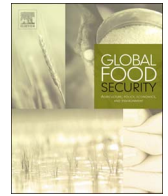




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Food insecurity measurement among older adults: Implications for policy and food security governance

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ABSTRACT

Understanding food insecurity among older adults (OAs) is a relevant issue. *Objectives:* Perform a systematic literature review identifying how food insecurity has been measured and how it affects policies, and assess through a psychometric analysis, if experience-based food security scales (EBFSS), can adequately monitor food security governance among OAs. *Methods:* Research was retrieved from 4 engines and grouped into themes. A psychometric analysis compared a EBFSS's (i.e. the Mexican Food Security Scale) validity in households with and without OAs. *Results:* 58 manuscripts were synthesized and grouped into 5 themes. The EBFSS showed adequate psychometric properties among OAs. *Conclusions:* Among older adults, food security governance, can be fostered by an ecological and multisectorial perspective, and by using valid monitoring instruments.

From the public health perspective a vulnerable group is a sub-population who has inadequate safeguards or is at any form of increased risk of poor health (Frohlich and Potvin, 2008; Rose, 2001), including older adults. For example, among older adults there are numerous factors that may contribute to experiencing food insecurity (a major predictor as well as consequence of poor health outcomes) in a different manner than younger populations (Olson and Holben, 2002; Vilar-Compte, Bernal-Stuart, Orta-Alemán, Ochoa-Rivera, and Pérez-Escamilla, 2014). These include physical limitations (Lee and Frongillo, 2001a), health-related conditions (Gao, Scott, Falcon, Wilde, and Tucker, 2009; Holben, Barnett, and Holcomb, 2006; Kim, Kim, Shin, and Lee, 2011), social isolation (Dean and Sharkey, 2011; Lee and Frongillo, 2001a), and lack of transportation (Chung et al., 2012a) amongst others. For these reasons, food security policies and programs need to take into account the needs and wants of older adults and ensure that they are adequately represented in food security governance from the national to the local level, understood as the formal and informal rules and processes that lead to decisions regarding food security in different population subgroups (Candel, 2014; FAO, 2011; Pérez-Escamilla, 2012). To be able to accomplish this goal it is fundamental to understand how best to assess the experience of food insecurity among older adults.

Understanding food insecurity and how to address it among older adults is of great importance from different standpoints. First, according to the United Nations (UN, Department of Economic and Social Affairs, Population Division, 2015), the number of older adults (i.e. 60 years and

over) are projected to grow by 56%, from 901 million in 2015 to 1.4 billion in 2030. Hence, food insecurity among older adults is of major public health importance in the context of the global demographic transition due to the growing representation of older adults in most countries. Second, as societies age, it is relevant to consider that a substantial part of such subgroup will lack pensions or adequate financial resources, leading to specific challenges in acquiring healthful foods (Deeming, 2011; Keller, Dwyer, Edwards, Senson, and Edward, 2007; Lo, Chang, Lee, and Wahlqvist, 2012). Furthermore, empirical evidence indicates that the prevalence of food insecurity is particularly high among older adults (Lee and Frongillo, 2001a; Nord and Kantor, 2006; Quandt and Rao, 1999; Rivera-Marquez and Guerrero-Alcocer, 2006; Sharkey, Dean, and Johnson, 2011) and has particularly adverse nutritional and health consequences. For example, food insecurity has been associated with lower intakes of food energy and nutrients, lower skinfold thickness (Lee and Frongillo, 2001b), poorer overall health status (Holben, Barnett, and Holcomb, 2006), lower cognitive performance (Gao, Scott, Falcon, Wilde, and Tucker, 2009), higher risk of depression, and higher body mass index (Kim and Frongillo, 2007) among others. In addition, food insecure older adults have been reported to invest less in healthcare (Bhargava, Lee, Jain, Johnson, and Brown, 2012) and to show greater rates of non-adherence to medical treatments due to financial constraints (Bengle, Johnson, Johnson, and Lee, 2009).

Despite such evidence, there are few studies that have focused on policy relevant food insecurity measurement instruments applicable to geriatric populations (Vilar-Compte, Bernal-Stuart, Orta-Alemán,

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Ochoa-Rivera, and Pérez-Escamilla, 2014; Wolfe et al., 2003) with most empirical research simply using measurement scales designed for the general population. This may pose a challenge for policy makers, as scales for the general population may not measure accurately the food insecurity experience among older adults. Several countries have policies and programs targeted at assuring better access to food and financial resources among the older adults, but evaluations have shown mixed results (Duflo, 2003; Vilar-Compte and Ortiz-Blas, 2013). Whether this is an artifact driven by the lack of specific instruments to assess food insecurity among older adults remains unknown.

The first objective of this study was to perform a systematic literature review aimed at identifying how food insecurity has been measured in different countries and contexts among older adults, and to infer how such measurement approaches have potentially affected decision-making in nutrition policies and food security governance. To complement the literature review, the second objective was to conduct a more granular analysis based on Mexico's case. As in other countries, some national surveys in Mexico include experience-based food security scales (i.e. health survey, income and expenditure survey). Such scales are used, amongst other things, to evaluate programs targeted at improving food insecurity among older adults. Hence, from a food security governance perspective we seek to assess if such scales have the adequate psychometric properties to inform correctly such decision-making process. We seek to complement the literature review by assessing if the conclusions attained through the evaluations cited regarding older adults' programs in Mexico and their impacts on food security, are supported by a more specific psychometric testing analysis.

1. Methods

A systematic literature review was conducted following the steps suggested by Khan et al. (Khan et al., 2003) (Fig. 1). The specific question we sought to answer was: "How has food insecurity been measured among the geriatric population". We searched PubMed, Web of Science, EBSCO, and SCielo. No publication date restrictions were used; and the key words searched included combinations of the terms "food security", "food insecurity" and "elderly", "older adults, or "aging". Only original published research was included (i.e. reports of the grey literature and literature reviews were excluded); and the languages included were English and Spanish. Based on these criteria, 98 abstracts were retrieved; these were reviewed and discussed by 2 of the authors and 3 research assistants. After the initial abstract review, 18 articles were excluded because they studied populations younger than 60 years of age (i.e. not considered older adults), were not linked to the primary question we sought to answer or were literature reviews. The quality of the 80 remaining articles was systematically evaluated. We specifically evaluated whether the studies had important threats to their internal validity, lack of theoretical grounding, or inadequate operational definition of food insecurity. Based on these criteria 22 additional articles were excluded. The remaining 58 articles were synthesized.

For the second objective of the study we conducted a psychometric analysis of the Food Security Mexican Scale (EMSA). We specifically compared the psychometric reliability of the scale in households with and without older adults. Data from the National Income and Expenditure Survey (ENIGH 2014) was used for the analysis. ENIGH is a nationally representative cross-sectional survey collected by Mexico's

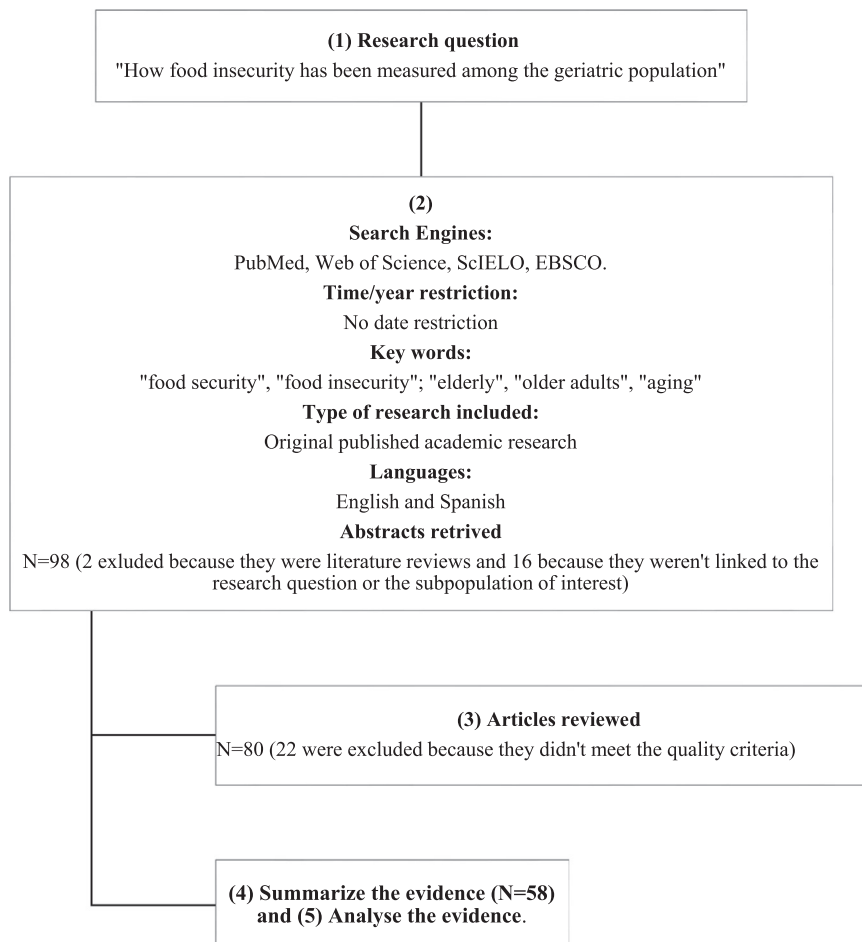


Fig. 1. Steps performed in the systematic literature review.

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