Comparison of Fall Definitions

Our results show that a fall has different meanings for different people. Although seniors most frequently associated "loss of balance" with falling, we found only one definition in the research literature that used that wording (Lach et al., 1991). When defining falls, health care providers mainly talked about the consequences of falling (injury, health, and anatomical landing point), which is understandable considering that nurses, doctors, and therapists from the local hospital represented 39% of the sample and that dealing with the consequences of a fall is part of their job.

Because both seniors and health care providers tended to focus on the consequences of falls, there is a possibility that non-injurious events will often be disregarded. This omission would negate the opportunity for early intervention and diminish the likelihood of preventing more serious falls in the future. It would be beneficial for the health care system to focus

attention on preventing injuries by scanning for warning signs like near falls, mishaps, or missteps.

Some research definitions eliminate particular health conditions known to cause falls, but seniors saw health as important and often cited it when defining falls. In our opinion, elimination of any condition that is age sensitive is not desirable. Improving fall-definition reporting practices in the research literature would improve understanding among researchers and facilitate comparison among studies. We also found that the seniors very often produced incomplete definitions of falls and that there was a great deal of variability in the definitions they used. Therefore, if not provided with an appropriate definition, seniors will likely interpret the word *fall* in many different ways. An older person's definition and reporting of a fall event will depend on that individual's tacit knowledge, experience, and psychological mindset. Although differences in the language that seniors use to define falls might reduce reliability and validity of self reporting, it is difficult to know if this would influence the accuracy with which researchers can predict future fallers.

An example of the necessity to provide an appropriate fall definition in order to compare between research groups can be found in the common database for the Frailty and Injuries: Cooperative Studies of Intervention Techniques trials (Buchner et al., 1993). This multisite collaborative study recognized the need for common measures that would allow meaningful comparisons across the sites, so they clearly defined a fall, a near

Table 3. Constructs and Their Descriptors Identified in the Definitions of Falls Provided by the Seniors and in Selected Research and Prevention Literature

Constructs	Common Descriptors Provided by Seniors	Common Descriptors Found in Research Literature
1. Antecedents		None
Weather	Bad weather, ice, snow, freezing rain, slush	
Surfaces	Slippery floor, surfaces or ground, uneven sidewalks	
Obstacles	Rug, furniture, stairs, ladder, obstacles in the way, getting into a car or a bathtub	
Health	Knee problem, dizziness, passing out, bad feet, legs and back, poor eyesight, age, arthritis, joints give out, high blood pressure	
Psychosocial	Rushing, not watching where going, inattention, carelessness, not careful, not alert enough	
2. Suddenness	Unplanned sudden lost of control, uncontrollable act, no time to protect yourself, one minute up the next down	Unintentionally, inadvertently, involuntary, unexpected, sudden, unanticipated
3. Event	Falling, slipping, tripping, stumbling, banging, twisting, losing balance, missed step	An event, change in (body) position, movement, loss of balance, loss of gait
4. Action	Falling down, from standing you go down, fall back	Coming to rest, contact, landing, falling all the way, from a position of bipedal support, from upright posture, in downwards direction, hitting, partial or full contact, touches or hits
5. Causality	None	Resulting, leading to, causing
6. Participant	Yourself, they, a person	Patient, subject, a person, an individual, victim, faller, resident, elder
7. Environmental landing point	Land on the floor, fall on the street, impact on the ground, falling on patio, person hits a wall or something, hit a flat hard surface	On the ground, floor, other lower surface or level, an object (bed, chair, stair, toilet), below knee level, position of no longer being supported by both feet, without the feet bearing the weight
8. Anatomical landing point	Landed on hip, shoulder, flat on the face, fall on your knees, land on your keester, some part of your body	A body part, hands, arms, knees, buttocks, or body
9. Consequence	You can break a bone or hip, hurt yourself, damn sore, bang head, injury, twist your back, need help to get up, have to crawl to get help, break a head, shoulder or arm, have bruise, cracked bones, dislocate hip, knock yourself out	May or may not result in physical injury
10. Exclusion criteria	None	Excluding, other than, not due to: loss of consciousness, syncope, major intrinsic events such as paralysis, stroke, fainting, epileptic seizure, overwhelming external force, violent blow, alcohol intake, motor vehicle accident, sports, falls where subject did not come to rest on the ground, assisted lowering to a chair or floor, near or intercepted falls

