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Research Paper

Time trends in leisure time physical activity and physical fitness in the elderly: Five-year follow-up of the Spanish National Health Survey (2006–2011)

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ABSTRACT

Objectives: To estimate the trends in the practice of leisure time physical activity, walking up 10 steps, and walking for 1 h, during the years 2006–2011, in elderly Spanish people.
Study design: Observational study, retrospective analysis of Spanish National Health Surveys. We analysed data collected from the Spanish National Health Surveys conducted in 2006 (n = 30,072) and 2011 (n = 21,007), through self-reported information. The number of subjects aged ≥65 years included in the current study was n = 5756 in 2006 (19.14%) and n = 4617 in 2011 (21.97%). We included responses from adults aged 65 years and older.
Outcome measures: The main variables included leisure-time physical activity, walking up 10 steps, and walking for 1 h. We analysed socio-demographic characteristics, individuals' self-rated health status, lifestyle habits, co-morbid conditions and disability using multivariable logistic regression models.
Results: The total number of subjects was 10,373 (6076 women, 4297 men). The probability of self-reported capacity was significantly higher in 2006 than in 2011 for leisure-time physical activity, walking up 10 steps, and walking for 1 h for both sexes (women: OR 2.20, 95%IC 1.91–5.55; OR 2.50, 95%IC 1.99–3.14; OR 1.04, 95%IC 1.01–1.07; men: OR 2.20, 95%IC 1.91–2.55; OR 2.01, 95%IC 1.40–2.89; OR 1.05, 95%IC 1.0–1.1) respectively. Both sexes were associated with a significantly lower probability of performing leisure-time physical activity, walking up 10 steps, and walking for 1 h. Additionally, those over 80 years of age, on average, showed a poor or very poor perception of their health and presented with some type of disability.
Conclusion: A decrease in the proportion of respondents who self-reported undertaking leisure-time physical activity, walking up 10 steps, and walking for 1 h was observed in the Spanish population of over 65 years between 2006 and 2011.

1. Introduction

In recent years, Spain has exhibited a rapid increase in the ageing of its population. Among several consequences this phenomenon may bring, a rise in the number of individuals at risk for suffering from a chronic disease may be the most relevant [1]. Recent guidelines show the importance of physical activity (PA) in older people [2,3], as regular PA can provide health benefits, even when they are initiated later in life [4]. According to an article from the Center for Disease Control and Prevention's Healthy Aging Network, PA is considered to be a key element for determining health status [5]. In fact, evidence suggests that PA is associated with increased life

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expectancy, a self-perceived healthy life, years without impairment in daily living activities [6], lower rates of functional decline [7], a lower risk of mortality [8], increased longevity [6], prevention of cognitive deterioration [9], and better quality of life [10].

Physical activity is a broad term that encompasses both leisure-time activity (sports, exercise) and activities of daily living [11]. Leisure time physical activity (LTPA) refers to exercise or sports not related to regular work, housework or transport activities [12]. Walking is the most common form of physical activity and is recommended for all ages [13,14]. Physical fitness is defined as a set of attributes that people have or achieve that relates to the ability to perform physical activity [15]. In fact, different studies have used walking and walking up-stairs to evaluate physical fitness of older people [16,17]. Previous studies [18,19] have reported a trend towards an increase in PA in individuals over the age of 60. However, some authors have suggested the opposite, that older people report lower PA [20,21]. In line with this hypothesis, the Center for Disease Control [22] reported that the prevalence of LTPA declined from 29.8% in 1994 to 23.7% in 2007 in the United States of America (USA).

In Spain, more than 40% of older adults are sedentary [23]. Palacios-Ceña et al. [24] showed an increasing difficulty in walking for 1 h without rest and walking up 10 steps between 2000 and 2007. Despite this data, in a previous study Palacios-Ceña et al. [25] reported an increase in LTPA between 1987 and 2006 ($p < 0.01$). The same authors also reported that for the variable walking for 1 h individuals exhibited a significant improvement ($p < 0.01$). In Spain, previous studies [24,25] reported that females had difficulties walking for 1 h, walking 10 steps without help and perform LTPA. Previous studies conducted in older adults have reported that important variables that are associated with the uptake of PA include gender, age [14], educational level [11,26], monetary income [11,26], marital status, co-morbid diseases [14,27], alcohol consumption [14,27], smoking [27], self-perceived health [28], and obesity [11].

