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RISK ASSESSMENT OF FALLING IN ELDERLY AVALIAÇÃO DO RISCO DE QUEDA EM PESSOAS IDOSAS EVALUACIÓN DEL RIESGO DE CAIDAS EN PERSONAS ANCIANAS

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ABSTRACT

Objectives: to identify factors associated with the risk of falling in the sample population, to understand the influence of the environment where the elderly live and analyze the need for preventive interventions to be implemented in practice care. **Method:** exploratory, descriptive and cross-sectional study with descriptive analysis. **Results:** in the sample 73.33% were female and 46.67% of those were living alone. According to the Barthel Index, 73.33% of the studied elderly were independent in activities of daily living, but 86.67% had a risk of falling. The home is presented as a risk factor for falls due to the presence of environmental obstacles and lack of safety devices. **Conclusion:** to guide the elderly and their families about the risks of falling and its consequences could make the difference between falling or not and often between the installation or not of dependency situations. **Descriptors:** Fall Risk; Elderly; Nursing.

RESUMO

Objetivos: identificar os fatores associados ao risco de queda na amostra populacional, compreender a influência do meio ambiente onde a pessoa idosa habita e analisar a necessidade de intervenções preventivas para serem implementadas na prática de cuidados. **Método:** estudo exploratório, descritivo e transversal com análise descritiva dos dados. **Resultados:** na amostra, 73,33% eram do gênero feminino, e 46,67% dessas viviam sozinhas. Segundo o Índice de Barthel, 73,33% das pessoas idosas estudadas eram independentes nas atividades de vida diária, mas 86,67% apresentavam risco de queda. O domicílio apresentou-se como fator de risco para quedas devido à presença de obstáculos ambientais e à ausência de dispositivos de segurança. **Conclusão:** orientar a pessoa idosa e os seus familiares acerca dos riscos de queda e as suas consequências poderá fazer a diferença entre cair ou não e, muitas vezes, entre a instalação ou não de situações de dependência. **Descritores:** Risco de Queda; Idoso; Enfermagem.

RESUMEN

Objetivos: identificar los factores asociados al riesgo de caídas en la muestra populacional, comprender la influencia del medio ambiente donde la persona anciana habita y analizar la necesidad de intervenciones preventivas a implementar en la práctica de cuidados. **Método:** estudio exploratorio, descriptivo y transversal con análisis descriptiva de los datos. **Resultados:** en la muestra, 73.33% eran del género femenino y 46.67% de estas vivían solas. Según el Índice de Barthel, 73.33% de las personas ancianas estudiadas eran independientes en las actividades de vida diaria, pero 86.67% presentaban riesgo de caída. El domicilio se presentó como factor de riesgo para caídas debido a la presencia de obstáculos ambientales y ausencia de dispositivos de seguridad. **Conclusión:** orientar a la persona anciana y sus familiares acerca de los riesgos de caídas y sus consecuencias podrán hacer la diferencia entre caer o no y, muchas veces, entre la instalación o no de situaciones de dependencia. **Descriptores:** Riesgo de Caída; Anciano; Enfermería.

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INTRODUCTION

Aging begins with birth and ends with death, it is an individual process featuring a natural stage of life, and relates to the direct and indirect particularities of each individual and the context where it is inserted. The shape and the aging speed is influenced by a number of intrinsic and extrinsic variables that can be seen in social, economic, environmental and cultural dimensions.¹

The aging process generates strong influence on the organism as a whole, each organ system and the tissue has its peculiarities. However, both are characterized by a harmful and gradual loss of vital functions, since is the final stage of development.²

The way how is aging and the multiplicity in its valuation, related to this process is subject mostly to the relations/social values than its nature itself. Chronological age is limited only on an assessment of each individual historical period (age in years). However, it does not show the factors which relate to the aging process, which decreases the credibility in this same criteria.³ The elderly in developed countries presents chronological age equal or more than 65 years old.⁴

This work was carried out during the international academic exchange, held at the Nursing School of Coimbra - Portugal, during the first half of 2013, sponsored by the International Mobility program of the Fluminense Federal University - UFF, directed to answer the question: *“What factors are associated with falling of elderly at home?”*.

