



The silver sensory experience – A review of senior consumers' food perception, liking and intake



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ARTICLE INFO

Article history:

Received 11 December 2014
Received in revised form 20 August 2015
Accepted 21 August 2015
Available online 28 August 2015

Keywords:

Elderly
Chemical senses
Multisensory perception
Food liking
Food intake
Olfactory impairment
Aging

ABSTRACT

It is commonly assumed that sensory impairments occurring with age negatively affect older people's intake of foods in terms of both quality and quantity. This review discusses evidence published on the effects of age on sensory perception and the consequences for independently living seniors' perception, liking and intake of food products. Because of anatomical changes in all the senses involved in human food perception, on average seniors perceive a lower flavour intensity than younger adults, are less sensitive to changes in the flavour profile of foods, and show a decreased ability to discriminate between different intensity levels of flavour and/or taste attributes. However, despite these differences in their sensory perception of foods, young adults and seniors seem to differ less in their initial hedonic appraisal of food products. Nonetheless, more research is needed to determine whether multisensory enrichment of foods across different modalities may lead to increased food liking in seniors both with and without olfactory impairment. Although limited, the current evidence suggests that sensory performance may be positively associated with BMI or body weight in specific senior populations. In addition, seniors fail to show a decreased appreciation of an eaten food, thereby increasing the risk of a monotonous diet. Taken together, these findings highlight the need for appropriate interventions and/or foods to improve and maintain adequate quantity and quality of food intake among independently living seniors, and especially those with low sensory performance. Such interventions should be holistic rather than focused on one modality and may also incorporate hedonic modulators such as past experiences, affective factors and external cues, e.g. brand names, labels or food packaging. In interventions and product development, segmentation of the senior consumer market is strongly advised to identify more homogeneous subgroups in order to deal with the large heterogeneity between independently living seniors. It is concluded that one size of the silver food experience will most likely not fit all senior consumers!

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1. Introduction

Dietary intake among elderly people is an important modifiable factor contributing to health and well-being. With the growing number of seniors across the globe, the role of nutrition in maintaining health and quality of life in older age is of great interest to researchers, policymakers, healthcare providers and the food industry (Goldman, McKay, Mojet, & Kremer, 2014; Phillips, 2003). In general, seniors require the same levels of nutrients (protein and vitamin D) as younger adults, or even higher, depending on their health status (Bauer et al., 2013; Elmadfa & Meyer, 2008; van Staveren & de Groot, 2011). At the same time, energy requirements tend to decrease with age because of altered body composition and reduced physical activity, which is often accompanied by reduced appetite (Roberts & Rosenberg, 2006; Wilson & Morley, 2003). The consumption of nutrient dense foods is therefore recommended for seniors in order to prevent nutrient deficiencies and is thought to be one – among others – of the prerequisites for healthy ageing (Ford, Jensen, Hartman, Wray, & Smiciklas-Wright, 2013; Hodge, O'Dea, English, Giles, & Flicker, 2014). In practice however, food intakes in senior populations are commonly inadequate, in terms of both quantity and quality, and, even at high energy intake levels, micronutrient intakes are often below what is recommended (de Groot, van den Broek, & van Staveren, 1999; Marshall, Stumbo, Warren, & Xie, 2001; Nicolas et al., 2000).

On the one hand, an inadequate food intake among seniors over a prolonged period of time in terms of a positive energy balance has been associated with a strong increase in the prevalence of overweight and obesity in the last decades (Han, Tajar, & Lean, 2011; Houston, Nicklas, & Zizza, 2009). On the other hand, an inadequate food intake in terms of negative energy balance may lead to unintentional weight loss. Current estimates show that 5–10% of independently living seniors suffer from undernutrition, and among homecare recipients the prevalence may rise to 35% (de Groot et al., 2002; Schilp et al., 2012; Wallace & Schwartz, 2002). Both types of malnutrition may contribute to negative health consequences in this population, such as loss of skeletal muscle mass, decreased bone mass, impaired immune function, cognitive decline, poor wound healing, increased hospital admissions,

delayed recovery from injury, and increased morbidity and mortality (Schiffman, 2009; van Staveren & de Groot, 2011).

It is commonly assumed that impairments in olfactory and gustatory function occurring with age contribute to an altered perception and liking of foods, and consequently may impact on the intake of foods in terms of both quality and quantity (Aschenbrenner et al., 2008; Murphy, 2008; Schiffman & Graham, 2000). An impaired sensory perception of foods may on the one hand promote the consumption of salt, sugar and calories to compensate for the lack of sensory stimulation from food (Duffy, Backstrand, & Ferris, 1995), or on the other hand may reduce interest in food, leading to a monotonous diet and/or to an overall reduction in food intake (Sanders, Ayers, & Oakes, 2002). These very often observed, initially slight alterations in dietary patterns may in the long run increase susceptibility to malnutrition and diminish quality of life (Croy, Nordin, & Hummel, 2014; Fukunaga, Uematsu, & Sugimoto, 2005; Pelletier, 2007). However, a previous critical review of the literature challenged these assumptions. Mattes highlighted the need for more evidence on the clinical relevance of independent effects of age on chemosensory function taking into account other risk factors including health status, medication use, dental status and environmental factors (e.g. smoking). Furthermore, he noted that changes in chemosensory function may alter the selection and intake of specific foods, but that our understanding of their possible effects on nutrient status and BMI is still very limited (Mattes, 2002).

To improve the quality and quantity of food intake among seniors, public health providers need a better understanding of successful strategies to maintain seniors' interest in food and to aid them in meeting their nutritional targets. In addition, the food industry needs to deal with the effects of age on the perception and liking of their foods to be able to develop and offer food products that meet the needs and wants of the senior consumer. Ideally, when food products are better aligned with seniors' requirements, these specific foods will be more often consumed and thereby contribute to an adequate nutrient intake, which in turn is beneficial for health and well-being (Hawkins & Mothersbaugh, 2009). However, despite a large body of evidence regarding the relations between food perception, liking and intake among children and young adults (Birch & Fisher, 1998; Drownowski, 1997;

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