FALLS, OLD AGE AND MENTAL ILLNESS

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ABSTRACT

Objective Falls in older people living in the community are an important health problem particularly when in cases of hospitalization. Having a multifactorial etiology, its severity and costs requires preventive intervention. The impact on functionality and quality of life and high socioeconomic costs, are recognized. **Aims**: to identify the prevalence of falls in older people and characterize clinically, functionally and socially the elderly involved in an episode of urgency in a psychiatric hospital. **Methods**: this was a quantitative, correlational cross-sectional study. We studied the prevalence of falls and associated factors. The sample consisted of 99 elderly people involved in an episode of urgency in the biennium 2012/2013 including a psychiatric hospital in the north of Portugal. **Results**: suggest a prevalence of 38% of falls in an aging population. The mental disorder and addiction factors are highlighted. **Conclusions**: A complex interaction between multiple personal, social and environmental factors in the etiology of decline suggests the importance of prevention and monitoring programs of the risk associated with it.

Descriptors: Accidental Falls; old people; mentally ill persons

INTRODUCTION

The European population gets old. And although not uniformly, the aging index in the EU-28 in 2012 have an average value of 115,5%, ranging between 157,1% (Germany) to 55,5% (Ireland) and Portugal with the index 129,4% according to data from PORDATA (Pordata, 2013).

The longevity predispose morbidity, coexisting various entities in the person: the multiple pathologies. Among them, there are the diseases of mental disorder, cardiocerebrovascular, oncological, the joint diseases among others. Chronic and disabling diseases that require the polypharmacy, strategy not without risks. When associated factors they can show effects on mobility and physical and mental dependency that marked the fragility of the cycle, getting people more likely to unintentional episodes of fall (Gilbert *et al.*, 2012; Partridge *et al.*, 2014).

The prevalence of falls varies between countries, taking values between 28% to 35% in individuals over 65 years and values between 32% to 42% in those over 70 years. It increases of 30% to 50% in groups living in long-term residential. However, many times the incidence of fall is evaluated from the hospital care and neglected in other situations

(Gilbert *et al.*, 2012), either for lack of institutional control or because the elderly do not report, for forgetfulness (Makizako *et al.*, 2014) identifying situations that are configured to underreporting (Martin, Ribeiro, Almeida & Santos, 2013). Some authors suggest the higher incidence in women (Borson *et al.*, 2013) but other in men because of the higher comorbidity (Tängman, Eriksson, Gustafson, & Lundin-Olsson, 2010). The cause is multifactorial, with intrinsic and extrinsic factors that act synergistically (Vu, Weintraub & Rubenstein, 2006) or, as in the World Health Organization (WHO, 2007), biological factors (age, gender, chronic diseases, decline in physical, cognitive and emotional abilities), behavioral (polypharmacy, lack of exercise, inappropriate footwear and alcohol abuse), environmental (buildings in disrepair, floors and irregular stairs, lack of support rods, and poor lighting) and socioeconomic (low income, poor housing, lack of social interaction, limited access to health and social services, poor community resources). The physical limitation and psychotropic medication consumption increase the risk of falling (Chan *et al.*, 2013; Quach, Yang, Berry & Newton, 2013) and lead to recurrence. To have cognitive impairment (Laakkonen *et al.*, 2013), body balance, balance and gait slowed, plus the risk (Chan et al, 2013; Robinovitch *et al.*, 2013), which finds expression in worst performance of ADLs. In a study of falling risk in psychiatric patients with control group (Chan *et al.*, 2013) found statistically significant differences, being worse in the group of: the older, the comorbidity with, the disoriented, those with changes of consciousness and with restricted mobility. Moreover what Lavsa and others have found, that the polypharmacy was a risk factor, but not age, gender and disease (Lavsa, Fabian, Saul, Corman & Coley, 2010).

