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Falls' problematization and risk factors identification through older adults' narrative

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Abstract *Falling is an important event for older adults as they might cause physical and psychological impairment, institutionalization and increased mortality risk. Adherence in falls prevention programs depends on older adults' perceptions in relation to falling. The current study aims to investigate the fall problematization and older adults' perception about the risk factors for falls. This is an exploratory qualitative research, conducted through content analysis approach. The sample consisted of older adults aged 60 years and older who participate in community groups in Porto Alegre (Brazil), and professors from two local universities. Final sample consisted of 22 participants, mean age was 70.2 ± 7.1. Coding and interpretation of data resulted in two thematic categories, named: falls' problematization and the perception of the risk factors for falling. The first category highlights that many older adults do not realize falling as a potential problem, which suggests that current preventive measures may not be reaching the target population. The second category shows that older adults' perceptions in relation to the risk factors exist, but often they are not avoided, because older adults consider their ability to "take care" as the main method of prevention, and due to the multifactorial nature of falls, this cannot be considered an efficient solution.*

Key words *Aged, Accidental falls, Perception, Qualitative research, Risk factors*

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Introduction

Population aging is a global process that is currently more accentuated in developing countries, such as Brazil[1]. Along with this demographic trend an epidemiological transition also occurs, which results in an increased incidence of chronic degenerative and disabling diseases[2]. Such illnesses, associated with physiological changes from human aging, increase older adults' risk of falling[3].

Falls are considered an event to be worried about. In Brazil, approximately 30% of older adults fall each year and this percentage increases to 50% in individuals with 80 years and older[4,5]. It is defined as an event which results in a person coming to rest inadvertently on the ground, floor or other lower level, and is not the result of an intrinsic factor (such as a stroke or syncope) or an unavoidable accident[6].

Falls are usually the result of a complex interaction between different risk factors which are classified in three categories: intrinsic, extrinsic and behavioral. Intrinsic risk factors comprehend older adults' characteristics, such as age, functional capacity, presence of chronic diseases and gait disorders. Extrinsic risk factors are those related to the environment in which older adults are, including uneven surfaces, slippery floors, poor lighting, loose rugs and staircase without handrail. Behavioral risk factors refer to the use and perception of space in relation to the demands imposed by the environment and individuals' functional capacity[7-9]. Most falls in older adults are caused by the interaction among risk factors[10] and knowledge about them is essential for falls' prevention[11].

These data are part of a broad research field that consider falls in older adults an event extremely relevant to public health due to its frequency, morbidity and high social and economic cost[12]. Furthermore, these studies show that prevention is closely linked to risk factors, that is, elements that can promote or be associated to this unwelcomed event, and not rarely serious, even not necessarily being the causative factor[13]. It is in this context, that several studies try to identify risk factors[5,14,15] in order to develop effective programs to prevent falls in older adults[16-19].

However, considering that recognition of risks and determinants factors are well established among health professionals, given the relevance of the problem, risk perception is still a challenge regarding older adults. If individuals are not able to identify their own limitations and risks in the environment, they probably will not engage in preventive activities[20]. Among barriers to participate in these activities is the stigma involved about falling and the difficulty of aligning the objectives proposed by health professionals and older adults expectations[17,21].

It is under such barriers that this study is justified, investigating older adults' perception about the risk of falling. As a background of such problem, we bring in the study of Peres[22], which describes the "invisibility phenomenon", which describes individuals' poor perception about health risks. For this author, the concept of risk for health professionals seem to be more defined, while it seems much harder for the general population, whose knowledge differ in origin and construction. Therefore, it is essential to investigate how individuals build risk notions in front of objective issues recognized as dangerous[22].

The same phenomenon of invisibility can be seen in older adults regarding falling, as there is also a gap between knowledge about risk factors and risk perception, an issue which is at the heart of this research. Thus, the aim of this study was to analyze how a group of older adults, in their speeches, perceive falling as a potential health problem, and how risk factors turn to be important information to be considered in everyday life.

