



Food neophobia is related to factors associated with functional food consumption in older adults



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ARTICLE INFO

Article history:

Received 3 March 2014

Received in revised form 9 November 2014

Accepted 9 November 2014

Available online 18 November 2014

Keywords:

Functional foods

Food neophobia

Older adults

Questionnaire

ABSTRACT

An abundance of functional food products with specific bioactive ingredients have emerged to target prevention and management of diet-related chronic disease. Older adults can particularly benefit from functional foods due to their multiple health concerns and growing proportion of the Canadian population. However, little is known about older adults' acceptance of and willingness to consume functional foods. The purpose of this study was to relate the degree of food neophobia to factors associated with functional food consumption in older adults. A total of 200 community dwelling older adults (70.8 ± 7.17 years old) completed a researcher-administered questionnaire exploring functional food consumption, attitudes towards functional foods, general health, medical and demographic data, and degree of food neophobia, which was assessed through completion of the 10-question Food Neophobia Scale (Pliner & Hobden, 1992). Cronbach's alpha for the Food Neophobia Scale was 0.85, indicating a high degree of internal reliability. Participants were divided into food neophobia score groups according to tertiles (low 10–23 ($n = 68$), medium 24–31 ($n = 67$), high 32–63 ($n = 65$) degrees of food neophobia). Participants with a higher degree of food neophobia were less willing to try a new functional food ($p = 0.05$) and those in the high food neophobia group reported the greatest number of barriers to consuming functional foods ($p < 0.05$). Among the barriers to functional food consumption, availability was more frequently identified by participants within the high food neophobia group ($p = 0.05$). The high food neophobia group also had a greater number of participants who reported taking prescription medications regularly ($p = 0.04$) and worried about functional foods interacting with their medications ($p = 0.05$). There were no other differences in factors related to consumption of functional foods or demographics among food neophobia groups. This research demonstrates that food neophobia is related to factors associated with functional food consumption and rationalizes the consideration of food neophobia in the advance of functional foods.

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Introduction

The older adult population is rapidly growing, with estimates that the proportion of Canadians 65 years of age and older will nearly double from 13.2% in 2005 to 24.5% in 2036 (Turcotte & Schellenberg, 2007). The United Nations projects similar growth rates for the global older adult population, indicating that this trend is not unique to Canada (Martins, Yusuf, & Swanson, 2012). This changing population distribution has important implications in terms of both individual health and associated healthcare. With an increase in age come increased health concerns, many of which

are chronic diet-related diseases, such as cancer, cardiovascular disease, and type 2 diabetes (Turcotte & Schellenberg, 2007). Results from the Canadian Community Health Survey found that 81% of community-dwelling adults 65 years of age or older had at least one diagnosed chronic condition and 33% had three or more, with the average number of conditions increasing with age (Gilmour & Park, 2006). Altogether, chronic diseases account for 67% of total direct costs in healthcare and 60% of indirect costs (Public Health Agency of Canada, 2006), representing a huge economic burden and contributing to the increased per capita health expenditure observed in the older adult demographic (Hogan & Hogan, 2002). This places impetus on developing preventative strategies to decrease related risk factors.

Functional foods are evolving as a potential chronic disease preventative strategy as they are purported to have physiological

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benefits and/or reduce the risk of chronic disease beyond basic nutritional functions (Hasler & Brown, 2009). A plethora of functional food products have emerged in recent years (Vergari, Tibuzzi, & Basile, 2010) that have specific bioactives added for their health benefits, contain an increased density of nutrients, and provide convenience to consumers (Klimas, Brethour, & Bucknell, 2008). This is particularly important given the many changes that accompany aging, including medical, psychological, social and environmental, that all have the potential to impact nutritional status (Keller, 2007; Roberts, Wolfson, & Payette, 2007). Furthermore, the health benefits of functional foods have also been studied specifically in older adults. Examples include phytosterol-containing functional foods which have been shown to reduce LDL-cholesterol to relate to a reduced cardiovascular disease risk (Rudkowska, 2010) and probiotic-containing functional foods which have been shown to modulate the intestinal microbiota in the elderly (Rampelli et al., 2013).

