

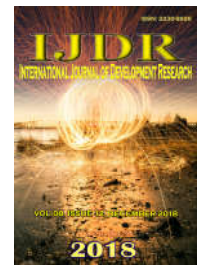


ISSN: 2230-9926

Available online at <http://www.journalijdr.com>

IJDR

International Journal of Development Research
Vol. 08, Issue, 12, pp.24773-24777, December, 2018



ORIGINAL RESEARCH ARTICLE

OPEN ACCESS

ASSOCIATION BETWEEN THE PHYSICAL AND ACCESSIBILITY RISKS AND THE ELDERLY PEOPLE FALLING RISKS

*¹Letícia Oliveira Gois, ²Isnanda Tarciara da Silva, ³Maria Alzira Calasans Costa Santos, ³Samile Santana Santiago, ³Bruna Amaral Santos and ³Naiara Rodrigues de Oliveira

¹Graduate of the Physiotherapy course by The Northeast Independent College – FAINOR

²Master in Health Sciences, Professor of the Physiotherapy course by The Northeast Independent College – FAINOR

³Physiotherapist Graduated by The Northeast Independent College – FAINOR

ARTICLE INFO

Article History:

Received 27th September, 2018
Received in revised form
20th October, 2018
Accepted 29th November, 2018
Published online 31st December, 2018

Key Words:

Falling accidents, Aging,
Risk factors, Environmental risk.

ABSTRACT

Objective: The study had as purpose to examine the influence of physical and accessibility risks of the elderly's falling risk. **Methodology:** It is a cross-sectional study, of descriptive and analytical character, with a census type of survey and of quantitative approach performed with 65 elderly people, of both sexes, that were registered in a Family Health Unit. **Results:** The predominance of the falling risk in this population was 38.5%, with the mean age in the falling risks group of 75.0 years (± 7.35), whereas with the risk free group it was 69, 53 years (± 8.32). Among the physical risks, the existence of slippery areas (81.5%), inadequate lighting (73.8%) and very low furniture (67.7%) were the most noticed. Among the accessibility risks there were highlighted the absence of access ramp (98.5%) and the existence of uneven stairs (64.6%), however none of the factors were substantially linked to the falling risk. **Conclusion:** It can be settled that extrinsic factors should not be taken as determinants of the falling risk in the elderly people when assessed in an isolated way, and it is important to take into consideration the intrinsic factors' influence in this process. **Keywords:** Falling accidents. Aging. Risk factors. Environmental risk.

Copyright © 2018, Letícia Oliveira Gois et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Letícia Oliveira Gois, Isnanda Tarciara da Silva, Maria Alzira Calasans Costa Santos, Samile Santana Santiago, Brunna Amaral Santos and Naiara Rodrigues de Oliveira. 2018. "Association between the physical and accessibility risks and the elderly people falling risks", *International Journal of Development Research*, 8, (12), 24773-24777.

INTRODUCTION

Ageing is a natural and permanent process described by a series of multifactorial changes that has an effect in everybody. Whereas the individual aging and the aging of the world's population is an unquestionable fact. It is projected that by 2025 the world's elderly population will rise 2.4% per year, and the world total population will only grow 1.3% per year. This demographic change is caused by the reduction of the fertility rates and the rise in the subjects' life expectancy, which creates the need to a rehabilitation in all the society fields. (Caetano, 2004; Dias, 2013; Ibege, 2015; Rodrigues; Souza, 2016; Saad, 2006). With the age advance, various events may lead the individual to independence and autonomy loss. Among them, one of the dominant disabling events that affects the elderly population is the falling, because of its high rate and elevated assistance costs it is seen as one of the big

geriatric syndromes and one of the greatest public health problems being addressed in Brazil with epidemic dimensions (Falsarella; Gasparotto; Coimbra, 2014; Salzbron *et al.*, 2012; Stamm *et al.*, 2016; WHO, 2007). Falling is an event that links intrinsic and extrinsic factors, being more possible to happen as the risk factors accumulate. The intrinsic factors are linked to the subjects' physiological aspects like strength and muscle power reduction, decreased mobility, balance lack, sight problems, changes on gait patterns, neurological or cardiovascular illnesses, pain and psychological factors such as fear of falling and depression. Extrinsic factors are connected to the environments where this person lives, being distributed into physical risks, which are the ones found on residential environment and accessibility risks that are the risks located in places that are a path to the household (streets, sidewalks, and others) (Rossetin *et al.*, 2016; Salzbron *et al.*, 2012; Silva *et al.*, 2017; Stamm *et al.*, 2016; Vieira *et al.*, 2016). Because of the falls' multifactor, to determine a single cause for them is something barely executable, meanwhile the