The consequences of falls occur to physical, emotional and functional level and may lead to death, but also have high socioeconomic weight (Gilbert *et al.*, 2012) and medical care costs so it has an impact on quality of life. Therefore, it must be fall prevention as the best strategy, with multifactorial and multidisciplinary approach, with regular and systematic evaluation that includes the static and dynamic postural work, adapted muscular reinforcement, teaching and guidance on security techniques and life styles and the mobilization of environmental and socioeconomic factors (Gilbert *et al.*, 2012; Hawley-Hague, Boulton, Hall, Pfeiffer & Todd, 2014). However, being more vulnerable forces the organization of the work of those who care in order to provide quality contacts in the affective and socialization areas (Mallidou, Cummings, Schalm & Estabrooks, 2013), softening the instrumental intervention. The framework presented justifies the objectives of this study which were to identify the prevalence of falls in older people, characterize as the clinical, functional and social point of view older people involved in an emergency episode in 2012/2013 biennium in a psychiatric hospital in the north of Portugal and analyze the factors associated with risk of falling.

METHODS

The sample consisted of 99 elderly people involved in an emergency episode in the 2012/2013 biennium, in a psychiatric hospital in the north of Portugal. It was a crosssectional, descriptive and correlational study. As data collection instrument was used the initial evaluation form (IE) set out in the clinical process where the records of sociodemographic, clinical and functional variables are part of. Of these, the following variables were used: Gender; Marital status; Age; Hours of sleep per day; Sleep medication; Reason for hospitalization; Personal background; Sensory changes; Change of thought; Hallucinatory activity; Orientation (time / space / allo and auto); TA values; Pain and functionality. We studied the prevalence of fall in the IE form and referred to in urgency episodes. Statistical analysis was descriptive and correlational with models of categorical analysis (Pestana & Gageiro, 2009). Ethical principles that guide the research were respected, based on the Helsinki Declaration of Ethics in Research Involving Human Subjects.

RESULTS

The sample is mostly female (83,8%), widowed (38,4%) with mean age of 72,38 years old (50% are between 66 and 82 years old). Older people (mean 76,39) fall more than the younger (mean 69,74, P = 0.008). In the case of mobility it appears that the majority, 70,8%, is independent, varying significantly with the falls as the likelihood ratio test (p = 0,025). About the interference of the functionality in the falls, it appears that those who need help has greater risk of falling (3,63 times) than independent with significant differences (p = 0,001). In self-care the most of people, 53,5%, need help to look after them, and independent ones have a lower risk of falling (6,2 times; p = 0,001). In contrast, those who need help in mobility has greater risk of falling than independent ones (3,63 times). Anyone who suffers from diseases of the urinary tract and/or bladder incontinence, has a greater tendency to fall (1,5 times), but differences are not significant (Table 1).

Table 1 - Demographic characteristics and their relationship to falls

Demographic and Clinical Characteristics	(n = 99)	Tests (p)
Falls		
Yes % (n)	38.4 (38)	
No % (n)	58.6 (58)	Binomial (p<0.001)
Sex		
Men % (n)	16.2(16)	
Women % (n)	83.8 (83)	Binomial (p <0.001)
Falls		
Men % (n)	40 (6)	RR= 1.02
Women % (n)	39.5 (16)	Fisher Exact (p=0.594)
Single % (n)	5.1 (5)	Conditional
Married % (n)	30.3 (30)	Independence
Divorced % (n)	14.1 (14)	Mantel-Haenszel
Widowed % (n)	38.4 (38)	(p=0.045)
Age Average (SD)	72.38 (12.3)	
Falls		
Yes % 76.39		
No % 69.74	(82-66) (38/97)	t (p=0.008)
(P75-P25) (Min/Max)		
Self-Care		
Dependent % (n)	12.7 (9)	
Needs Help % (n)	53.5 (38)	Chi-Square Test
Independent % (n)	33.8 (24)	Pearson p= 0.001
Self-Care/		
Falls		
Dependent % (n)	70.0 (7)	
Needs Help % (n)	45.8 (22)	RR =6.2
Independent % (n)	22.2 (8)	
Urinary elimination/		
Falls		
Normal	35.9 (28)	
Incontinence	53.8 (8)	RR= 1.5

Table 1 - Demographic characteristics and their relationship to falls

Demographic and Clinical Characteristics	(n = 99)	Tests (*p*)
Urinary elimination/ Mobility		
Dependent	7.3 (7)	Ratio test
Needs Help	21.9 (21)	the likelihood
Independent	70.8 (68)	p= 0.025

