Maturitas 75 (2013) 367–372

Contents lists available at SciVerse ScienceDirect

Maturitas

journal homepage: www.elsevier.com/locate/maturitas

Treatment for menopausal symptoms and having health insurance were associated with a lower prevalence of falls among Brazilian women

Luiz Francisco Baccaro[a,*], Vanessa de Souza Santos Machado[a], Lúcia Costa-Paiva[a], Maria Helena Sousa[b], Maria José Osis[b], Aarão Mendes Pinto-Neto[a]

[a] Department of Gynecology, State University of Campinas (UNICAMP), Brazil
[b] Center for Research on Reproductive Health of Campinas (CEMICAMP), Brazil

ARTICLE INFO

Article history:
Received 9 April 2013
Accepted 29 April 2013

Keywords:
Accidental falls
Menopause
Risk factors
Insurance
Health
Hot flashes

ABSTRACT

Objectives: Brazil has an aging population. This study aims to raise awareness of the prevalence and factors associated with falls among Brazilian women.
Study design: Cross-sectional study with 622 women over 50 years of age was conducted between 05/10/11 and 10/31/11 in the city of Campinas/São Paulo/Brazil in the form of a population survey.
Main outcome measures: The dependent variable was the occurrence of falls in the past 12 months. The independent variables were sociodemographic data, health-related habits and problems, self-perception of health and evaluation of functional capacity. Statistical analysis was carried out by Chi-square test and Poisson regression using the backward selection criteria.
Results: The mean age of the women was 64.1 years. The prevalence of falls in the past 12 months was 24.6%. Having trouble keeping balance when walking: PR 1.87 (95% CI 1.33–2.63, $P < 0.001$); alcohol consumption: PR 1.69 (95% CI 1.25–2.28, $P < 0.002$); having been admitted to a hospital in the last 12 months: PR 1.46 (95% CI 1.09–1.96, $P = 0.012$); and having cataract: PR 1.40 (95% CI 1.05–1.87, $P = 0.021$) were associated with a higher prevalence of falls. Having health insurance: PR 0.67 (95% CI 0.50–0.89, $P = 0.007$) and using some form of medication to treat menopausal symptoms: PR 0.42 (95% CI 0.19–0.92, $P = 0.031$) were associated with a lower prevalence of falls.
Conclusion: Having health insurance and using some form of medication to treat menopausal symptoms were associated with a lower prevalence of falls among Brazilian women.

1. Introduction

Brazil has an aging population with an increasing life expectancy. Between 1960 and 2010 the life expectancy rate increased by 25.4 years to 73.4 years for both sexes. For women, life expectancy at birth reached 77.3 years. For those aged 50, life expectancy is now 81.2 years [1]. The increased number of elderly in the population leads to a higher prevalence of comorbidities, with falls having significant importance in this context.

Falls in the elderly result in a large number of hospital admissions, leading to increased public health spending [2]. Approximately 30–50% of falls cause minor injuries, such as cuts and lacerations, 10% result in major injuries, such as fractures and head trauma, and 1% result in a hip fracture [3]. Only 50% of individuals who survive a hip fracture reestablish the skills to perform daily activities [4]. It was estimated that 80% of women would rather die than lose normal mobility because of a hip fracture and thus become institutionalized [5].

The elderly are more prone to falls because of a combination of individual and environmental risk factors [6]. There are many individual risk factors for falls, such as muscle weakness, a history of previous falls, fainting or loss of consciousness, balance problems, difficulty walking or standing, arthritis and neuropathy of the lower extremities, decreased visual acuity, and the use of medications affecting balance or acting on the central nervous system [7]. The greater the number of risk factors, the greater the likelihood of falls, which can reach 80% when there are four or more risk factors [8]. Elderly people who have already suffered a fall may develop a fear of falling again, potentially restricting their daily activities, leading to worsening physical fitness, depression, and social isolation, thus further increasing the risk of future falls [9–11].

There are few studies on falls in Latin America and Brazil. In 2010 the Brazilian osteoporosis study (BRAZOS) estimated among

* Corresponding author at: Department of Gynecology, State University of Campinas, Rua Alexander Fleming, 101, Cidade Universitária Zeferino Vaz, Campinas, 13.083-881 São Paulo, Brazil. Tel.: +55 19 3521 9306; fax: +55 19 3521 9306.
E-mail addresses: luiz.baccaro@gmail.com (L.F. Baccaro), vss80@yahoo.com.br (V.d.S.S. Machado), paivaepaiva@uol.com.br (L. Costa-Paiva), mhestat@cemicamp.org.br (M.H. Sousa), mjosis@cemicamp.org.br (M.J. Osis), aarao@unicamp.br (A.M. Pinto-Neto).

0378-5122/$ – see front matter © 2013 Elsevier Ireland Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.maturitas.2013.04.020

women over 40 years of age a prevalence of 25.6% for recurrent falls and 59.8% for a fear of falling. Risk factors associated with recurrent falls among women were older age, a history of previous fracture, a worse quality of life related to a physically sedentary lifestyle, diabetes mellitus, and the use of benzodiazepines [12]. This study aims to raise awareness of the prevalence and factors associated with falls among Brazilian women. The study was conducted with women aged over 50 years living in the city of Campinas, São Paulo, Brazil.