Based on the research question, the following objectives were defined: To identify factors associated with the risk of falling in the sample population; to understand the influence of the environment where the elderly live and to analyze the need for preventive interventions to implement in practice care.

METHOD

It is an exploratory, descriptive and cross-sectional study. An exploratory study refers to the characterization of the phenomenon under study, by discovering the surrounding factors and their description, thus allowing their knowledge and sectional study aims through the use of

questionnaires in unique moments, get common associations among facts, without a follow-up period. In this sense, a quantitative approach to the treatment of information obtained was adopted in order to proceed to the classification and analysis.

The sample in this study is not intentional probabilistic, this is an accidental sampling group of subjects who are easily accessible, included in the study as they are shown until the sample reaches the desired size. This type of sampling is considered ideal for an exploratory study, since it limits the generalizability of the results.⁵

When the theme to develop is identified and the type of search to be made, it was necessary to define the criteria for the selection of the target population, due to the small timeline for collecting information and data processing, from 29 April to 1 July 2013, 15 people become the elements of the sample for participating in the research.

As inclusion criteria, the elderly used attended nursing consultations by nursing students in the building of Coimbra Nursing School, in the Board of Parish of S. Martinho de Árvore; Were equal or more than 65 years old; When received information and free will, granted informed consent on the project to develop; Able to show the places where they lived, autonomously; Resided in that parish.

Using the computer database, created in Microsoft Excel 2007 spreadsheet for Windows Seven, for registration of personal data and assessments on elderly people who attended nursing consultations, the following sociodemographic variables were obtained: age, gender, marital status and cohabitation.

To compare the data obtained in the state with the study population, it was conducted a field survey that evaluated various parameters, such as depression, cognitive assessment, assessment of activities of daily living, falling risk assessment and environmental assessment risk of falling, with standardized assessment instruments suitable for each of them.

Informed consent was elaborated and requested the authorization of participants to collect the necessary information. Participants were informed of the research objectives, its relevance, that it was a voluntary participation and no permanence of commitment by the end of it and that guarantee the confidentiality of information

relating to personal data (name, Tax Identification Number, address and phone number).

This whole process of information and request for authorization was made in the presence of a witness, when this was not possible, the students took that figure. The illiterate participants, their dactilograma was only collected. Given the purpose of the work, the collection of information began to be performed in the nursing consultations, and the research was explained, the purpose of it and asked them the verbal informed consent for participation.

Also during the consultations, the scales were applied in geriatric depression (GDS), cognitive evaluation (6CIT), Barthel Index, adapted PAMPI-stroke, Downton scale and environmental falling risk scale. After a screening of 15 individuals held in the consultations, we held a Home Visit at their home, in order to implement environmental scale of risk of falling, being asked to present each of their home as well as the divisions/spaces where thwy would be longer.

In this way it was possible to assess not only the risk but also guide the elderly in a personalized way for adoption of strategies that aimed to reduce the risk of falling. During the Home Visit, they were asked to

sign the informed consent, filed a copy and the other was given to research participants.

The data collection ended when they were collected all the data relating to 15 research participants, moving subsequently to the descriptive statistical analysis of the data obtained using the computer program Microsoft Excel 2007 worksheet, for Windows Seven .

RESULTS

According to data obtained by sociodemographic questionnaire among the population sample selected for age, it was found that they were between 65 and 92 years old, with an average value 74.33 ± 7.26 years old.

Among the participants, four (26.67%) were between 65-69 years old, and the same number were 70-74 years old. There were three (20%) in the age group between 75-79 years old and three (20%), were 80-84 years old. One elderly (6.66%) was between 90-94 years old.

