Older adult fallers and non-fallers: association with social characteristics, economic factors, clinical aspects, physical activity level, and fall risk awareness: a cross-sectional study

Idosos caidores e não caidores: Associação com características sociais, fatores econômicos, aspectos clínicos, nível de atividade física e percepção do risco de quedas: um estudo transversal

Los ancianos que caen y los que no caen y su asociación con características sociales, factores económicos, aspectos clínicos, nivel de actividad física y percepción del riesgo de caídas: un estudio transversal

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ABSTRACT | Falls in older adults can negatively affect several biopsychosocial aspects. This study aimed to verify the association of falls with social characteristics, economic factors, clinical aspects, physical activity level, and fall risk awareness in older adult fallers and non-fallers. The sample consisted of 520 older adult (71.7±7.4 years) of both sexes (83.7% female) who were interviewed regarding their social characteristics, economic factors, clinical aspects, fall history, physical activity level (*Minnesota*), and fall risk awareness (*Falls Risk Awareness Questionnaire*, FRAQ). The Mann-Whitney and Chi-square tests were used for comparison, and binary and multivariate logistic regression tests were used for association. After data analysis, we identified that older adult fallers presented lower education level, economic class, and fall risk awareness (FRAQ). Education level (OR: 1.35 to 1.28), economic class (OR: 1.62), and FRAQ (OR: 1.46) were associated with falls, which was also observed in older adult people with two or more falls (education level, OR: 2.44 to 1.92; FRAQ, OR: 0.84). The analysis of older adult people with only one fall presented an association only with FRAQ (OR: 0.87). We conclude that older adult fallers presented a lower fall risk awareness, education level, and economic class. FRAQ was an important tool for fall prevention programs, since it was able to identify perceptual factors about the risk of falls that can be used for assessment and follow-up, as well as for targeting these programs for older adults in the community.

Keywords | Physical activity; Older adult Health; Accidental Falls; Awareness.

RESUMO | As quedas em idosos são capazes de impactar negativamente sobre diversos aspectos biopsicossociais. O objetivo deste estudo foi verificar a associação de quedas com características sociais, fatores econômicos, aspectos clínicos, nível de atividade física e percepção do risco de quedas em idosos caidores e não caidores. A amostra foi composta por 520 idosos (71,7±7,4 anos) de ambos os sexos (83,7% feminino) que foram entrevistados em relação às características sociais, fatores econômicos, aspectos clínicos, histórico de quedas, nível de atividade física (*Minnesota*) e percepção do risco de quedas (*falls risk awareness questionnaire*, PRQ). Para comparação foram utilizados os testes de Mann-Whitney e qui-quadrado e para associação os testes de regressão logística binária e multivariada. Após a análise de dados, identificamos que idosos caidores apresentaram menor escolaridade, classe econômica e PRQ. A escolaridade (OR: 1,35 a 1,28), classe econômica (OR: 1,62) e PRQ (OR: 1,46) apresentaram associação com as quedas, semelhante foi observado em idosos com duas ou mais quedas (escolaridade,

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OR: 2,44 a 1,92; PRQ, OR: 0,84). A análise de idosos com apenas uma queda evidenciou associação apenas com a PRQ (OR: 0,87). Conclui-se que idosos caidores apresentaram menor percepção do risco de quedas, nível de escolaridade e classe econômica. A PRQ demonstrou-se uma ferramenta importante para programas de prevenção de quedas, pois foi capaz de identificar fatores perceptuais sobre o risco de quedas que podem ser utilizados para avaliação e acompanhamento, bem como direcionar estes programas em idosos da comunidade.

Descritores | Atividade física; Saúde do Idoso; Acidentes por Quedas; Percepção.