Most are overweight (58,7%, BMI> = 27,1), but in this study, the falls do not vary significantly with body mass index (BMI). The reason for hospitalization was essentially behavioral changes (57,6%), followed by depressive symptoms (19,6%) being the remaining reasons distributed by psychosis (5,4%) and others (17,4%). Who was hospitalized for behavior change is more likely to fall than the rest (1,8 times; p = 0,05). When analyzing separately the episodes of aggression and the occurrence of falls, it appears that the majority, 68,6%, don't has this change and who carries episodes of aggression have a higher risk of falling (1,46 times), but the differences are not significant.

With regard to the prevalence of fall, it is verified that is 38,4% and most have no risk (Fisher, p <0,001). However, it is 6,7 times higher the risk of falling in those who have explicit risk.

Regarding sleep, it is identified that 60,6% of people sleep between 5 to 8 hours per day, a range considered normal for the elderly. The remaining 39,4% have sleep disorders. However, when relating to the falls, we observed that anyone who doesn't fall has averaged more sleep hours than those who falls (6,60 vs 6,19), with no significant differences. Most, 90%, take sleep medication, and the others who does not have greater risk of falling (1,6 times); however, no statistically significant difference even when observing the situation in relation to gender (Table 2).

Table 2 - Relation between diseases,
pharmacological therapeutics and falls

Diseases and falls	(n = 99)	Tests (p)
Sleep Medication		
Yes % (n)	90 (81)	RR= 1.6
Não % (n)	10(9)	
Falls		
Yes % (n)	38.4 (38)	Binomial (p<0.001)
No % (n)	58.6 (58)	Binomial (p<0.001)
Psychological diseases		
Yes % (n)	11.1 (8)	Fisher exat test
No % (n)	88.9 (85)	(p= 0.265)
Psychiatric diseases		
Dementia	47.9 (46)	
Psycosis	15.6 (15)	RR=1.6
Schizophrenia	1 (1)	
PMD	14.6 (14)	
Neurological diseases		RR=1.7
Yes % (n)	11.5 (11)	Mantel Haenszel
No % (n)	88.5 (85)	Common odds

When analyzing the interference of the presence of pain on falls, it is seen that 87,5% of the persons showed no pain and falls do not vary significantly with pain (LR) p = 0,676. It is found that 45,2% of people have thought changes and these have 1,1 times greater risk of falling of who does not mention them. The majority, 91,3%, has no hallucinations, no distinction as to the falls. It was also found that most (88,5%) do not have neurological diseases, but those who have shown an increased risk of falling (1,7 times). In the analysis of items of mental status category it appears that most are oriented auto and alo psychically (71,9% and 66,7%), followed by those who are oriented in space, 56,3%. Only the spatial orientation differs with the biggest risk of falling (0,63 times). Regarding the temporal orientation, it is seen that 58.3% of people have the change; but this is not reflected in the risk of falling (Table 3).

Table 3 - Mental state, hospitalization motive and association with falls

Mental State	(n = 80)	Tests (p)
Reason for hospitalization		
Behavior change	57.6 (53)	
Depressive Syntoms	19.6 (18)	
Psychosis	5.4 (5)	Pearson Test,
Anxiety	3.3 (3)	p = 0.06
Others	14.1 (13)	
Reason for hospitalization		
Falls		
Behavior change	49.1 (26)	
Depressive Syntoms	22.4 (4)	RR=1.8
Psychosis	40 (2)	
Others	35.3 (6)	
Alopsychic Orientation		
Yes % (n)	66.7 (64)	Fisher com p = 0.999
No % (n)	33.3 (32)	
Autopsychic Orientation		
Yes % (n)	71.9 (69)	Fisher com p = 0.64
No % (n)	28.1 (27)	
Spacial orientation		
Quedas		
Yes % (n)	31.5 (17)	RR= 0.63
No % (n)	50 (21)	
Temporal Orientation		
Yes % (n)	41.7 (40)	Fisher com p = 0.527
No % (n)	58.3 (56)	

