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Food insecurity, weight and nutritional status among older adults attending senior centres in Lisbon

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ABSTRACT

Nutritional status is important to elders to live without disabilities. Food Insecurity (FI) is a risk factor associated with poorer nutritional status among elderly as well as a social determinant. This research aimed to identify FI prevalence and to explore the relation between FI, weight status and socio-demographic factors.

Methods: This cross-sectional study was conducted from September 2015 to February 2016 in Lisbon. Malnutrition was determined using Mini Nutritional Assessment (MNA). FI was assessed using FIES (Food Insecurity Experience Scale) and social risk using Gijon's social-familiar evaluation scale. Data were collected through face-to-face interviews and anthropometric indices were measured according to Isak procedures.

Results: A sample of 337 subjects, with an average age of 78.4 years old (range 66–99), mostly women (n = 210; 62.3%) were enrolled. 70.0% were FI, whereas 40.7% was at risk of malnutrition, 4.7% were malnourished and 34.7% of participants presented high social risk. Being a woman, FI, reported Depression, Loneliness, Acute Myocardial Infarction, Cerebrovascular Accident, Diabetes, being aged 74–85 years old, Health status and attending SC for less than 5 years were contributors to risk of malnutrition/malnutrition. Lack of money, socialization as a reason for attending SC, Social Risk and Diabetes were related to FI. There was no correlation between FI and obesity, but a positive correlation between FI and weight was found.

Conclusion: Nutritional status and food insecurity on the studied sample were associated with their health status and also with their social circumstances, such as diabetes, loneliness and lack of economic resources.

1. Introduction

Senior population has been increasing drastically worldwide (Lee & Frongillo, 2001b), namely in Portugal (INE (Instituto Nacional de Estatística) (2015)). According to the most recent national census (2011) 19% of the Portuguese population was aged 65 and over with an increase of 18.7% between 2001 and 2011. Data from Census 2011 also revealed that 18.21% of the Lisbon population were elders (INE (Instituto Nacional de Estatística), 2012b, 2012a).

The inversion of population pyramids is accompanied by a new paradigm for nutrition. In fact, the influence of food and food patterns on nutritional status, body composition, mental and physical health is well established for all stages of life cycle (Majowicz et al., 2016). The elderly are more predisposed than the younger to the impact of nutrition and other health-related factors, such as food insecurity (FI) (Lee & Frongillo, 2001b).

Food security appears, by definition, "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, IFAD, & WFP, 2015). In this concept, there are four dimensions: physical availability of food, economic and physical access to food, food utilization and stability of the other three dimensions over time (FAO, 2008). This presupposes that if some of the four dimensions cannot be ensured, the person is considered food insecure.

Food insecurity (FI) may be classified as chronic or transitory, according to its duration. Chronic FI is a long-term or a persistent condition, and usually occurs when someone is unable to meet their minimum food requirements over a sustained period of time (FAO, 2006, 2008). Transitory FI is a short-term temporary condition, and occurs as the result of an unexpected decline in the ability to produce or

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to access enough food to maintain a good nutritional status (FAO, 2008). The spectrum of FI severity ranges from the fear of not having food to experience hunger.

In addition to several age-related changes in normal aging process which may affect nutritional status (Ahmed & Haboubi, 2010), the susceptibility of the elderly has been related to their frailty, presence of chronic conditions, poor incomes and need for assistance in their activities of daily life (Simsek, Meseri, Sahin, & Ucku, 2013). The cluster of this factors is often linked to the presence of FI, which negatively affects health, quality of life and nutritional status (Lee & Frongillo, 2001b, 2001a) as well as cognitive function and mental health (Chung et al., 2012). Old people who are food-insecure usually have decreased food intake and poor self-perception of wellbeing (Lee & Frongillo, 2001a; Lindberg, Lawrence, Gold, Friel, & Pegram, 2015). Malnutrition, defined as underweight, is a serious public-health problem that has been linked to an increased risk of mortality and morbidity (Blössner & De Onis, 2005) that occurs when nutrient intake is insufficient to meet requirements, resulting in body weight and composition changes and dysfunctions (Jiang et al., 2017).

Malnutrition clearly contribute, in older adults, to increased disability, decreased resistance to infection, exacerbation of disease and extended hospitalization (Hong & Kim, 2013; Simsek et al., 2013). However, in some circumstances, FI is associated with obesity rather than malnutrition (Dinour, Bergen, & Yeh, 2007).