2. Methods

2.1. Subject selection

This is a secondary analysis of a cross-sectional study entitled "Health conditions in women over 50 years of age: a population-based study in the city of Campinas, São Paulo", conducted between May 10 and October 31, 2011 in the city of Campinas, São Paulo, Brazil in the form of a population survey. A total of 66 census sectors were selected in the city by simple random sampling or equal probabilities of selection, based on a list supplied by the Brazilian Institute of Geography and Statistics (IBGE), classified according to the identification number of each sector. The IBGE census sectors were numbered and their geographical limits were clearly defined. The sectors were classified in accordance with the database of the 2000 census for the city of Campinas. All census sectors with at least ten women of 50 years of age or older residing in them were included in the random selection process. The sectors in which there were fewer than ten women in this age group were grouped together with the consecutively numbered neighboring sectors. Research assistants guided by maps of each census area went to odd-numbered houses and enquired whether any of the residents were women of 50 years of age or older. Any woman who fulfilled the eligibility criteria was invited to participate in the study. If she agreed to participate, a questionnaire was implemented in person or by telephone by interviewers trained at the Center for Research on Reproductive Health of Campinas (CEMICAMP). This was repeated until 10 eligible women were obtained in each sector. If the required number of women (10 per sector) was not achieved, visits to homes in the sector were reinitiated, going to those that had not been previously visited. A total of 721 women were invited to participate in the study. Ninety-nine women (13.7%) declined to participate, principally reporting a lack of time in which to answer the questionnaire. Therefore, the final sample comprised 622 women. All women signed free and informed written consents before their interviews. The study was approved by the Research Ethics Committee of UNICAMP under number 1012/2010.

2.1.1. Sample size

According to the IBGE, the population of Campinas in 2007 was 1,039,000, of whom approximately 545,000 were women. Approximately 131,800 of these women were aged over 50 years. To calculate the sample size, hypertension was taken into consideration as the most prevalent morbidity in women in Brazil and in developed countries, with an estimated prevalence of 56.3%. A type 1 (alpha) error of 5% and a margin of error of 5% were considered. The resulting sample size was then increased by 10% to compensate for a possible loss of subjects; therefore, the final sample size was established as 657 women. For the present study we calculated a new sample size based on the objective of assessing the prevalence of falls in Brazilian women. Considering an estimated prevalence of 35% [3], with alpha of 5% and a margin of error of 5% the sample size resulted in 546 women.

2.1.2. Inclusion criteria

The study selected women over 50 years of age residing in the city of Campinas/São Paulo/Brazil.

2.1.3. Exclusion criteria

Explicit refusal to participate in the study or any factor preventing the interview from taking place, such as illness, personal commitments, or incompatibility of schedules, constituted exclusion criteria. Women with a cognitive disability that prevented them from answering the questionnaire or those suffering from dementia were also excluded.

2.1.4. Dependent variable

This was the occurrence of a fall in the past 12 months. The classification was made through the following question: "Have you had any falls in the last year?", with the following answer options: yes, no, or do not know.

2.1.5. Independent variables

The independent variables were age (years); education (years of schooling, classified as ≤8 years or >8 years); marital status (with or without a partner); skin color (white or non-white); monthly income (≤R$1500 or >R$1500); body mass index (BMI) (<20, 20–24.9, 25–29.9, or ≥30 kg/m^2); difference between the current weight and the weight at 20–30 years of age (had lost weight, had gained between 0 and 14.9 kg, had gained between 15 and 29.9 kg, had gained ≥30 kg); smoking (never smoked, past smoker, current smoker); if a past or current smoker, the number of cigarettes/day (0–4, 5–20, ≥21); alcohol consumption (yes/no); frequency of alcohol consumption (none or less than once a week/once a week or more); weekly physical exercise (yes/no); frequency of physical exercise (none, once or twice weekly, 3 days/week or more); if the woman had had to stay in bed for more than half the day in the preceding 2 weeks because she was ill or in pain (yes/no); number of days spent in bed in the previous 2 weeks (none/1–6/7–14); hospitalization in the past year (yes/no); number of months since the last medical consultation (<1, 2–5, 6–11, ≥12); use of any drugs acting on the central nervous system (CNS) (yes/no); use of medication to treat menopausal symptoms (yes/no), use of anti-rheumatic drugs (yes/no); if the woman had private medical insurance (yes/no); if she had stopped menstruating more than a year ago (yes/no); time since menopause in years (0, 1–10, 11–20, 21–30, ≥30); menopausal treatment (yes, currently in treatment; yes, used in the past; no); hormonal treatment for the menopause (yes/no); treatment with natural menopausal remedies (yes/no); time of menopausal treatment in months (0, ≤12, 13–48, >48); if she had problems keeping her balance when taking a bath, dressing, or going down stairs (yes/sometimes/no); if she was afraid of falling (yes/no); if her fear of falling was interfering with her routine activities (yes/no/she was not afraid); self-perception of health (very good, good, fair, poor/very poor); and difficulties in feeding herself, taking a bath, or going to the toilet (unable to/some difficulty, no difficulty). The following variables were categorized as unable to, had a lot of difficulty, had little difficulty, or had no difficulty: running, lifting something heavy, doing sports or heavy work; pushing a table or doing housework; climbing stairs; crouching or kneeling down; walking 100 m; and walking more than 1 km. The remaining independent variables included: if the woman had been diagnosed with diabetes (yes/no); time since diagnosis of diabetes (did not have diabetes or less than 1 month, 1–12 months, >12 months); undergoes some type of treatment for diabetes (yes/no); had ever been diagnosed with cancer (yes/no); had been diagnosed with osteoarthritis (yes/no); time since diagnosis of osteoarthritis (did not have osteoarthritis or less than 1 month, 1–12 months, >12 months); had ever been diagnosed with hypertension (yes/no); time since diagnosis of hypertension (did not have hypertension