*Corresponding author: Letícia Oliveira Gois,

¹Graduate of the Physiotherapy course by The Northeast Independent College – FAINOR

literature has demonstrated that environmental risk factors are present in 30% to 50% of the falls, which may be seen as a high potential factor regarding the risk of falls, primarily the falls experienced by the elderly people who live in community. Studies evidence that the places where the falls happens the most are the homes, because in general they are environments where the elderly stay for long periods and because they are more familiar places, which allow increased self-confidence of the elderly person, making them to reduce their attention to risk factors that may arise (MORAES *et al.*, 2017; OLIVEIRA *et al.*, 2014). With these discoveries, the studies addressing the displayed theme are particularly relevant, because of its importance to the understanding of contemporary health scene and the adaption of preventive and corrective measures the knowledge about the fallings leading factors, data about its magnitude, characteristics and consequences, assuring with this the population quality of life. Therefore, the present study had as goal to analyze the influence of the physical and accessibility falling risks in elderly people.

MATERIAL AND METHODS

It is a cross-sectional study, of descriptive and analytical character, census-based with a quantitative approach that was performed at a Family Health Unit (USF) in the city of Vitória da Conquista, Bahia, Brazil. It was conducted with 65 elderly people of both sexes, registered on the Health Unit.

As exclusion criteria there were determined: The hearing impaired ones; the elderly people with low cognitive functioning, assessed by the Mini Mental State examination – MMSE (cutoff score: < 13 for illiterates 18 for subjects with 1 to 7 years of schooling; 26, for 8 or more years of schooling); elderly people on the wheelchair and the ones confined to bed who could not execute the Timed Up and Go (TUG); and elderly people who could not be found in their homes after three tries to visit them in different days and shifts. This study's data collection instrument was comprised of questionnaires and validated tests as well as by a questionnaire created by the authors. The first questionnaire used was the sociodemographic questionnaire, taken from the Study of Health, Welfare and Aging (SABE). SABE was led by the Pan American Health Organization (PAHO / WHO) as a multicenter inquiry on health and well-being of elderly people in seven urban centers in Latin America and the Caribbean.

The elementary goal of this study is to assess the living and health conditions of the elderly people residing in the urban areas in a way to project the social and health necessities that emerged with the increase of the elderly population. The secondary goal is to encourage a dialogue between the public health investigation and the aging's study, strengthening the interdisciplinarity (SILVA, 2003). From this first questionnaire were collected information regarding sex, age, ability to read and write, schooling degree, the people they lived with, occupation and income. For the cognitive assessment it was used The Mini Mental State Examination (MMSE) Also known as the *Folstein* Test, the MMSE is a test that shortly measures the patient's mental state, demonstrating cognitive losses. It consists of two parts, one that includes guidance, memory and attention, with the maximum score of 21 points, and another that consider specific skills like to name and comprehend, with a maximum score for this second part of 09 points, totaling 30 points. The final outcome may be affected by the impact of the patient's schooling level, consequently for

illiterate subjects the standard grade is 13 points, for subjects with low to medium schooling degree it is 18 points, and for subjects with high schooling levels, 26 points (BERTOLUCCI *et al.*, 1994; BRUCKI *et al.*, 2003; FOLSTEIN, 1975). Regarding the physical and accessibility risks, these were assessed by a survey created by the authors based on the information that the literature defines on the main risks of the elderly people environments. As for household physical hazards these were noticed: poor lighting, slippery areas, rugs, elevated or narrow stairs, steps without flooring, very low or very high furniture, stairs without handrails or uneven steps, the presence of domestic pets, electrical loose wires, or if the elderly person wore clothes or shoes with inappropriate sizes. Concerning accessibility, the questionnaire assessed of the public road was preserved, if there were holes on the sidewalk, or the street had cobble stones or asphalt, if there were uneven steps on the sidewalk, any external stairs without the handrail, access ramps and non-slip flooring.