With regard to musculoskeletal changes, it appears that the majority (80,2%) did not mention them and that those who did have 1,3 times greater risk of falling. Respiratory diseases were rather referred (5,6%) and people in this condition have less risk of falling (0,85 times). About the relationship between diabetes and falls, it appears that there is a higher risk of falling on who suffers from the disease (1,04 times); however, differences are not significant. In what corresponds to episodes of fall and blood pressure values, it is seen that hypertensive individuals have a higher risk of falling (p> 0,05). Regarding the sensory changes,

including the ear, it turns out that most do not have them and they are not associated with fall. The specific analysis of psychiatric diseases shows that most have backgrounds of dementia (47,9%) followed by psychosis (15,6%) and 14,6% for manic depression.

DISCUSSION

We studied an elderly person sample, with a history of mental illness living in the community and who had an episode of urgency. It is a mainly female population, partly dependent, with multiple pathologies and polypharmacy. The prevalence of falls in this sample is high, 38,4%, and consistent with other studies that indicate that, as we age, also increases the risk of falling assuming values of 28% to 35% on those over 65 years old and values between 32% to 42% on those over 70 years old (WHO, 2007) and did not vary either with age or gender. Women have played in other studies, the higher prevalence of falls (Morris, 2007), in this there was no such difference. Moreover, people have other diagnoses associated with the risk of falling, particularly cognitive impairment that underlies the dementia process that almost half of the sample suffers and, which is consistent with other studies (Taylor, Delbaere, Mikolaizak, Lord & Close, 2013).

Highlights the dependence in self-care and the greatest risk of falling, which follows the studies of other authors (van Strien, Koek, van Marum & Emmelot-Vonk, 2013). It is known the powerful association between functional disability and mortality (Idland, Pettersen, Avlund & Bergland, 2013) and, in this study, the degree of dependency predicts the risk of falling. There is a hierarchical pattern of decline and those who less fall are the most autonomous in activities requiring more potential with limitations in less complex activities. Thus, we identify a hierarchical pattern of functional impairment (Idland *et al.*, 2013) and it is recognized that those who still have energy to walk, though slowed, are at lower risk, slowing to some extent the vicious circle of reduced physical activity, loss of physical function and early disability.

In this study there was no relationship between the risk of falling and commitment in bladder removal, unlike other authors who suggest that most episodes of fall are related to the loss of involuntary urine, especially at night (Gilbert *et al.*, 2012). Despite the values found on the mobility are reasonable in terms of autonomy, the difficulties in spatial orientation, temporal and auto and allopsychic may be disturbing factors, jeopardizing the march, for the effects that these changes reflect in terms of gestures and balance. Another greater risk of falling factor is BMI, for associations that adds as disease entity and all cardiovascular and balance consequences associated with BMI, including a higher consumption of drugs (Robinovitch *et al.*, 2013); however, in this study, there was no association between this variable and episodes of fall.

In the case of visits to the emergency department predominantly for behavioral changes, it appears that this situation is associated significantly with falls, a similar situation to other studies (Stubbs *et al.*, 2014a) which state that the behavior disorder exacerbates the perception of reality and this, in turn, takes some insight that enables protect yourself from possible imbalances with consequent falls. Aggressive episodes are also behavioral changes associated with risk of falling, which was not the case in this study, with only a slight increase of fall.

The assessment of the risk of falling seems fundamental to minimize the occurrence of this phenomenon. Therefore, the authors advise to review preventively, which is in line with the values found in this investigation. Risk monitoring is a proactive strategy, even more appropriate when there are studies linking an increased risk for fall to the difficulties in physical and mental abilities (Hawley-Hague *et al.*, 2014; Robinovitch *et al.*, 2013).

Some authors reported that there had been major changes in demographics and consumption of drugs with a proportional increase in the risk of falling (De Brauwer *et al.*, 2014). In this study, the majority, 90%, take medication to sleep, making sure that people who do not take have higher risk of falling, unlike other authors which are unanimous in reference medication as a fall factor (van Strien *et al.*, 2013). In this sample, there is the reliance on self--care while physical limitations associated with increased risk of falling, which is consistent with Carter and colleagues mean when they say the physical limitations associated with psychotropic medication increases the risk of falling (Carter *et al.*, 2001). Furthermore, the type of medication (psychotropic drugs, cardiotonics and pain killers) are associated with falls (van Strien *et al.*, 2013) and in this study, the consumption of medicines for sleep exists in nearly the entire sample, and the average consumption on other studies are around six to eight different drugs a day (Limpawattana, Euawiriyanukool & Sawanyawisuth, 2014).