Note: Rare and uncategorized descriptors in both groups are omitted.

fall, and other measures of interest. This practice was recently followed by the Prevention of Falls Network Europe consensus group (Lamb, Jørstad-Stein, Hauer, & Becker, 2005), and our present study confirms the importance of this approach. Of special interest are reviews that do not report the use of a fall definition as a search or inclusion/exclusion criteria. We wonder if reviews on falls really summarize comparable results.

Based on the results of the present study, we suggest that one define a fall using wording understandable to seniors whenever falls are being considered—be it in communication with a patient, community prevention programs, educational material, or journal articles (see Table 3). Although an effort has been made in the past to produce one universal fall definition (Kellogg, 1987), such a definition may not be possible or necessary. We suggest
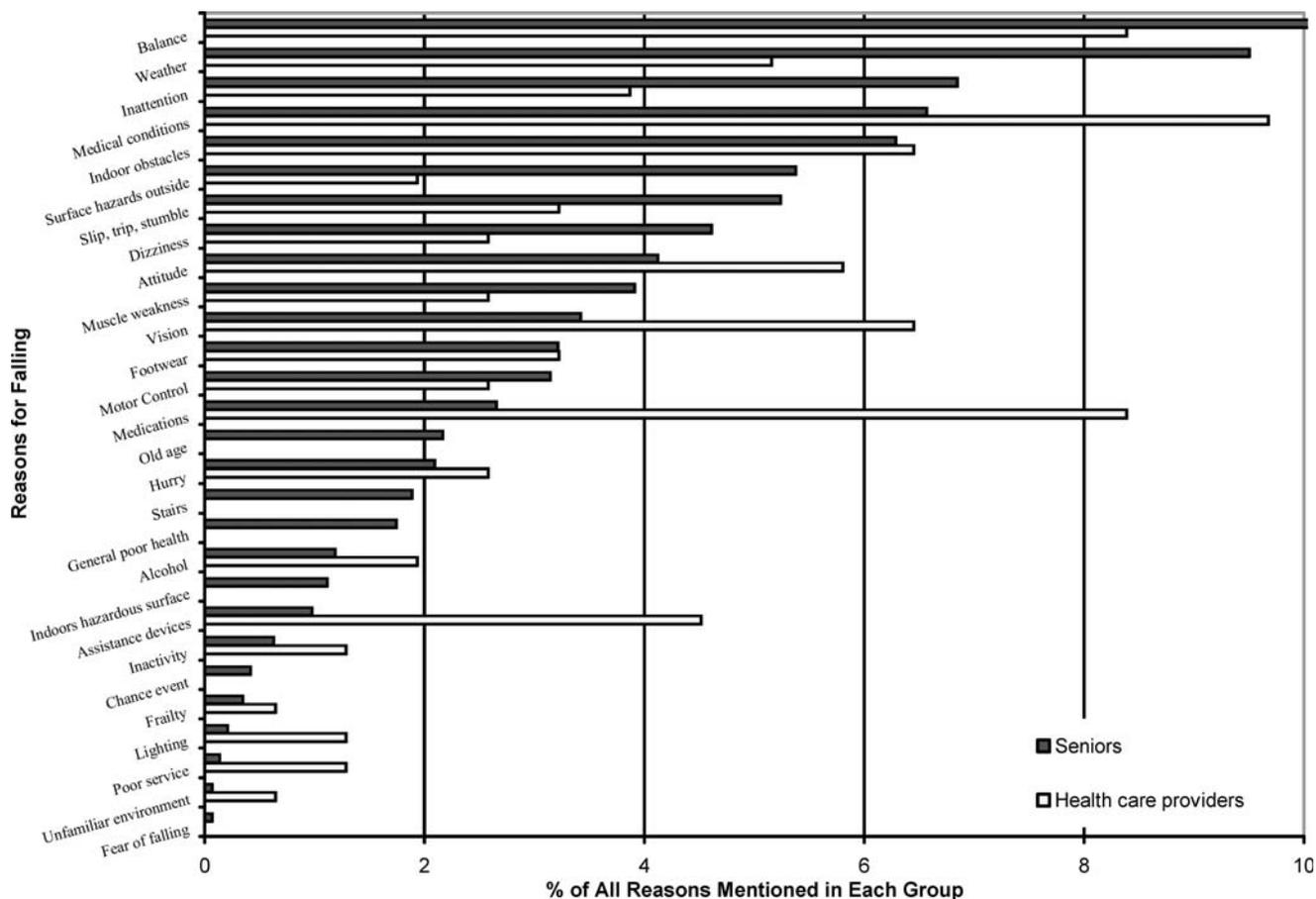
Figure 2. Ranking of the reasons for falling provided by seniors compared to health care providers. *Note*: The following are example responses seniors used to define reasons for falling (category name is in italics, example responses follow): *Balance*–poor balance/equilibrium, unsteady, unstable on feet; *Weather*–ice, snow; *Inattention*–not watching where going, not paying attention, being preoccupied; *Medical conditions*–illness, diabetes, stroke, arthritis, feet problems; *Indoor obstacles*–cords, loose carpets, stairs, clutter; *Surface hazards outside*–rough ground, slippery conditions, poor sidewalks; *Dizziness*–feel faint, vertigo, pass out; *Attitude*–carelessness, doing what should not be doing, nor careful, too cautious upset or nervous, not using handrail; *Muscle weakness*–weakness in legs, hips, or general, no strength; *Vision*–poor eyesight, bifocal, misjudge distances; *Footwear*–inadequate or poor fitting footwear, socks, bare feet; *Motor control*–coordination, clumsy, slow reaction time, not as agile, turning quickly; *Medications*–improper medications, too much medication; *Hurry*–moving fast, no patience, getting up too fast, rushing; *Indoors hazardous surfaces*–wet or slippery floors, slippery bathtub, tile floor, waxed stairs; *Assistive devices*–lack of grab bars, no railings, did not use cane, wheel fell off walker; *Inactivity*–lack of exercise, poor mobility; *Lighting*–not putting lights on, going out after dark; *Poor service*–poor nursing care, negligence on part of maintenance, lack of assistance or supervision; *Unfamiliar environment*–not adapted yet to living accommodations. Generic codes such as: no answer, other and repeated code were excluded from the graph.