Lastly, it was assessed the elderly's falling risk through the Timed Up and Go (TUG) test. TUG is an functional mobility assessment, related to the elderly's person balance, gait and functional ability, pointing out their degree frailty. It was created in 1991 by *Podsiadlo* and *Richardson* and has as goal to assess the falling risk. It is held by asking the elderly person to get up from a chair not using the support of the arms, walk in a space of 3 meters, turn 180° and come back to the starting place, sitting again; with it the researcher ought to measure the time that the elderly person used to perform the action and the conditions he/she carried the path. A time until 10 seconds, displays better functional performance and points out that there is no falling risk; from 11 to 20 seconds shows a low falling risk, whereas a slower time, between 21 and 29 seconds, point to an average falling risk; after 30 seconds, the falling risk is taken as high (*Podsiadlo*; *Richardson*, 1991; *Rodrigues*; *Souza*, 2016). The study's data collection was carried after approval of the Ethics and Research Committee of The Northeast Independent College - CEP / FAINOR. At first, the survey for the name and address of each elderly living in the neighborhood, together with the Family Health Unit team, where the goals and stages of the collection procedure were explained. After this stage, the neighborhood was mapped with the help of the Google Earth online tool, aiming to identify the neighborhood's streets, simplifying the active search for the elderly person in the community.

All the goals and stages of the collection were elucidated to the elderly person and after signing the Informed Consent Term (ICT), the collection procedure began. The visits were done five time per week, by four students of the FAINOR physiotherapy course which were submitted beforehand to the standardization process, with the goal of making the procedures reliable and uniform. The data was tabulated using the EpiData software v. 3.1, in double typing, the data analysis was accomplished by the descriptive and analytical form with the software SPSS v. 21.0. They were displayed in relative and absolute frequency for categorical variables. For the comparison of proportions differences among the groups it was used the Chi-square test with a significance level of 5% for all the analysis. This paper is a part of a bigger project named "Physical and accessibility risks in the elderly household environment" subjected and approved by the CEP/FAINOR under opinion number 2,132,348. All the stages were performed in accordance with the resolution 466/2012 of the National Health Council.

RESULTS

Among the 65 subjects assessed, the falls' risk prevalence was of 38.5%. The average age in the group with risk of falling was 75.0 years (± 7.35), varying from 60 to 93 years, whereas in the risk free group this was 69.53 years (± 8.32), varying from 60 to 94. Table 1 indicates these characteristics in line with the stratification of the falling risk.

Table 1. Characterization sample of elderly people assessed according to the risk of falling. Vitória da Conquista, 2017

	Risk of falling				P
	No		Yes		
	N	%	N	%	
Sex					0,935
Female	26	65,0	16	64,0	
Male	14	35,0	9	36,0	
Age Group					0,002*
60-69	24	60,0	4	16,0	
70-79	10	25,0	15	60,0	
80 and more	6	15,0	6	24,0	
Schooling					0,95
Illiterate	33	82,5	18	72,0	
Literate	7	17,5	7	28,0	
Marital Status					0,03*
Without partner	20	50,0	16	64,0	
With partner	20	50,0	9	36,0	

Source: Research data

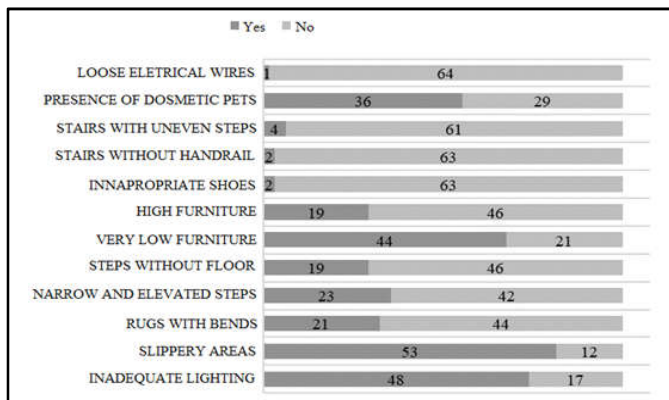


Figure 1. Distribution of the elderly's physical risks. Source: Research data. Vitória da Conquista, 2018.

Table 2. Accessibility characterization risks in the region of the elderly's residence. Vitória da Conquista, 2017

	Risk of falling				P
	No		Yes		
	n	%	n	%	
Conserved public road					0,258
Yes	25	62,5	19	76,0	
No	15	37,5	6	24,0	
Holes on the sidewalk					0,325
Yes	16	40,0	7	28,0	
No	24	60,0	18	72,0	
Cobblestone					0,202
Yes	0	0	1	4,0	
No	40	100,0	24	96,0	
Irregular steps on the sidewalk					0,538
Yes	27	67,5	15	60,0	
No	13	32,5	10	40,0	
External stairs without handrail					0,426
Yes	1	2,5	0	0	
No	39	97,5	25	100,0	
Access ramp					0,202
Yes	0	0	1	4,0	
No	40	100,0	24	96,0	
Non slip floor					0,772
Yes	27	67,5	16	64,0	
No	13	32,5	9	36,0	
Proper external illumination					0,202
Yes	40	100	24	96,0	
No	0	0	1	4,0	

Source: Research data

Among the physical risks assessed there were stated that the presence of slippery areas (81.5%), inadequate lighting (73.8%) and very low furniture (67.7%) were the most dominant. None of these factors was expressively linked to the falling's risk. Among the surroundings accessibility risks, it was taken as more prevalent the absence of the access ramp (98.5%) and the presence of irregular steps (64.6%). Table 2 displays such risks according to the falling risks assessed by the TUG, describing that there was no association for any of the domains assessed.

DISCUSSION

The present study showed that the falling risks predominance among the subjects assessed was considerably low (38,5%) supporting other national studies, which pointed out indexes among 32,1%, 42% e 51,1% not overcoming the 53% of (CRUZ *et al.*, 2012; STAMM *et al.*, 2016; VIEIRA *et al.*, 2016) being still seen a lower prevalence in the studies with elderly people living in community (11% - 42%) and the population-based studies (11% a 21%) (OLIVEIRA *et al.*, 2014). Concerning the characterization of the elderly assessed according to the fallings' risk, the study's shows that although 64% of the subjects who displayed falling risks were women, there was no noteworthy difference between the men or women surveyed, differing from the findings of the national and international literature which indicate that the gender variable directly affects the outcomes which are linked to the falling risk, with the falling prevalence of elderly women over elderly men (FALSARELLA; GASPAROTTO, COIMBRA, 2014; MORAES *et al.*, 2017). In line with the stratification of the falling risks, the socioeconomic variables age group and marital status displayed a statistically significance linked to the elderly people falling risks in this study, since the subjects with mean age of 75 years (± 7.35) had more falling episodes than the ones with the mean age of 69.53 years (± 8.32); and the elderly person who lives with their partners fell less than those that somehow do not have partners.

The outcomes obtained attests that the studies regarding the human aging are showing that the older the individual is, the greater are the falling risks because of numerous physiological alterations that happen like the reduction of muscle mass and the balance deficits. When these changes are linked to extrinsic falling risk factors, the occurrence probability and a repeated manner, increases which represents more limitations to the instrumental tasks and advanced daily life activities (GAWRYSZEWSKI, 2010). In Moraes *et al.* (2017) study, the elderly people with ages equal or 80 years old fell more than the elderly with less than 80 years old, besides that the elderly people displayed prevalence of two or more falls expressively higher when compared to one fall. The elderly's marital status was also a crucial factor to the falling's risk, since subjects who cohabitated or had a partner fell less than those who were single. This finding is related to the care exchange between these people and their partners, supporting the creation of an environment that spreads safety and comfort. Gomes *et al.* (2013) explain this event in a study done with elderly people that lived in the city of São Paulo, where it was noticed that the marital status directly affected in the elderly's mortality, representing its increased number among the single elderly. This study shows that there are significant differences between men and women, with the single elderly men forming the most vulnerable group, whereas among the elderly women, the divorced and separated had the highest mortality rates. The

present paper also indicated that, although the physical risks were existent in the elderly's household environments and that the incidence was high, as displayed in Figure 1, it may not be stated that there is a statistically proven link between these variables and the elderly's falling risk. When assessing the physical risks aspects placed in the home environment, the most predominant mentioned by the elderly people were the presence of slippery areas (81.5%), inadequate lighting (73.8%) and furniture with improper height (67.7% %), supporting the studies of Araújo *et al.* (2008), Couto (2016) and Rossetin *et al.* (2016), which also highlighted these topics as the ones that most caused the elderly's falling in the home environments. When assessing this range of contingences mentioned aforementioned we may realize them as a result of the individuals unawareness and the naturalness with which they handle the daily domestic situations, which ends up making the situations that should be simple in the daily life to barriers to the elderly's independence (NEVES, BIFANO, 2015). Just as happened to the physical risks, the accessibility risks were involved with in near residential environments, highlighting as more predominant the absence of access ramps (98.5%) and the existence of uneven steps (64.6%). However, there was no link between the falling risk, assessed through TUG and the evaluated domains. These outcomes, despite not pointing out the link to the falling risk, illustrate that these architectonic obstacles hinders the accessibility of the elderly person to their homes, making their life more limited to their home environment (NEVES; BIFANO, 2015). The household environment must not only performs its basic function, besides this it should offer comfort, security, autonomy and independence to the residents. This way, it is essential that the architectural and urban patterns are reworked, promoting the healthy aging process and the reduction of health risks to the elderly subjects with these being ensured (COUTO, 2016; SILVA *et al.*, 2015).

Conclusion

This paper concludes that the extrinsic factors could not be taken as determinants of the falling risk in the elderly people when assessed in an isolated way becoming important to take into consideration the influence of the intrinsic factors in this process. This study exposed that the demographic aspects displayed an statistically considerable influence on the risk of falling more than the variables that concern physical hazards and accessibility risks, even though these were present in a prevailing form in residential environments and surroundings.