RESUMEN | Las caídas en ancianos pueden afectar negativamente varios aspectos biopsicosociales de esta población. El objetivo de este estudio fue verificar la asociación de caídas con las características sociales, los factores económicos, los aspectos clínicos, el nivel de actividad física y la percepción de riesgo de caídas en ancianos que caen y los que no caen. La muestra estuvo conformada por 520 ancianos (71,7±7,4 años) de ambos sexos (83,7% mujeres) que fueron entrevistados respecto de características sociales, factores económicos, aspectos clínicos, historia de caídas, nivel de actividad física (*Minnesota*) y percepción del riesgo de caídas (*falls risk awareness questionnaire*, PRQ). Para comparar los datos se utilizaron la prueba de Mann-Whitney y el test chi-cuadrado, y para asociarlos se emplearon las pruebas de regresión logística binaria y multivariante. El análisis de datos permitió identificar que los ancianos que caen tienen bajos niveles educativo, de clase económica y de PRQ. El nivel educativo (OR: 1,35 a 1,28), la clase económica (OR: 1,62) y la PRQ (OR: 1,46) se asociaron con las caídas de manera similar a lo que se observó en los ancianos con dos o más caídas (nivel educativo, OR: 2,44 a 1,92; PRQ, OR: 0,84). El análisis de ancianos con una sola caída mostró asociación solamente con la PRQ (OR: 0,87). Se concluye que los ancianos que caen tienen una percepción del riesgo de caídas, el nivel educativo y de clase económica bajos. La PRQ demostró ser útil para los programas de prevención de caídas, ya que permite identificar los factores de percepción sobre el riesgo de caídas que pueden utilizarse en la evaluación y seguimiento, así como en la aplicación de estos programas a ancianos de la comunidad.

Palabras clave | Actividad Física; Salud del Anciano; Accidentes por Caídas; Percepción.

INTRODUCTION

A fall can be defined as an unintentional event that results in a change in the individual's position to a lower level in relation to their initial position, which results in significant morbidity and mortality for older adults[1]. Recent data show that 1.48 million Brazilian older adults were hospitalized by the Brazilian Unified Health System (SUS) as a result of falls, resulting in a cost of R$135.58 million[2]. Approximately 25% of falls result in moderate to severe injuries, including soft tissue bruises, lacerations, hip fractures, and concussions[3]. After an episode of falling, 21% to 39% of fallers develop a fear of falling; and older people who fear a new fall may become more susceptible to the recurrence of this episode, as they restrict their activities, reduce their physical activity level, and have a reduced quality of life[3,4].

The practice of physical activity is a measure with the potential to prevent restrictions on activities and risk of falls. In a recent study, Sherrington et al.[5] identified 116 studies that involved a total of 25,160 participants exposed to various types of exercise (balance, functional, and resistance) and confirmed that older people engaged in physical activity (all types) were able to reduce the rate of falls by 23%.

Furthermore, education for the fall risk awareness is an important preventive factor that must be considered in intervention programs, since as individuals are able to identify the factors that can trigger a fall, they can adhere to behaviors to prevent these episodes, such as adequate ambient lighting and additional care with uneven and/or wet surfaces[6,7]. Thus, an increased fall risk awareness can promote differentiated and effective patterns of behavior in the prevention of falls for the older adult population.

The literature indicates that people with higher socioeconomic status tend to have lower nutritional risk and greater well-being, while individuals with lower socioeconomic status are more prone to falls[8]. The study by Kim, Choi, and Xiong[9] reported several factors that predispose female individuals to a greater risk of falls, such as living alone, having a lower education level, not having a partner and having lower satisfaction with relationships, being unemployed, more children in the environment, and lower socioeconomic status[9].

The World Health Organization (WHO) warns that the number of injuries caused by falls will double

by 2030 if prevention strategies are not carried out in the short term[10]. Given this information, falls and their consequences are a major concern in the public health scenario due to their high prevalence and their biopsychosocial impact, that is, repercussions mainly on the physical and functional health of older people, but also on social and economic issues of the individual, family, community, and society[11,12]. There is, therefore, a need for developing fall prevention policies, instructing health professionals to carry out the early identification of older people at greater risk of falls, and promoting healthy aging by educational instructions and physical exercise interventions[13].

Therefore, one must understand the relationship between episodes of falls and socioeconomic data, physical activity level, and fall risk awareness, so that prevention can occur globally, with an integrated and multifactorial look at the older adult, involving not only physical and functional aspects, but also socioeconomic, clinical, and perceptual factors that may be related to the risk of falls, since these associations are still not clear in the literature. Thus, this study aims to verify the association of falls with personal characteristics, economic factors, clinical aspects, physical activity level, and fall risk awareness in older adult fallers and non-fallers.

METHODS

Study and sample characterization

This study has a cross-sectional design and was carried out in partnership with the Municipal Health Department of the Municipality of Curitiba (PR).

Sample calculation was performed using the Centers for Disease Control and Prevention's (CDC) Epiinfo calculator, and the following statistical parameters were considered: (1) population of 19,187 individuals aged 60 years or over in the city of Curitiba – Paraná; (2) sample power of 90%; (3) maximum sampling error of 5%; (4) 50% anticipated frequency, considering the maximum variance, and (5) 20% margin for possible losses and refusals. Thus, the estimated sample size was 481 older adults.

Participants in this study were aged 60 years or older, of both genders, and living in the city of Curitiba. The exclusion criteria were: (1) decompensated health conditions (e.g., arrhythmia, hypertension, diabetes mellitus) and (2) cognitive changes that

made it impossible to complete the questionnaires or understand the guidelines, identified by the initial screening performed by the research team through the Mini-Mental State Examination (MMSE)[14,15]. Therefore, 520 older adult people agreed to participate in this study after signing the free and informed consent form. This study follows the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (Strobe)[16].

Instruments and procedures

The assessments took place in a single moment by individualized face-to-face interviews lasting approximately 1 hour, conducted by previously trained researchers. Each evaluator was responsible for a battery of tests to minimize the choice of different evaluation criteria and strengthen the standardization of procedures. All interviews were conducted in a standardized manner, starting with an evaluation form, consisting of social characteristics (age, sex, education level, and marital status), economic factors, clinical aspects (cognitive screening [MMSE] and anthropometric data), history of falls, followed by physical activity level and fall risk awareness.

The MMSE was used for cognitive screening, adjusted according to the participant's years of education, excluding scores below the following criteria: 20 points for illiterates; 25 points for 1-4 years of education; 26 points for 5-8 years; 28 points for 9-11 years and, finally, 29 points for individuals with >11 years of education[14,15].

The anthropometric profile of the older adults was measured using the following data: body mass (kg), height (cm), and body mass index – BMI=body mass (kg)/height(m)^2. Height was measured using a portable stadiometer and body mass was obtained using a portable digital scale with a variation of 0.1kg and a capacity of up to 150kg[17].

The history of falls was evaluated using the question: "Did you have any episodes of falls in the past twelve months?"; if the answer was yes, questions related to the number of falls, location, reason, and consequences would be asked[18]. Older people who reported one or more episodes of falls in the past 12 months were considered fallers. In this study, a fall was defined as an unintentional event that results in a change in the individual's position to a lower level in relation to their initial position[1].

The economic classification was evaluated using the economic classification criterion[19], which aims to assess the purchasing power of groups of consumers. The criteria categorizes participants into economic classes, and the higher the score, the higher the economic class. Thus, "A1" (42-46 points) and "A2" (35-41 points) represent the upper economic class; "B1" (29-34 points) and "B2" (23-28 points) represent the upper-middle economic class; "C1" (18-22 points) and "C2" (14-17 points) represent the lower-middle economic class, and "D" (8-13 points) and "E" (0-7 points) represent the low economic class[19].

Physical activity level was assessed using the Minnesota leisure time activities questionnaire[20]. To interpret the data and calculate the energy expenditure of the individual evaluated, the following equation was used: IAM=Σ (I×M×F×T), where IAM=annual energy expenditure; I=intensity of each activity in mets; M=number of months/year in which the activity was performed; F=average number of times it was performed in the month; T=average activity duration on each occasion. To obtain the value in kilocalories (kcal), the multiplication of I by the constant 0.0175 and the individual's weight in kilograms is used.

Finally, an assessment of fall risk awareness was carried out with the falls risk awareness questionnaire[21]. Its score ranges from 0 to 32 points, and, the higher the number of points, the better the fall risk awareness by the older adults.

Statistical analysis

Descriptive statistical analysis (median, minimum, maximum, absolute [n], and relative [%]) was used to characterize the study. The Kolmogorov-Smirnov test was used to verify the distribution of data for continuous variables, identifying that the data were not parametric. The older adults were divided into two groups: non-fallers and fallers (older adults who had at least one fall episode in the past 12 months). The differences between groups were analyzed using the Mann Whitney and chi-square tests. The correlation between socioeconomic factors, clinical aspects, physical activity level, fall risk awareness, falls and number of falls was evaluated using Spearman's correlation. Correlation coefficients were classified as small (rho≤0.10), medium (rho>0.10; rho<0.50), and large (rho≥0.50) effect [22]. In addition, correlations with a medium or large effect were included in the binary (falls) and multivariate (number of falls) logistic regression models to identify the association between the variables, using estimates of *odds ratio* (OR) and their respective 95% confidence intervals (95%CI). The statistical significance level adopted was p<0.05.