When analyzing the interference of the presence of pain on falls, it turns out that it is not often the presence of pain and falls do not vary significantly with pain unlike other studies (Stubbs *et al.*, 2014a; Stubbs, *et al.*, 2014b) involving the risk of falling to pain, particularly in the lower limbs. However, some authors report that given the stigma attached to mental illness, sometimes the pain is not recorded nor referred to specialists by be assumption that the mental patient does not adhere to treatment (Corrigan *et al.*, 2014). In a study (Stubbs *et al.*,2014a) twenty-one articles mentioned that in 12 months, 50,5% of seniors with pain reported one or more falls compared to 25,7% of controls. In a global meta--analysis, fourteen studies demonstrated that pain has been associated with an increased likelihood of falling (Stubbs *et al.*, 2014a; Stubbs *et al.*, 2014b).

The prevalence of falls is high, although below the figures reported by WHO (WHO, 2007), we can be face-to underreporting situation, as pointed out by several authors (Gilbert *et al.*, 2012).

Behavioral risk factors are shown in the deficit cognitive functions, which may accompany cerebrovascular disease and affect all areas of behavior, even directly, cognitive functioning, which compromises the approach strategies, planning, development of cognitive activities, among others, a situation observed in this study. Social life is changed when there is commitment of the executive functions, as in the case of dementia, predisposing to social isolation. We note the fundamental role of these functions in the risk of falling and the evidence that the right hemisphere lesions can boost that risk (Nagamatsu, Munkacsy, Liu-Ambrose & Handy, 2013). The pattern of risk factors suggests a complex interaction of personal and behavioral factors in falls of older people with mental illness, and are recommended studies on the development of multifactorial screening procedures and individually tailored interventions to prevent the fall. Thought changes and the hallucinatory activity were not associated with the fall; however, some authors report that a certain detachment from reality, as the thought change and hallucinatory activity, can play a reason to fall.

With regard to musculoskeletal changes that tend to cause risk of falling in older people, it appears that most do not mention them but those who have, are in higher risk of falling. In the same vein are respiratory diseases highlighting that, by making the ventilation appropriately, have lower risk of confusion which prevents the imbalance that leads to the fall episode (Bellelli *et al.*, 2014). With regard to diabetes and its relation to the falls, it turns out that there is greater risk of falling with the disease (Ng, Lee, Toh & Ko, 2014; Shin *et al.*, 2014). As corresponds to episodes of fall and the blood pressure values it is found that hypertensive patients are more likely to fall however, did not settle the difference proposed by other authors who reported having an increased prevalence of hypertension with age and its association with other comorbidities, including some structural changes and increased rigidity and aging organs and systems (Kapoor & Kapoor, 2013), which alone can facilitate the event of falling. Regarding the changes in the sensory system, including the ear, because it has relevance as an organ that interferes with the balance, it appears that most do not have those changes and that people who have them do not have that factor associated with episodes of falling.

Limitations of the study: Evaluation of risk factors is limited and it would be helpful to cover the socio-economic and environmental factors and measure in a more comprehensive way the risk of falling including balance and strength. To determine the consumed medication will provide specific factors related to drug consumption.

CONCLUSIONS

Older people with mental disorders have a high prevalence of falls and the risk factors are multiple, including older age, cognitive impairment and reliance on selfcare. Even in cases where mobility is not disturbed the guidance difficulties can precipitate the risk of falling. The disturbed behavior can generate distortion in perception and therefore should be associated with falls. It proves to be important to improve pain assessment in people with mental illness because it is undervalued and there will not be the association that generally exists in the rest of the elderly population. Complex and multidimensional approaches are required in order to prevent falls in this population and is necessary to establish specific programs for risk monitoring and controlling factors. The implication in professional practice leads to power ease up the personal costs and in general society with a reflection on the quality of life of older people living in the community.

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