Methods

For the development of this study, a qualitative analysis was carried out, looking at a set of emerging categories from participants' narratives about how they think and describe issues related to falls, which enable the development of new knowledge and/or to launch new hypotheses about the risk of falls in older adults. Therefore, it was a qualitative analytical approach focused on the speech, based on Grounded Theory, which results can be very important to better understand the phenomenon of engagement and developing fall prevention programs. Thus, information about individuals' experiences was explored and a relationship with existing theories and concepts were developed, aiming to create new hypotheses, rather to test them[23].

Participated from the study community-dwelling older men and women, aged 60 years and older, from the city of Porto Alegre (RS, Brazil). A selection criterion was the ability to walk in the standing position, with or without assistive device. This inclusion criterion was adopted as wheelchair or bedridden older adults have differ-

ent risk factors for falls compared to those who walk. The search for participants occurred in two specific locations and at different times. First, older adults attending senior groups at two social work centers, called *Centro de Referência da Assistência Social (CRAS) Leste* and *Parthenon* were invited, voluntarily, to participate. After completing the interviews, it was found that these participants had a low level of education, so, the search for individuals with a higher educational level was held in universities, in order to reach a heterogeneous group, as the older adult population is characterized. The small number of participants arising from universities is justified by the lack of new information in the speeches, compared to earlier interviews in the CRAS, since the final number of participants was determined by saturation of information.

Before starting the interview, older adults completed the Mini Mental State Examination (MMSE) for cognitive screening. The score proposed by Bertolucci et al.[24] was used, which considers the educational level in the final result. The maximum score to be achieved is 30 and the acceptable score for older adults with four years or less of education is greater than or equal to 17; for older adults over four years of study, the expected score is at least 24. Older adults who have not reached the cutoff point were excluded from the sample.

Twenty-five older adults were interviewed, but three of them were excluded because of undesirable score achieved on MMSE. Thus, the investigated group was compounded by twenty-two older adults. Data collection was conducted in the period between May to November of 2014, through semi-structured interviews, addressing everyday situations and knowledge of older people about the risk factors for falls, previous experiences and prevention (unstructured interview guide available upon request). Interviews were conducted "face-to-face" and recorded in full upon participants' permission. The products of such narratives were then transcribed. During this action, textual adjustments were made, noting the fact that such modifications did not change the meaning of individuals' speech.

With data produced, expressed in the form of texts, content analysis was developed. The thematic contents analysis was the selected approach, following Bardin[25] and Minayo[26] guidelines. Thus, the analysis was performed in three stages, starting with the pre-analysis, to be immersed in the content through reading; followed by open coding, in which meaning units were identified; and, finally, categorization, in which identified meaning units build categories and subcategories related to falls in older adults[25,26].

In the categorization process, frequency that meaning units appeared in each subcategory was counted. This quantitative information was taken as an indicator of the importance of the category in older adults' speech, that is, the more recurring the unit, greater the qualitative importance of the subcategory on the research topic.

All older adults agreed to participate in the study and signed a consent form. The present study fully comply the principles of the Declaration of Helsinki and was approved by the Research Ethics Committee of the Pontifical Catholic University of Rio Grande do Sul (PUCRS). To ensure confidentiality, participants received a number according to the order of the interviews, being called interviewee 1, interviewee 2 and so on (I1, I2, I3 ...).

Results and discussion

Firstly, it is important to explain some of the research participants' characteristics. Older adults mean age was 70.2 ± 7.1, being the majority women (20 individuals). Among subjects, eighteen participants were from the CRAS (E1 to E18) and four were universities' staff (E19 to E22). Complete data of participants are shown in Table 1.

In general, except for the predominance of women, we can assert that the group shows heterogeneity in aspects of housing, personal income and years of education. This heterogeneous setting is important as we seek to bring to the analysis results from individuals who contemplate distinct characteristics.

Analysis was conducted focusing on the content of older adults' speeches and resulted in the development of two main categories following the objectives of this study. These categories bring two main issues to be discussed: one oriented to if/how falls are identified as a health problem during the development of daily and social activities, and the other related to the perception of factors that constitute risk for falls.