RESULTS

The final sample (n=520) of this study was composed of older adults of both sexes (female=83.7%; male=16.3%) aged between 60 and 95 years old (71.7±7.4 years old). Most older adults did not have a history of falls (n=330; 63.5%). In the comparison analysis, it was possible to observe that fallers presented a lower fall risk awareness, education level, and economic class compared to non-fallers. Also, regarding age, body mass index, cognitive status, physical activity level, sex, and marital status, no differences were observed between the groups (fallers vs. non-fallers) (Table 1).

Table 1. Comparison of sociodemographic data, anthropometric data, cognitive status, economic class, physical activity level, and fall risk awareness in the older adult population (n=520)

Continuous Characteristics	Fallers (n=190)	Non-fallers (n=330)	p
	Median (Min – Max)	Median (Min – Max)	
Age (years)	71.00 (60.00 – 95.00)	71.00 (60.00 – 90.00)	0.447
Body mass index (kg/m²)	27.50 (18.00 – 42.00)	27.00 (19.00 – 39.00)	0.235
Cognitive status (points)	25.00 (14.00 – 30.00)	26.00 (15.00 – 30.00)	0.375
Physical activity level (kcal)	1.287 (10.00 – 11.712)	1.385 (20.00 – 12.390)	0.942
Fall risk awareness (points)	15.00 (6.00 – 23.00)	18.00 (6.00 – 23.00)	0.001*
Categorical Characteristics	Fallers (n=190)	Non-fallers (n=330)	p
	n (%)	n (%)	
Sex			
Female	165 (31.7)	270 (51.9)	0.136
Male	25 (4.8)	60 (11.5)	

(continues)

Table 1. Continuation

Categorical Characteristics	Fallers (n=190) n (%)	Non-fallers (n=330) n (%)	p
Education level			0.031*
Illiterate	9 (1.7)	14 (2.7)	
Elementary school	81 (15.6)	105 (20.2)	
High school	61 (11.7)	140 (26.9)*	
Higher education	39 (7.5)	71 (13.7)*	
Marital status			0.507
Married or consensual union	73 (14.0)	133 (25.6)	
Divorced or Single	41 (7.9)	83 (15.9)	
Widow(er)	76 (14.6)	114 (21.9)	
Economic class			0.024*
A1+A2	4 (0.8)	21 (4.0)	
B1+B2	24 (4.6)	201 (38.6)*	
C1+C2+D	162 (31.2)*	108 (20.8)	

kg: kilograms; kg/m²: kilograms per square meter; kcal: kilocalories; A1 (42-46 points): upper economic class; A2 (35-41 points): upper economic class; B1 (29-34 points): upper-middle economic class; B2 (23-28 points): upper-middle economic class; C1 (18-22 points): lower-middle economic class; C2 (14-17 points): lower-middle economic class; D (8-13 points): low economic class; E (0-7 points): low economic class. *p<0.05.

Regarding the faller older adults, most (21%) had an episode of falling in the past twelve months, outdoors (53.1%), due to a stumble (60.5%), and as a consequence presented excoriations or bruises (53.1%). Additionally, a relevant information is that 19% of the older adults had a history of hospitalization regardless of the falls (Table 2).

Table 2. Characteristics of episodes of falls in the past twelve months among older adult fallers (n=190)

Categorical Characteristics	n	%
Number of falls		
1	109	21.0
2 – 3	55	10.5
4 or more	26	5.0
Fall place		
Residential environment	89	46.7
External environment	101	53.1
Fall reason		
Stumbled	115	60.5
Slipped	42	22.1
Darkening of vision or dizziness	33	17.4
Fall consequence		
Excoriations or bruises	101	53.1
Hospitalization	36	19.0
No consequences	53	27.9

The correlation analysis showed an average correlation of education (rho=0.482; rho=-0.409), economic class (rho=0.478; rho=-0.494), and fall risk awareness (rho=0.404; rho=-0.409), both in terms of history and number of falls (Table 3).