Most of them were female (73.33%), and the percentage of the marital status is 46.67% (married and widowed). With regard to cohabitation, most of them (53.33%) live with somebody, and 46.67% live alone. Below, there is the sociodemographic variables.

Table 1. Distribution of sample parameters according to sociodemographic variables.

Variables	n	%
Age Group		
[65 - 70[	4	26.67
[70 - 75[	4	26.67
[75 - 80[	3	20
[80 - 85[	3	20
[90 - 95[	1	6.66
$X_{min.} = 65; X_{max.} = 92; _ = 74.33 ; Av = 74.00; s = 7.26$		
Gender		
Male	4	26.67
Female	11	73.33
Marital status		
Married	7	46.67
Widowed	7	46.67
Divorced	1	6.66
Cohabitation		
Accompanied	8	53.33
Alone	7	46.67

For the Six Item Cognitive Impairment Test scale, it was found results of between 0.00 and 20.00 points, with average value being 8.73 ± 6.85 points; 50% of the studied paramenters showed values greater than or equal to 6.00 points. It was found that 40% of respondents have a moderate to severe reduction of their cognitive condition.

Regarding Downton scale, there were

values between 1.00 and 7.00 points, and the average value 4.00 ± 1.46 points; 50% of older people have equal or higher values to 4.00 points. Following the cut-off points referred by the author of the scale, 86.67% of those were at risk of falling.

Regarding the Geriatric Scale of Depression (GDS), there were values between 3.00 and 17.00 points, with

average of 8.80 ± 31.4 points and 50% of people had values greater than or equal to 8.00 points. It was found that 73.33% of the participants have no depression.

As for the Barthel Index, there were values between 95.00 and 100.00 points, and the average value 98.67 ± 2.29 points and that 50% of the studied parameters presented values equal to 100.00 points. It can be seen that 73.33% are independent in their activities of daily living. For PAMPI - AVC draft, in the category of Essential

Activities to Life, it appears that the values range between 74.38 and 100.00 points, with the average value 96.93 ± 6.39 points and 50% of older people have equal or above 98.85 points.

In the category of Complementary Activities for Life, it appears that the values range between 42.50 and 100.00 points, and the average value 77.50 ± 16.34 points and that 50% of individuals have values greater or equal to 80.83 points.

Table 2. Minimum and maximum, average, median, standard-deviation values of the cognitive levels (6CIT), depression (GDS), falling risk (Downton), functional independence (Barthel and the two Physical Functional Domain categories of PAMPI-AVC draft).

	Min.	Max.	Avera ge	Md	s
Six Item Cognitive Impairment Test	0.00	20.00	8.73	6.00	6.85
Geriatric Scale of Depression	3.00	17.00	8.80	8.00	4.31
Downton Scale	1.00	7.00	4.00	4.00	1.46
Barthel Index	95.00	100.00	98.67	100.00	2.29
PAMPI-AVC draft					
Essential Activities to Life	74.38	100.00	96.93	98.85	6.39
Complementary Activities for Life	42.50	100.00	77.50	80.83	16.34

According to the evaluation performed with the Environmental Risk Scale, the results obtained were as follows: 70% of individuals have problems related to the item of transportation areas, and out of this percentage, 13 elderly (86.67%) have in their homes coverings that are not uniform or carpets that are not fixed.

In the assessment made in the bathroom, it was noted that eight elderly (53.33%) did not present a bathroom area with non-slip mat. In the kitchen area, 63.33% of the study population sample have problems, and the absence of a handicapped dishwasher (sink) with ease of use by a person with reduced mobility (wheelchair) were in 11 elderly (73.33%).

With regard to the item of stairs, only 12 reference sample of subjects studied (80%) had stairs in their homes. However, after analysis of the data collected, it was found that these 12 elderly, 85% had problems in terms of locomotion. As aspects to note, there were 12 elderly people (100%) with no non-slip in the step, and 11 (91.67%) had no bilateral handrail on the stairs.