The purpose of thematic content analysis was to seek on participants speeches the foundations for the two categories. Therefore, sets of subcategories emerged which help to describe the aspects of the two main topics. Both categories, as well as subcategories are summarized in Chart 1.

Table 1. Participants' characteristics.

Number	Gender	Age	Housing	Monthly income	Years of education
E1	M	62	Partner	1.000 – 3.000	5
E2	F	69	Partner	1.000 – 3.000	5
E3	F	79	Alone	1.000 – 3.000	4
E4	F	60	Family member	1.000 – 3.000	6
E5	F	72	Alone	1.000 or less	7
E6	F	64	Family member	1.000 – 3.000	3
E7	F	63	Family member	1.000 or less	5
E8	F	79	Alone	1.000 – 3.000	2
E9	F	67	Alone	1.000 or less	3
E10	F	69	Partner	1.000 or less	7
E11	F	70	Family member	1.000 – 3.000	> 10
E12	F	83	Alone	1.000 – 3.000	4
E13	F	71	Partner	1.000 or less	4
E14	F	66	Partner	Do not have	4
E15	F	79	Alone	1.000 or less	4
E16	F	78	Alone	1.000 or less	5
E17	F	79	Family member	1.000 or less	3
E18	F	62	Alone	1.000 or less	8
E19	M	77	Partner	More than 3.000	>10
E20	F	69	Alone	More than 3.000	>10
E21	F	66	Partner	More than 3.000	>10
E22	F	60	Partner	More than 3.000	>10

Source: authors data, 2015. M = Men / F= Women; Housing = with whom live with; Income: in Reais (Brazilian currency).

Chart 1. Categories, subcategories and the frequency of meaning units in each one.

Category	Subcategories
How/if falling is identified as a problem (142)	Recognizing the possibility of suffering a fall and its consequences (45)
	Vicarious learning (34)
	Previous fall and consequences (29)
	Received advice (22)
	Requested advice (6)
	Almost have fallen (3)
	Comparison with other age groups (3)
Perception of the risk factors for falling (170)	Behavioral factors – "Take care" (58)
	Extrinsic factors (58)
	Intrinsic factors (47)
	Multifactorial (7)

Source: authors' data, 2015.

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Therefore, categories bring two important issues faced by participants, one of them depicting the problematization of falls in daily life and the other emphasizing the awareness of factors that may present a risk for falls. For interpretative purposes, these categories are described separately in specific sections, where results and discussion are presented.

Category 1: Falls problematization

During the interview, older adults were asked about the incidence of falls. Interestingly, five participants have denied the occurrence of such event; however, following the dialogue, they reported falling experiences that, at first, seemed to have the "invisibility status".

The way falls become a problem worthy of prevention and care for older adults is the central theme of this first category, because, in older adults' dialogue, it can be seen that falling, as a usual event for anybody, does not seem to be recognized as a problem to be prevented. Seven subcategories describe findings in this direction, especially highlighting the *recognition of the possibility of falling and its consequences* (45 meaning units). This subcategory covers everything that was reported about the fact that the individual recognize that might fall, be afraid or not to experience a fall or even be scared about the consequences of falling, as reported by interviewee 10: *I'm very afraid of slipping in the bathroom, God forbid falling in the bathroom. As I'm afraid about it, I take my bath holding myself close.* Other reports were interesting about consequences of falls, as in the interview 19 excerpt: *I'm terribly, terribly afraid of falling, afraid of hitting my head and do not getting up anymore.* However, many older adults reported no fear of falling, and also pointed out that falling is an event that anyone can experience, not identifying it as a problem that can have serious consequences, especially for older adults. Two speeches that exemplify this situation were presented by participants 7 and 9, respectively: *I'm not afraid to fall, I do not even think about it. If you fall, you have to get up* (I7). *I'm not afraid of falling; it is part of life* (I9). Moreover, while many older adults reported being afraid of falling, it seems, that this feeling does not encourage them to change their routine, suggesting that maintaining functional independence and performance of activities that have always been present in their daily lives, are the most important factors for these individuals, which can often put them at risk of falling, as interviewee 6 said: *I do not give up on anything because of fear of falling, because I have no one to do my things at home. The machine washes the clothes, but I have to hang them up outside the house, where is a little dangerous to fall.*