Table 3. Correlation between falls and number of falls with sociodemographic data, anthropometric data, cognitive status, economic class, physical activity level, and fall risk awareness in the older adult population

Variables	Falls rho	Falls p	Number of falls rho	Number of falls p
Age (years)	-0.033	0.224	0.032	0.231
Sex (F, M)	-0.065	0.068	0.055	0.104
Education level (years)	0.482*	0.032	-0.409*	0.006
Marital status (MCU, DS, and W)	-0.04	0.181	0.019	0.330
Body mass (kg)	-0.046	0.148	0.051	0.123
Body mass index (kg/m²)	-0.052	0.117	0.065	0.069
Economic class (points)	0.478*	0.038	-0.494*	0.016
Cognitive status (points)	0.039	0.188	-0.064	0.074
Physical activity level (kcal)	0.002	0.481	-0.017	0.353
Fall risk awareness (points)	0.404*	0.001	-0.409*	0.001

F: female; M: male; MCU: married or consensual union; DS: divorced or single; W: widow(er); rho: Spearman's correlation coefficient; *p:<0.05.

The regression was able to identify the association of the history of falls (fallers and non-fallers) with education (OR: 1.35 to 1.28), economic class (OR: 1.62), and fall risk awareness (OR: 1.46). Concerning the number of falls, we observed that the history of a fall was associated only with fall risk awareness (OR: 0.87), while the history of two or more falls was associated with education (OR: 2.44 to 1.92) and awareness (OR: 0.84).

Table 4. Association of falls and number of falls with education level, economic class, and fall risk perception in the older adult population

Falls	B (SE)	Wald	p	OR (95%CI)
Education level				
Illiterate	0.18 (0.51)	0.25	0.040*	1.28 (0.39-0.94)
Elementary school	-0.10 (0.28)	0.14	0.709	0.90 (0.52-1.56)
High school	0.30 (0.27)	1.24	0.026*	1.35 (1.09-2.29)
Higher education	-	-	-	1
Economic class				
A1+A2	-	-	-	1
B1+B2	0.17 (0.21)	0.62	0.432	1.18 (0.77-1.79)
C1+C2+D	0.48 (0.49)	1.98	0.032*	1.62 (1.02-4.27)
Fall risk perception	0.15 (0.03)	23.1	< 0.001*	1.46 (1.09-2.23)

Number of falls				
1 fall	B (SE)	Wald	P	OR (95%CI)
Education level				
Illiterate	-1.20 (0.81)	2.17	0.141	0.30 (0.06-1.49)
Elementary school	-0.29 (0.33)	0.76	0.382	0.75 (0.39-1.43)
High school	-0.35 (0.30)	1.34	0.248	0.70 (0.39-1.28)
Higher education	-	-	-	1
Economic class				
A1+A2	-	-	-	1
B1+B2	-1.21 (0.25)	0.23	0.632	0.88 (0.54-1.46)
C1+C2+D	-0.58 (0.59)	0.94	0.332	0.56 (0.17-1.80)
Fall risk perception	-0.12 (0.04)	11.13	0.001*	0.87 (0.82-0.95)

2 or more falls	B (SE)	Wald	p	OR (95%CI)
Education level				
Illiterate	0.89 (0.62)	15.07	0.042*	2.44 (0.72-0.98)
Elementary school	0.65 (0.41)	12.5	0.047*	1.92 (0.86-0.99)
High school	-0.11 (0.42)	0.06	0.802	0.90 (0.39-2.06)
Higher education	-	-	-	1
Economic class				
A1+A2	-	-	-	1
B1+B2	-0.27 (0.29)	0.81	0.368	0.76 (0.43-1.37)
C1+C2+D	-0.37 (0.69)	0.28	0.598	0.69 (0.18-2.70)
Fall risk perception	-0.18 (0.40)	20.07	< 0.001*	0.84 (0.77-0.90)

A1 (42-46 points): upper economic class; A2 (35-41 points): upper economic class; B1 (29-34 points): upper-middle economic class; B2 (23-28 points): upper-middle economic class; C1 (18-22 points): lower-middle economic class; C2 (14-17 points): lower-middle economic class; D (8-13 points): low economic class; E (0-7 points): low economic class. *p<0.05.

DISCUSSION

This study was designed to explore the association of falls with personal characteristics, economic factors, clinical aspects, physical activity level, and fall risk awareness in older adult fallers and non-fallers. The results indicated that older adult fallers presented a lower level of education, economic class, and fall risk awareness compared to older adult non-fallers, factors that are in line with the initial hypothesis of the study. There was no difference regarding other social variables, clinical aspects, and physical activity levels, not corroborating the initial hypothesis of the study. Also, data analysis made it possible to identify that falls were associated with education level, economic class, and fall risk awareness, information that partially meets the initial hypothesis of the study.