that researchers provide study participants with an operational definition explicitly stating inclusion and exclusion criteria. Reporting this operational definition in subsequent publications will allow for appropriate comparison with other studies and for summaries in reviews and meta-analyses. This will be particularly useful when focusing on specific issues such as modifiable risk factors. The next step toward obtaining further clarity in the area of fall definitions could be the organization of a consensus conference with all stakeholders involved in the process.

Reasons for Falling

Some of the risk factors identified in the literature may not be comparable to the reasons for falls provided by the seniors and health care providers in this study. Therefore, one might expect to see differences between the perceptions of seniors and providers and the research literature. This is because researchers typically identify risk factors for falls by using correlational research techniques. Some risk factors (e.g., history of falls, as reported in Table 4), although related to falls, are not causes but simply factors correlated to the likelihood of a fall. Although the term *reasons* (defined as a *cause* or an *explanation* in the Concise Oxford Dictionary [Pearsall, 2001]) diminishes the gap between causes and correlated factors conceptually, it may not have been completely successful in doing so practically (i.e., as used in this survey). It is also sometimes difficult to identify an obvious biomechanical link between a risk factor identified in the literature and a

cause for a fall. Fear of falling is a case in point. If fear of falling causes agonist–antagonist co-contraction resulting in increased muscle stiffness, then it clearly can be a cause for a fall. With these limitations noted, we are satisfied that the reasons identified here and the risk factors from the literature are reasonably comparable.