Despite the growing research interest on FI and nutritional status (Chun, Ryu, Park, Ro, & Han, 2015), the real extent of this burden remains unclear in most countries, including Portugal. Besides recent research have found that 26.6% of Portuguese older adults experienced some level of FI and the prevalence of malnutrition on elderly were 15% (Gregório et al., 2018; Nutrition UP 65, 2016), less is known about the community–dwelling elders, that need health services and social support more (Simsek et al., 2013), namely Senior Centre (SC). SC are places that promote physical and mental health (Cohen, 1968; Schneider, Ralph, Olson, Flatley, & Thorpe, 2014), by providing several services, particularly important to these elders.

Therefore, this research aimed to determine FI prevalence and also to identify variables associated with nutritional status and FI among a sample of SC attendees aged 65 years-old or more.

2. Materials and methods

2.1. Study design

This was a cross-sectional study enrolling SC in the municipality of Lisbon, Portugal, from September 2015 to February 2016. The study was conducted in accordance to the Declaration of Helsinki and approved by ICBAS-UP Ethics Committee. Informed consent was obtained from all subjects.

In order to select the sample, we used *Carta Social*, an online tool describing social equipment in Portugal having financial support from the ministry social affairs. The inclusion criteria applied for SC were: belonging to the municipality of Lisbon and having capacity for 50 or more attendees. From the 241 SC identified in Lisbon, 54 met the inclusion criteria. These SC were invited to participate by telephone and/or by e-mail and from those 7 SC accepted to participate in this research, with a total of 491 registered attendees. After applying eligible criteria, the 400 potential participants were contacted directly by the researcher at SC facilities and were invited to participate. 63 refused to participate.

The inclusion criteria applied for participants were: aged 65 or more, living in the community and being SC attendees, being able to give written informed consent. The overall study design is presented in Fig. 1. Data were collected through face to face interviews in SC facilities.

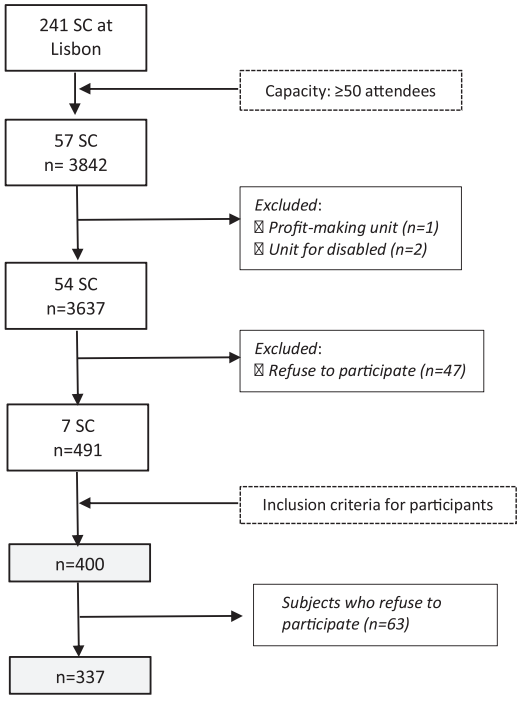

Fig. 1. Study design.

2.2. Social-Demographic and health and lifestyle self-reported variables

Social and demographic data on gender, age, years of education, marital status, average household income, ownership of the house, living with whom, which SC services were used by the elderly, the main reason for attending SC and length of stay were collected. The respondents were stratified in three age groups: young-old: 65–74; middle-old: 75–84 and old-old: ≥85 years old. Data on lifestyle (current smoking and alcohol habits), self-reported general health status (assessed by a Likert scale ranged very good to very poor), self-reported chronic diseases, daily medication and nutritional supplements were also surveyed.

2.3. Anthropometry

All anthropometric measurements were performed according to International Standards for Anthropometric Assessment (ISAK) procedures (Olds, Ridder, de Arthur, & Marfell-Jones, 2011). Body weight was assessed with a portable calibrated balance scale (OMRON BF511) with a maximum capacity of 150 kg. Height was measured with a portable stadiometer (Seca®). Body Mass Index (BMI) was calculated as weight (kg)/height $(m)^2$ and classified according to WHO criteria. A non-extensible metric tape was used to assess mid upper arm (MUAC), waist (WC) and calf circumferences (CC). The cut-off for MUAC was the same used in MNA protocol. WC was classified according to WHO criteria (World Health Organization, 2008). The cut-offs for muscle mass loss according to CC measurements were < 31 cm for both men and women (WHO, 1995). Triceps skinfold thickness (TST) was measured using a Holtain Tanner Skinfold Caliper, with a precision of 0.2 mm. Nutritional status was assessed by MNA® (Guigoz, 2006).

2.4. Food insecurity (FI)

FI was assessed by Food Insecurity Experience Scale (FIES), a validated scale for Portugal, that can be used for household or individual level (Ballard, Kepple, & Cafiero, 2013). This instrument is built from two experience-based food security scales: the US Household Food Security Survey Module and the Latin American and Caribbean Food