Thus, the comparison between older adult fallers and non-fallers corroborates previous studies, which have shown that lower socioeconomic levels can directly or indirectly affect the risk of falls, whether by behavioral changes (e.g., low level of physical activity, alcoholism) or by greater exposure to risky situations related to the environment, such as inadequate residential environments and uneven sidewalks[23,24]. Additionally, individuals with less education and low income may have less access to information and access to health services, a fact that can also influence the knowledge of strategies to prevent falls, as well as lead to a greater risk of chronic diseases, physical limitations and, therefore, an increased risk of falls[9].

Moreover, the fall risk awareness, defined as the individual's understanding and knowledge about the risk factors for falls, has presented a decrease among older adult fallers in previous studies [6,7,25], information that corroborates the results of this study. This finding may be related to the fact that individuals with greater awareness present protective behaviors and adopt a more cautious strategy in performing activities of daily living, responsible for most falls at home or outside, such as walking cautiously in unfamiliar places, wet or uneven surfaces, and areas with poor lighting, making them less prone to falls[6,7,25].

Most falls occur when individuals are not aware of events that may cause them to fall and/or when environmental demands exceed their physical capacity[25]. However, a balance between precaution and restriction is necessary so that older adults do not limit their activities without real danger of falling and become insufficiently

active. Thus, the greater the knowledge of the risks and factors involved in episodes of falls, the greater the individual's ability to make appropriate decisions regarding their behavior and, consequently, prevent these episodes[25-27].

Based on the information mentioned above, it is suggested that socioeconomic and awareness aspects have an important role in the episodes of falls, since individuals with higher socioeconomic status have greater access to information and ease of learning, which may be able to increase their awareness related to risk factors for falls. Lack of knowledge leads individuals to greater exposure to risk situations[26], so education and economic classification can be considered social determinants that can influence the search for health and modification of life habits[9].

Concerning the body mass index, a recent meta-analysis[28] has shown that this variable was not associated with an increased risk of falls, as in this study. This topic still presents a contradiction in the literature: some researches indicate that individuals with high body mass index are more likely to fall due to reduced mobility[29], dynamic balance[30], and, also, muscle quality[31]. Therefore, studies on the subject, considering not only the body mass index, but also the use of tools with greater precision to assess body composition (e.g., bone densitometry), need to be carried out to analyze this information more precisely and with different older adult profiles (e.g., average weight, overweight, and obese).

Furthermore, this study found no association between the physical activity level and falls, which can be explained by the fact that the activity profile in both groups is very similar, in which the majority was classified as sufficiently active (over 150 min/wk), indicating the homogeneity of the sample in this aspect. A recent study indicated that older adult people with a higher level of physical activity presented higher levels of physical and functional capacity, factors that are related to a lower risk of falls[6]. Nevertheless, studies have also shown that active older adult people also have episodes of falls, but with different characteristics from sedentary older adult people, that is, more active older adult people are more exposed to risks in outdoor environments, while less active older adult people present more prevalence of falls in a residential environment[32]. This fact expressly highlights the need for and importance of promoting programs with the aim of increasing fall risk perception in the older adult population, so that their greater engagement in activities in a safe way will provide an active lifestyle with less risk of falls.

In view of the results found, as strengths and differentials of the study, it is suggested the development of strategies that include explanatory components (risk factors for falls), as well as the training of individuals for developing skills to identify these risks and plan appropriate actions to reduce them. Also, the information from this research can provide support for the development of public policies that encompass the variables related to the risk of falls, encouraging physical and perceptual health care, thus preventing falls and promoting aging with quality of life.

The study has limitations that should be considered for future research. The sample consisted of physically active and healthy older adult people, and the same result cannot be generalized to the overall population. The self-report method for evaluating the episodes of falls and physical activity level can result in recall bias. However, physical activity questionnaires are widely used in several studies with older adults[33]. Furthermore, the occurrence of falls was similar to other studies with older adult Brazilians[6,34]. Nevertheless, caution is recommended when extrapolating the data to older adult people with different characteristics from the sample in this study.

CONCLUSION

Based on the findings of this study, we conclude that older adult fallers had a lower level of education, economic class, and fall risk awareness, and these factors were associated with episodes and number of falls. Thus, this information should be addressed in health promotion and fall prevention programs for the older adult population, so that prevention strategies can be created and older adult people at greater risk for falls can be identified, thus preventing future episodes and/or relapses and their consequences.

Acknowledgments

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