DISCUSSION

In the present study we sought to assess the risk of falling from a population sample of 15 elderly people, aged equal or over 65 years old, from the parish of S. Martinho de Árvore. The parameters of the studied

sample (73.33%) belong to the female gender, which refers to a percentage of 52.20% of Portugues population to be female.⁶

Over 70% of falling occur at home, and people who live alone are at increased risk of falling.⁷ In the sample collected, most elderly (53.33%) live with somebody and the remaining (46.67%) live alone. In this study, the risk of falling stands at 86.67%. The cognitive decline varies from the beggining and progression and with aging, depending on factors such as education, health, personality, global intellectual level, specific mental capacity, among others.⁸

The primary aging shows a gradual decline in cognitive function.⁹ The intellectual capacity of the elderly individual can be maintained without brain damage up to 80 years old. However, learning and forgetting unimportant things can be included along with some changes that commonly occur in older people aged up to 70 years old.¹⁰

According to the scores obtained in the cognitive assessment conducted in the population sample, 60% of older people (three men and six women) have normal or slightly decreased, the remaining 40% of the sample elements (one man and five women) show a decrease moderate to severe. Given that the average age of the sample is 74.33 years old, the elderly studied were within

normal parameters that are considered by the consulted literature in this area. There has been a higher number of falling in the female population.¹¹

Female is more fragile, with prevalence of diseases, medication therapy, risk behavior and a greater number of domestic activities, as well as the muscle mass and strength being lower in this gender.¹² Exercise and physical relaxation is one of the forms of intervention for the prevention of falling, since physical activity reduces the risk of functional decline and mortality.¹³

The previously described by the authors, is not similar to the reality of the population sample studied, since a score of average risk of falling is 4.25 for males and 3.91 for females. However, the number of male participants is only 26.67% (four individuals), which can skew the results statistically.

With regard to physical exercise, this has been implemented in the community under study in order to be a factor preventing of fallings. Thus, one hour of physical activity is held twice a week, maintaining and increasing physical endurance and muscle strength. Physical activity at any age can reduce the risk of depression and cognitive decline.¹⁴

Regular physical exercise in the elderly contributes to the control of depression and decreased anxiety, enabling this greater familiarity with their body and functions.¹⁵ Depression is the most common mood disorder affecting each year 5% of world population. It is characterized by depressed mood, decreased interest/pleasure in all activities. Other symptoms may occur as loss or increase of appetite, insomnia or hypersomnia, feelings of worthlessness and guilt, feelings arising on death.

In the elderly depression is presented as somatic symptoms or more frequent hypochondriacs, which may result in reduced treatment response¹⁶. One of the risk factors of depression is the gender difference and age.¹⁷ The authors state that depression is twice as common in women than in men but suggest that this discrepancy can be explained by the environment and social support of most cultures.

During the aging process it is more frequent appearance of degenerative diseases or physical phenomena capable of producing the characteristic symptoms of

depression.¹⁶ With regard to depression, the results of the assessment carried out with the GDS were as follows: the average scores is 5.50 ± 1.29 for males and 10.00 ± 4.43 for females. It can be seen that 73.33% of the elderly (four men and seven women) had signs of depression, while the remaining 26.67% of the subjects (four women) had mild depression.

Environmental factors are those that provide the greatest risk of fallings and, when associated with physical characteristics of the people, they are even more aggravating. Most fallings occur at home due to extrinsic factors. The more frequently are the stairs, the bedroom, the living room and the bathroom. It is noteworthy that even the home of the elderly person should be free of obstacles that could cause slips and/or tripping.¹⁸

The elderly identified that “mats” and the “wet floor” are predisposing factors to fallings at home¹⁹. The places the sample reveals that 70% of those studied do not present an obstacle-free environment, with the runners and carpets not fixed to the floor as the main source of concern for this population. One of the principles to be taken into account for the decrease in the bath falling risks is placing non-slip rubber mats in the tub and/or shower.²⁰

In the studied population sample, we can see that 53.33% of the subjects showed no such care in their homes. The stairs are sources of numerous accidents, but there are strategies adopted when substantially diminish the risk of falling, as: existence of fixed bilateral handrail and away from the wall, wide steps and free of obstacles without rugs or runners²⁰. Placing antiskid strips is also an important factor in preventing fallings.