In the past years, changes in health care promotion programmes have been implemented in Spain. To the best of the authors' knowledge, no previous study has investigated time trends in PA attitudes in Spanish older people. The present study examines time trends in the prevalence of PA in adults aged 65 and over using Spanish National Health Surveys conducted in the period between 2006 and 2011. The objectives of this study were: (1) to describe the prevalence of self-reported LTPA and physical fitness by the Spanish elderly population in the period between 2006 and 2011; (2) to determine socio-demographic features, self-perceived health status, co-morbidity, and lifestyle-related habits associated with self-reported LTPA and physical fitness by older people; and, (3) to analyse time trends in the prevalence of LTPA and physical fitness in the period from 2006 to 2011 in Spanish older people.

2. Methods

2.1. Study design and population

2.1.1. Spanish National Health Surveys (SNHS) 2006 and 2011

To carry out this descriptive, cross-sectional study, we used secondary data from the 2006 and 2011 SNHS through self-reported information. These surveys were carried out using home-based personal interviews examining a nationwide, representative sample of the civilian, non-institutionalized population.

Study subjects were selected by means of probabilistic multistage sampling, with the first-stage units composed of census sections, and the second-stage units represented by main family dwellings. Adults were defined as those aged 15 years or over in the SNHS 2011 and 16 or over in the SNHS 2006. The surveys included in this investigation were executed by the National Statistics Institute (*Instituto Nacional de Estadística, INE*) under the aegis of the Spanish Ministry of Health & Consumer Affairs. The detailed methodologies are described elsewhere [29,30].

Surveyors were previously trained in basic communication skills, related procedures and specific training on the questionnaire to be used. Informed consent was signed by all participants before they answered the survey. In order to meet the surveys' stated aim of being able to furnish estimates with a certain degree of reliability at both national and regional levels, the following samples of adults were selected within the SNHS: 30,072 subjects in 2006; and 21,007 in 2011. The number of subjects aged ≥65 years included in the study throughout the entire period was 10,373 (2006: $n = 5756$–19.14%; 2011: $n = 4617$–21.97%).

For the purpose of the current study, we included self-reported answers from adults aged 65 years and older from these surveys. The variables included in the current study were created on the basis of several questions included in the questionnaires which were identical in all surveys. The dependent variables were: (1) LTPA, which was collected using the following question: "Do you practice any physical activity during your leisure time?", with two possible answers: "none" or "once a month or more", and (2) physical daily fitness, which was assessed via two questions: "Can you walk up 10 steps without help?" and, "Can you keep walking for 1 h without rest?". The possible answers to both questions were dichotomized as "yes" or "no".

We also analysed socio-demographic characteristics such as age (65–71 years, 72–79 years, 80 years and older), marital status (married vs. unmarried/widowed/separated-divorced), educational level (no studies; primary education completed; secondary education or more) and size of town or city (<50,000 habitants vs. ≥50,000 habitants). Self-perceived health status was assessed via the following question: "How have you perceived your state of health over the previous 12 months?" Subjects described their health status as very good, good, fair, poor and very poor. The answer was dichotomized into very good/good or fair/poor/very poor. We determined this dichotomization as some categories had a very small number of subjects, i.e., very good or very bad. We also collected the number of medical diagnoses of co-morbid chronic conditions (including high blood pressure, myocardial infarction, other heart diseases, osteoarthritis, arthritis or rheumatism, chronic spine pain [cervical and/or lumbar], asthma, chronic bronchitis, emphysema, chronic obstructive pulmonary disease, diabetes, depression, chronic anxiety, other mental problems, embolism, cerebral infarction, cerebral haemorrhage, and malignant tumours) as follows: none or one, two or three, and four or more. The number of prescribed medications for any of these chronic conditions was also categorized as none or one, two or three, and four or more. Body mass index (BMI) was calculated from self-reported body weight and height. Individuals with a BMI ≥ 30 were classified as obese, those with BMI between 25 and 29.9 were classified as overweight and those with BMI < 25 were considered to have normal weight. Individuals with BMI < 18.5 or incomplete data on height and weight were excluded from the analysis.

Regarding lifestyle habits, smoking habits differentiated between current smokers, non-smokers or ex-smokers. Alcohol consumption was measured via the question "Have you consumed alcoholic drinks within the last 2 weeks?" with two possible responses: "yes" or "no". Finally, sleep habits were divided into subjects sleeping > 8 h per day and those sleeping < 8 h per day.

Finally, in order to assess the level of disability, patients were asked to respond to their ability to perform the following activities: Ability to "eat (cut food and/or place it in your mouth)", "dress and undress and choose the right clothes", "Get out of bed and lie down", "Wash your face and body from the waist up", and "Showering or bathing". Responses were selected from the following categories: