



A scoping review of anorexia of aging correlates and their relevance to population health interventions



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ARTICLE INFO

Article history:

Received 5 February 2016

Received in revised form

27 June 2016

Accepted 28 June 2016

Available online 1 July 2016

Keywords:

Appetite

Anorexia

Weight loss

Elderly

Aged

Review

ABSTRACT

Anorexia of aging (AA, *i.e.*, loss of appetite and/or reduction of food intake with aging) is an important public health issue. It leads to unintentional weight loss, which is an independent risk factor for morbidity and mortality among seniors. AA has mainly been studied from a biological perspective and regarded as a normal physiological consequence of aging, rather than a negative health outcome with underlying determinants. Some potentially modifiable correlates have however been found to be associated with this geriatric condition. Here, we conducted a scoping review of the literature to: 1) identify AA correlates, and 2) discuss their relevance to population health interventions. Our results indicate two main categories of AA correlates, namely, physiopathological and non-physiopathological. The first category relates to physiological dysfunctions, pathologies involving (or culminating in) biomarker dysregulation, and polypharmacy. These correlates are difficult to modify, especially through population health interventions. The second category, which contains fewer correlates, includes potentially modifiable public health targets, such as food-related properties, psychological, sociocultural, and environmental issues. We conclude that there are several AA correlates. Some of them are modifiable and could be targeted for development and implementation as appropriate population health interventions to prevent appetite loss and promote maintenance of adequate food intake in aging.

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1. Introduction

Aging has been associated with loss of appetite and/or reduced food intake in both cross-sectional (Briefel et al., 1995; Callen & Wells, 2005; Silver, Guillen, Kahl, & Morley, 1993) and longitudinal studies (Hallfrisch, Muller, Drinkwater, Tobin, & Andres, 1990; Sjogren, Osterberg, & Steen, 1994; Sorbye et al., 2008). This decline in appetite and/or food intake is a condition termed *Anorexia of aging* (AA; Landi et al., 2013; Muscaritoli et al., 2010; Morley, 1997). Its prevalence ranges from 23% to 62% in hospitalized seniors (Ahari & Kimigiar, 1997; Elmstahl & Steen, 1987; Guigoz, Vellas, & Garry, 1996) and may reach 85% in elderly nursing home populations (Ahmed & Haboubi, 2010; Guigoz, Lauque, & Vellas, 2002). The prevalence of this geriatric condition in free-living seniors (Inouye, Studenski, Tinetti, & Kuchel, 2007) varies from 5% to 25% (Ahmed & Haboubi, 2010; Donini et al., 2011; Guigoz et al., 1996, 2002; Landi et al., 2012).

AA usually leads to weight loss (Landi et al., 2000; Morley, 2007a), and losing weight, whether intentionally or not (Tayback, Kumanyika, & Chee, 1990), is an independent risk factor for institutionalization, morbidity, and all-cause mortality among free-living frail elders (Payette, Coulombe, Boutier, & Gray-Donald, 1999; Payette, Coulombe, Boutier, & Gray-Donald, 2000), seniors in assisted living facilities (Cartwright, Hickman, Perrin, & Tilden, 2006), geriatric rehabilitation settings (Cornali, Franzoni, Frisoni, & Trabucchi, 2005; Sullivan & Walls, 1994; Sullivan, Patch, Walls, & Lipchitz, 1990) or at home but receiving assistance (Landi et al., 2012). Numerous other adverse outcomes have also been associated with AA, such as functional impairment, reduced cognitive capacities, psychological distress and depression (Boer, Horst, & Lorist, 2012; Landi, Laviano, & Cruz-Jentoft, 2010), diminished immunocompetence (Chapman & Nelson, 1994), cachexia (Morley, 2001a), and poor overall quality of life (Bostick, Rantz, Flesner, & Riggs, 2006; Landi et al., 2010). Loss of appetite and/or reduction of food intake after 65 years of age are not desirable, owing especially to increased vulnerability to nutritional deficiencies (Chandra, Imbach, Moore, Skelton, & Woolcott, 1991) and malnutrition (Allaz, Bernstein, Rouget, Archinard, & Morabia, 1998) among seniors. All these associations highlight why AA is so often linked with slower gait speed, poorer endurance, decreased

mobility and exercise capacity (Morley, 2001a), lower muscle mass (*i.e.*, sarcopenia) and strength (*i.e.*, dynapenia: Boer et al., 2012; Muscaritoli et al., 2010) and, ultimately, frailty (Martone et al., 2013).

Based on current demographic transition, on deleterious consequences of AA and on its linkage with frailty (Martone et al., 2013), it is of public health relevance to identify modifiable correlates of this geriatric condition. Such information is needed to develop population health interventions aimed at preventing appetite loss and promoting the maintenance of adequate food intake during aging. An at-a-glance overview of the AA literature highlighted that many scientific efforts have been made to better understand the biological mechanisms involved in appetite loss with age, at the expense of identifying relevant and potentially modifiable correlates on which to build appropriate public health strategies. A scoping review of the literature was then performed to address this issue, with the objectives of: 1) identifying AA correlates, and 2) discussing their relevance to population health interventions.

2. Materials and methods

This scoping review was conducted according to the Arskey & O'Malley procedure (2005). Five stages were completed in agreement with the procedure: 1) formulation of research questions, 2) identification of relevant studies, 3) study selection, 4) data charting, and 5) collating, summarizing, and reporting the results. Because the purpose of this scoping review was also to discuss the relevance of identified correlates with respect to population health interventions, we added a sixth stage to address the issue (Levac et al., 2010).

2.1. Stage 1: formulation of research questions

We formulated two research questions: 1) What are AA correlates? and 2) Are these correlates modifiable and relevant to population health interventions?

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