REFERENCES

- Araújo M. C. B., Morais S. A., Araújo I. F. & Santos M. B. G. 2008. Avaliação dos riscos físicos no ambiente residencial e sua influência na qualidade de vida na terceira idade. *Anais do Encontro Nacional de Engenharia de Produção: A integração de cadeias produtivas com a abordagem da manufatura sustentável*. Rio de Janeiro, 13 a 16 de outubro; pp. 2-11.
- Bertolucci P. H. F., Brucki S. M. D., Campacci S. R. & Juliano Y. 1994. O mini-exame do estado mental em uma população geral: impacto da escolaridade. *ArqNeuropsiquiatr.* 52(1):1-7.
- Brucki S. M. D. *et al.* 2003. Sugestões para o uso do minixame do estado mental no Brasil. *ArqNeuropsiquiatr.* 61(3B).
- Caetano, A. J. 2004. O declínio da fecundidade e suas implicações: uma introdução. In: Caetano, AJ; Alves, JED; Corrêa, S (Org.) *Dez anos do Cairo: tendências da fecundidade e direitos reprodutivos no Brasil*. 2:11-19.
- Couto, F. M. T. 2016. *A influência dos fatores extrínsecos no risco de queda de idosos em ambientes domiciliares: um estudo à luz da arquitetura de interiores*; Mestrado em Ambiente Construído. Universidade Federal de Juiz de Fora, (JF) Brasil.
- Cruz D. T., Ribeiro L. C., Vieira M. T., Teixeira M. T. B., Bastos R. R. & Leite I. C. G. 2012. Prevalência de quedas e fatores associados em idosos. *Rev Saúde Pública* [internet]; 46(1):138-46. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0034-89102012000100017
- Dias E. F. 2013. O envelhecimento populacional e o direito à saúde da pessoa idosa. *Rev.Juridic.Dir, Soc e Justiça*, 1(1).
- Falsarella G. R., Gasparotto L. P. R. & Coimbra A. M. V. 2014. Quedas: conceitos, frequências e aplicações à assistência ao idoso. Revisão de literatura. *Rev. Bras.Geriatr. Gerontol.* 17(4): 897-910
- Folstein M., Folstein S., & Mchugh P. 1975. "Mini-mental state". A practical method for grading the ognitive state of patients for the clinician. *J Psychiatr Res.* 12(3):189-98.
- Gawryszewski V. P. 2010. A importância das quedas no mesmo nível entre idosos no Estado de São Paulo. *AMB ver Assoc. Med. Bras.* 56(2):162-7.
- Gomes M. M. F. G., Turra C. M., Figoli M. G. B., Duarte Y. A. O., & Lebrão M. L. 2013. Associação entre mortalidade e estado marital: uma análise para idosos residentes no Município de São Paulo, Brasil, Estudo SABE, 2000 e 2006. *Cad. Saúde Pública.* 29(3):566-578.
- Instituto Brasileiro de Geografia e Estatística 2015. *Pesquisa anual de serviços: esperança de vida ao nascer*. Disponível online em: <http://agenciadenoticias.ibge.gov.br/agencia-noticias/2013-agencia-de-noticias/releases/9490-em-2015-esperanca-de-vida-ao-nascer-era-de-75-5-anos.html>
- Moraes S. A., Soares, W. J. S., Lustosa L. P., Bilton T. L., Ferrioli E., & Perracini, M. R. 2017. Características das quedas em idosos que vivem na comunidade: estudo de base populacional. *Rev. Bras.Geriatr. Gerontol.* 20(5): 693-704.
- Neves F. C., & Bifano A. C. S. 2015. O processo de envelhecimento e acessibilidade: o idoso no espaço domiciliar. *Anais do Congresso Internacional de Envelhecimento Humano (CIEH)*. 21 a 26 setembro; vol.2, n.1
- Oliveira A. S., Trevizan P. F., Bestetti M. L. T., & Melo R. C. 2014. Fatores ambientais e risco de quedas em idosos: revisão sistemática. *Bras.Geriatr. Gerontol.* 17(3): 637-645.
- Podsiadlo D., & Richardson S. 1991. The timed 'Up & Go': a test of basic functional mobility for frail elderly persons. *Journal Am Geriatric Society.* pp. 142-148.
- Rodrigues A. L. P., & Souza V. R. 2016. Eficiência do Teste Timed Up Go na predição de quedas em idosos atendidos em uma unidade básica de saúde de Fortaleza- CE. *Rev. Bras. Presc.Fisiolog. Exerc.* 10(58):314- 320.
- Rossetin L. L. *et al.* 2016 Indicadores de sarcopenia e suas relações com fatores intrínsecos e extrínsecos às quedas em idosas ativas. *Rev. Bras. Geriatr. Gerontol.* 19(3):399-414.
- Saad P. M. 2006. *Envelhecimento populacional: demandas e possibilidades na área de saúde*. In: Guimarães JRS (Org.) *Demografia dos negócios: campo de estudo, perspectivas e aplicações*. vol. 1, cap. 7, pp. 153-166. ABEP. São Paulo.

- Salzbron C. A., Barroso, M. C., Lopes N. P., Hebert R. R., & Ribeiro S. J. P. 2012. Fatores intrínsecos e extrínsecos que ocasionam a queda em idosos. *Rev. Curs. Enferm.* 1(1).
- Silva L. B. O., Silvestre C. C., Hora A. B., & Oliveira C. G. S. 2017. Risco de queda em idoso relacionado aos fatores intrínsecos e extrínsecos. *Congresso Internacional de enfermagem: Good practices of nursing representations in the construction of society*, Barcelona, 9 a 12 de maio; pp. 1-3.
- Silva N. M., Varoto V. A. G., Monteiro L. C. A., & Bernadinelli I. 2015. Necessidades próprias da (c) idade: espaço acessíveis e funcionais para idosos. *Serv. Soc. Rev.* 18(1): 219- 242.
- Silva N. N. 2003. Aspectos metodológicos: processo de amostragem. In: Lebrão ML, Duarte YAO (organizadoras). O projeto SABE no Município de São Paulo: uma abordagem inicial. Brasília: *Organização Pan-Americana da Saúde*; 2003; pp. 47-57.
- Stamm B., Leite M. T., Hildebrandt L. M., et al. 2016. Cair faz parte da vida: Fatores de risco para quedas em idosos. *Rev Fund Care Online.* 8(4):5080-5086.
- Vieira C. P. B., et al 2016. Fatores de risco associados a quedas em idosos. *Rev Enferm UFPE online*, 10(11); pp. 4028- 4035.
- World Health Organization 2007. *Who Global Report on Falls Prevention in Older Age*. Victoria- Canada: ALC; pp. 1-47.