Another important subcategory for falls problematization is *vicarious learning* (34 units of meaning), in which older adults, from observing other people who have fallen (friends, family or acquaintances) recognizes fall as a problem, as explained by the interviewee 1: *It happened to a friend* of *mine, he fell, hit his head on the floor and had serious problems on his head.* Many respondents identified falling as a health problem after taking care of family members who had negative consequences after a fall, as explained by the interviewee 10: M*y mother fell many times, now she passed away. She used to fall a lot, had Alzheimer's disease, because of a fall she broke her arm, her leg, had to undergo surgical procedures, needed a cane, walker, and she did not want to use them. When we realized she was already on the ground.*

Also on this category, it is important to point out *previous fall experience and consequences* (29 units of meaning). In this subcategory were allocated content about falls experienced by the participant as well as its consequences. One of these reports that well represent this issue was presented by participant 19 who said that: *I fell, hit my head, and it scared me* a *lot. Nothing happened, I got up immediately, just had abrasions on my forehead, which is not good;* and by the interviewee 2: *I fell and hit my arm, the doctor said that I hurt its "nerves". So, I had to treat it with 30 [sessions] of physical therapy and now it only hurts a little at night.* It is worth noting the fact that older people consider falling as a problem as someone already experienced it, even themselves or acquaintances. The fact is that, preventive activities seem far from the reality of older adults understanding, as the concern to protect themselves from falls is not anticipated.

There are other factors that were also judged as important to problematize fall episodes, but were less observed. These subcategories are: *almost have fallen* (3 meaning units) as said by respondent 1: *I almost fell on the street, if my wife had not held me on my arm, I would have fallen with my head on the ground; comparison with other age groups* (3 meaning units), emphasizing falls, as an usual event for individuals, that can happen at any stage of life, regardless consequences that can cause to older adults. The statements of respondents 11 and 20, respectively, explain this fact: *Everyone falls, even young peo-*

ple (I11). *Not only for older adults, but everybody has this problem of falling* (I20).

Also in this category, it was investigated how older adults learn about falls through advice. These have been represented in quantitative studies as essential to prevention programs. Thus, two subcategories were created, *received advice* (22 meaning units) and *requested advice* (6 meaning units). Speeches about advice received were especially linked to the media and senior center groups, which can be exemplified by the following statements: *The TV always show comments, sometimes reports that people fall and they should put those handrails in bathroom, floor should be slip-resistant, all these things they teach on TV* (I5). *I have received advice about fall prevention in the senior group* (I11).

Regarding requested advice, just two reports emerged from older adults who have requested information on how to prevent falls, as in the excerpt from interviewee 19: *I have requested medical guidance, advice from colleagues and other older adults.* The other meaning units in this category point out that older adults have never asked for such advice, as said by the respondent 13: *I have never asked anybody about it.* It is important to highlight the few reports about receiving and/or requesting guidance about falls to health professionals and that among advice received, the media, especially television, friends and family or senior centers groups were the most remembered. Health care professionals are, especially, health educators and, thus, have a key role to help older adults in fall problematization. This is a crucial point to be developed for all those who work with this population group. A study with informal caregivers showed that knowledge about fall prevention was from the media or vicarious learning; only 14.6% of participants reported this type of advice from health professionals[27], which corroborates to findings from this study.

Additionally, it is important to include fall history in older adults' assessments, and if necessary, indicate prevention programs[9]. In Brazil, there is a strong belief that falls are a usual and expected event of aging and, because of this, are often forgotten during geriatric and gerontological assessments, unless the presence of a serious injury due to fall[28]. According to the clinical practice guideline for preventing falls in older persons, from the American and British Geriatrics Societies, all older adults should be asked at least once a year, about the occurrence of fall, for an appropriate screening[29]. However, negative stereotypes related to falls and aging can encourage older adults to reject information about falls and prevention[30].