Considering the large number of risk factors identified in the literature (Fletcher & Hirdes, 2000; Myers et al., 1996; Nevitt et al., 1991; Tinetti, Speechley, & Ginter, 1988), it was not surprising that seniors and health care providers recognized many reasons for falling. The differences between the perceptions of seniors and providers (as shown in Figure 2) and the comparison of these perceptions with a ranking of risk factors from the literature (Table 4) are of extreme interest to the development of falls prevention programs. Because the community represented by these results is quite small and relatively isolated from other major centers, one might expect the views of seniors and their health care providers to be fairly similar, as one of the roles of the provider is to educate the patient. Although there was a 60% overlap in reasons mentioned, there were also some important differences. The focus by health care providers on medical conditions, medications, vision, and assistive devices seems to reflect the professional training they received and the work they do. From a falls prevention perspective, however, the discrepancy between the views of seniors and providers concerning medication use is problematic, because 80% of the seniors surveyed reported daily prescription medication use (see Table 2). More public education around the issue of prescription medications seems warranted. It may be the case that the links between certain medical conditions and falls may not have been effectively communicated.

The focus by seniors on weather and surface hazards outdoors partially reflects the fact that the survey was conducted in the winter months and that the community is in northern Ontario, where snow and ice are abundant at that time of year. Proper snow removal and safe walking surfaces are essential to falls prevention. Indoor obstacles were frequently mentioned by both seniors and health care providers. Inattention was mentioned frequently by seniors and to a lesser degree by health care providers. Developing an educational program to encourage seniors to pay attention at critical times would be useful.

Table 4 provides further insights into falls prevention strategies. Seniors, health care providers, and the research literature all accurately identified balance as an important risk factor for falls. In contrast, muscle weakness is an important modifiable risk factor mentioned most often in the research literature. It is potentially problematic that the health care providers surveyed did not seem to recognize the relative importance of this factor. Lower-body strength is critical to the maintenance of

Table 4. The Most Frequent Reasons for Falling Suggested by Seniors and Health Care Providers Compared to Risk Factors Reported in Research Literature

Rank	Seniors	Health Care Providers	Research
1	**Balance**	*Medical conditions*	*Muscle weakness*
2	*Weather*	**Balance**	History of falls
3	*Inattention*	Medications	Gait deficits
4	*Medical conditions*	*Indoor obstacles*	**Balance deficits**
5	*Indoor obstacles*	**Vision**	*Use of assistive devices*
6	Surface hazards outside	*Attitude*	**Visual deficit**
7	*Slip, trip, stumble*	*Weather*	Arthritis
8	Dizzy	*Assistive devices*	ADL impairment
9	*Attitude*	*Inattention*	Depression
10	*Muscle weakness*	*Slip, trip, stumble*	Cognitive impairment
11	**Vision**	Footwear	Age > 80 years

Notes: Research data are taken from the American Geriatrics Society (2001). Risks reported by all three groups are in bold, risks mentioned in any two groups are in italics, and risks mentioned only once are in normal font.

independent living. We could raise similar concerns about gait deficits, although seniors and health care providers in the present sample clearly recognized the Motor Control category as important (see Figure 2). Therefore, an intervention strategy for falls prevention should ensure that seniors and providers are familiar with all risk factors and their relative importance—in particular those that are modifiable either through personal or environmental strategies.

Conclusion

This study showed how seniors conceptualize falls and reasons for falling. Fall definitions from the literature were similar to those provided by seniors. However, seniors associated falls with antecedents and consequences, whereas research studies understandably focus mainly on a description of the event. Operational definitions of a fall would be valuable for both research consistency and effective falls management and prevention. In all cases one should utilize wording familiar to seniors. Holding a consensus conference of seniors, researchers, and health care providers should be the next step toward obtaining an operational definition of a fall that would maximize the likelihood that seniors would report all falling events.

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