In the assessment made in the housing environment of the sample under study, it was found that the above is not adopted in practice, with 91.67% of the elderly not having non-slip strips and 91.67% had no bilateral handrail on the stairs, only 66.67% have a handrail or banister bilateral as well fixture.

In this work, specifically the collection and processing data, there were obstacles resulting from the lack of time, since the timeline for the preparation of it was between April 29 and July 1, 2013. The sampling method selected for convenience was not the most appropriate, since this is

not a type of probability sampling which does not allow an accurate generalization of the results, the sample population being studied is not representative of the overall characteristics of the population.

The limitations of the study, can be highlighted: the distribution by gender, since, out of the 15 participants, only four are male, the fact that the sample population studied, being unrepresentative of the global population of S. Martinho de Árvore parish, not being possible to perform statistical inference.

CONCLUSION

Through in-depth study of literature, the application of instruments and carrying out the proposed activities, it was possible to understanding the factors related to the occurrence of fallings in the home environment, identifying possible changes to make at each location.

The environmental changes should be carried out with the utmost concern, without changing the comfort and elderly welfare. The arrangement of furniture, household utensils and other articles and/or places showing risk, are aspects that need to be addressed regularly in a conversation where there is exchange of information between the sender and receiver, and are outlined effective strategies and favorable to construction a safe environment.

Understanding the falling event as a multifactorial phenomenon that deserves health care team in the prevention, minimizing spending on health and the consequences that for the elderly and their families; To evidence that physical activity should be encouraged by health professionals as their acts as occurrence of fallings protection factor.

Sessions of weekly exercise, permanently, is a way to allow and encourage the realization for the elderly. Regular physical activity is an effective measure that contributes to the smooth functioning of the body, having a positive effect on muscle strength, improving posture and balance and also in maintaining the mental well-being.

One of the health professionals focus of attention is the prevention of fallings, having noticed as a public health challenge, just for the loss and related mobility and its implications for important aspects of the general health of the community.

It was established as imperative by nurses in clinical practice the human care as a foundation, and in this sense the challenge to identify possible risk factors related to the falling event in the home context of the elderly.

In addition to identifying, the nurse is responsible for a series of interventions that must be grounded in preventive strategies that minimize environmental risk, considering that the falling holds a multifactorial nature. We conclude, therefore, that guide the elderly and their families about the risks of falling and its consequences, can make a difference between falling or not and often between the installation or not of dependency situations.

Before to their orientation, it must pay attention the most appropriate form of communication, taking into account the facilities and difficulties faced by the people involved. Proposed measures should be easily accessible to the appropriate socio-economic reality of the elderly, so that the intervention has effectively prioritizing the most stimulating performing independently and safely daily activities.

The home is presented as a context that due to the presence of environmental obstacles and absence of safety devices, it can be considered a harmful environment for safe mobility for the elderly. In general, we were able to conclude that despite population sample is diminished and can not be performed statistical inference on the obtained data, this study population presents a higher risk of falling, and if they are not introduced to corrective aspects, they may have serious consequences that will entail the decline in quality of life.

After this study, we consider relevant further studies/research around this issue, given that it is a current topic of general interest and to date, little explored. It is suggested to study replication in larger populations and control of other variables, including muscular strength, balance and gait.

The finding focused scientific evidence in this subject provides new opportunities for professionals, providing the adoption of effective strategies that will contribute to the reduction of fallings in the elderly.

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