It is clear, therefore, that the majority of older adults recognize falling as a potential health problem only when have somehow experienced it, falling themselves or watching someone who has fallen, which may lead to the development of fear of falling. A study about the influence of falls in older adults' quality of life found that 88.5% of those who have fallen reported fear of falling and 36% reported negative consequences[31]. Listening older adults and their stories about falls may help to understand why interventions related to fall prevention are not always followed or maintained[30].

According to emerging results in this category, older adults can constitute the perception of falls as a structural problem of their daily actions from different information. Subcategories, to some extent, show that this change of perception is not based only on a single aspect. Although experiences with falling are important, it is clear that fall problematization will occur in the articulation of different information or experiences (vicarious learning, having almost fallen, comparisons with age groups, received or requested advice). This finding – of multiple sources - is very relevant to have in mind while working at prevention programs, because it indicates the need for different approaches in the awareness processes, so that falls might not be identify as a non structural problem of older adults life and become to be perceived as a structural problem, that is, something that older adults need to always be aware of.

Category 2: Perceived risk factors for falls

Given the multiple sources of information from which perception is built, we can sustain that awareness of fall as a problem is linked, not as a cause and effect logic, with risk factors. Therefore, in order to deepen the analysis, we tried to map, in older adults' speeches, factors identified as a risk for falls. Questions were made from an extensive review of the subject, using the classification of risk factors according to the literature[7-10]. Thus, four subcategories of risk factors emerged from older adults narratives.

According to the analysis, *extrinsic risk factors*, subcategory with 58 meaning units, were the most described by older adults as possible cause for falling. Within this subcategory were allocated all risk factors related to the environment

where older adults are, even at home or on the streets. The most remembered factors were potholed sidewalks, unsuitable shoes, no handrail on stairs and loose rugs. However, it can be seen that often, older people recognize the danger of extrinsic factors, however, do not improve conditions so that falls could be avoided, the excerpt of interview 21 is an example: *I love carpets, but the rug of my room sometimes have curled edges, and I've noticed that when I walk fast the rugs make me lose balance, but I do not take them out from there;* as well as the speech of participant 8: *I do not have stairs at home, only few steps without handrail, and I have rugs everywhere.* These narratives illustrate the understanding of the presence of extrinsic risk factors, but not the perception of falling as a structural problem, which can be crucial for older adults' quality of life and the need to avoid it, characterizing the phenomenon of invisibility of hazards in the environment, even though they are known.

Intrinsic risk factors, subcategory with 47 meaning units were also mentioned, but less frequently. Chronic health problems and pain, especially on the knee and spine were the most cited as possible causes for falls, as well as physiological changes related to aging, such as decreased visual acuity and balance. Importantly, ten older adults reported age as a factor, determining the condition of greater vulnerability of the elderly comparing to younger individuals. The interview excerpts 1 and 17, respectively, demonstrate this: *With certain age, 45-50 years we are not that 'fresh and young' as we were on the thirties, with all ability* (I1). *Our body is not the same as when we were younger, our knee is stiff as well as our arms, and everything is so hard to move. It is not easy* (I17).

However, considering all factors mentioned by older adults, the expression "take care" is remarkable for its recurrence. Thus, the *behavioral factors* that make up the "take care", turned into a subcategory, with 58 meaning units. The act of "taking care" was transmitted by the elderly as the most effective prevention against the risk factors they reported, that is, they seemed to think that their behavior is the key to fall prevention, independent of the presence of other risk factors. The speech of the interviewee 4 illustrates this subcategory: *At home, have a step ladder, I do everything, but I have to take care to avoid accidents;* as well as shown in the narrative of interviewee 7: *I think is lack of attention, because if you have a rug, you have to take care to do not slip on the rug and fall.*

As mentioned before, for these older adults, maintaining functional independence and autonomy is the key. Therefore, they may carry out some risky activities; however, when taking care of themselves older people feel immune to these hazards, which denote only a behavioral structure of actions regarding the problem of falling. In such cases, "taking care" is understood to pay attention to the barriers, but older adults seem not to be convinced that they can "take care of themselves" eliminating or avoiding some extrinsic risk factors, especially at their homes, or exercising their body, and thereby minimizing intrinsic risk factors.

Some older adults said that it is not possible to name just one risk factor for falls, emphasizing its multifactorial nature. Thus, *multifactorial* causes also has become a subcategory, but with lower frequency of meaning units (7). The speeches of interviewee 20 and 21, respectively, exemplify this subcategory. *I think it's a set of things [that lead older adults to fall], we cannot say that is only one* (I20). *I think risk factors are associated; it is not just one thing* [that lead older adults to fall] (I21).

Findings from the present work were similarly described before in other studies. Braun (1998), points out that older adults listed extrinsic risk factors, such as conditions of the roads and the lack of handrails on the stairs, as the main cause of falling[32]. These studies help to support the greater attention and perception of the participants of this study to these factors.

Risk factors related to home environment may increase the prevalence of falls by 50%. However, Cesari et al.[33] suggest that the changes made in the environment must be combined with prevention of intrinsic risk factors, because they alone seem to be insufficient to prevent falls, because of its multifactorial nature[33,34]. This result demonstrates a need for appropriate information on fall prevention and risk factors, also considering that participants of this study did not report much about the multifactorial issue and seem to give less emphasis to intrinsic risk factors.

Other than that, older adults reported, quite frequently, the need to "take care" to prevent falls. Nyman et al. highlight that falls depend considerably on individual behavior, for example, avoid walking too quickly[35]. It is important to note that half of falls experienced by older adults, in the study of Nyman et al., have not been assigned to a specific risk factor or were identified with unknown cause[35], indicating that often the risk factors for fall, are not perceived or relevant to older adults. Findings of Braun[32], Hughes et al.[36] and Pohl et al.[37], suggest that

older adults believe that fall risk factors are not perceived or consider a relevant topic to be discussed. These studies, therefore, reinforce the analysis of the first analytical category, that is, there are two ways to perceive falling: as a structural problem (worthy of changes in daily life) and as a non-structural problem (perceived, but not considered important).

In this second analytical category it was possible to deepen this issue. It was noted that older adults seem to find an intermediate solution that does not reduce their independence. Risks are perceived and associated with falling, but this perception results only in behavioral structure (the "take care") and it does not continue to major concerns about extrinsic and intrinsic risk factors. This does not mean that extrinsic and intrinsic risk factors are not perceived, but in relation to the problem of falls, these factors - described more individually than as multifactors - appear to be overlapped by the relevance of behavior of "take care", since intrinsic factors were the least mentioned in older adults speeches. This assumption can be quite important for those who work with falls awareness and prevention.

Conclusion

It seems quite plausible to say that fall awareness as a health risk depends not only on an event or information. Thus, for effective participation in prevention activities, it is important to surround older adults with information coming from different sources, considering the multiple factors involved. In addition, this study contributes to the knowledge that the perception of older people in relation to risk factors for falls exists, but often they are not avoided because they consider their ability to "take care" as an infallible weapon to prevention, which brings out the invisibility phenomenon related to certain health risks.

Despite significant results, which bring advances to the existing literature, this study has some limitations. The main issue to be listed is the difficulty in generalizing the results. In addition, the study had less men participating than women, reducing the heterogeneity of the investigated group. We suggest the development of new studies to deepen the present findings, which can be more oriented to intervention, with the following research questions: "Preventing falls in older adults can be more effective when developing a "polyphonic information effort?" "How to balance social values of "taking care" to still keep older adults' functional independence as well as do not making the risks invisible?"

Collaborations

P Morsch worked on the study theme design, data collection, data analysis, literature review and writing of the article. M Myskiw worked in data analysis, critical review and approval of the final version. JC Myskiw worked in the design of the study subject, critical review and approval of the final version.

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