Like the older adult demographic, the functional food industry is growing immensely, with annual growth rates of 8–14% and global market estimates as high as \$167 billion (Agriculture and Agri-Food Canada, 2009). Unfortunately, research into consumer attitudes towards, and acceptance of, functional foods has not kept pace with industry growth, and this has particularly been noted for the older adult demographic (Paulionis, 2008).

Assessment of attitudes towards functional foods and understanding the barriers to their consumption can inform the development of strategies to increase acceptance and incorporation of functional foods by older adults (Frewer, Scholderer, & Lambert, 2003). Related to the idea of acceptance of new foods is the concept of food neophobia, which is described as the “reluctance to eat and/or avoidance of novel foods” (Pliner & Hobden, 1992). Since functional foods are a novel category of food, food neophobia may negatively influence consumption of functional foods. Previous research in European populations has indicated that older adults may have a greater degree of food neophobia than younger age groups (Bäckström, Pirttilä-Backman, & Tuorila, 2003; Tuorila, Lähteenmäki, Pohjalainen, & Lotti, 2001). Bäckström et al. (2003) suggest that this may be due to a reluctance to seek change and accept technological developments, such as those utilized in the production of functional foods. Related to new food technologies, perceived risks may also act as barriers to functional food consumption (Frewer et al., 2003). Finnish focus group participants expressed a duality between the disease risks that functional foods are posed to reduce and risks related to the unknown effects and safety of new functional foods (Niva, 2007). By identifying the risks and safety concerns older adults have with respect to functional foods, appropriate communication strategies can be established to distinguish real versus perceived risks. This can help to ensure appropriate incorporation of functional foods into older adults' diets.

Since consumers are not homogenous in terms of purchase intentions and attitudes towards functional foods, it is imperative to conduct research within specific population groups. Research on food neophobia and older adults is minimal and is primarily limited to European populations, indicating a need for research in other populations such as Canadians. The purpose of this study was to explore the role of food neophobia in the context of functional foods in older adults in Canada. To assess food neophobia, the previously validated 10-question food neophobia scale (FNS) developed by Pliner and Hobden (1992) was used. The objectives of this study were to assess the degree of food neophobia in a sample of older adults and to compare food neophobia scores among factors related to functional food consumption. Specifically, it was hypothesized that those with a higher degree of food neophobia would (1) be less likely to consume functional foods, (2) be less willing to try a new functional food, (3) perceive more barriers to

functional food consumption and (4) perceive more risks to functional food consumption.

Materials and methods

Participants

A total of 200 community-dwelling adults ≥ 60 years old who were not using any meal-assisted services (e.g. Meals on Wheels) and who were cognitively able to provide informed consent and complete the questionnaire were recruited to participate in the study. Participants were recruited from Guelph, Ontario, Canada and surrounding communities at events for seniors (26% of participants); retirement communities and senior centers (24.5%); through friends, family, and word of mouth (18.5%); newspaper and newsletter advertisements (11%); emails to University of Guelph campus colleges (8%); recruitment flyers (10%); and undisclosed locations (2%). The study was advertised as a “Food Survey Study” to minimize recruitment bias towards functional foods. Participants were screened via phone, email, or in person, depending on initial contact method to ensure that all eligibility requirements were met. The research protocol received approval from the University of Guelph Research Ethics Board (REB#10SE012).

Data collection

Data was collected by means of a researcher-administered questionnaire completed at the Human Nutraceutical Research Unit (HNRU) at the University of Guelph. One-hour appointments were booked to allow for extensive interaction with participants and written consent was obtained from all study participants prior to completing the questionnaire.

The study questionnaire was part of a larger, comprehensive questionnaire designed to explore factors related to functional food consumption among older adults. A combination of open- and close-ended questions gathered qualitative and quantitative data regarding consumption of functional foods (current consumption, willingness to try a new functional food), barriers to functional food consumption (yes or no to specific barriers and a tally of the yes responses), and perceived risks (confidence in the safety of functional foods, perception of risks involved, specific risks) as they relate to functional foods. Food neophobia was assessed with completion of the FNS (Table 1) (Pliner & Hobden, 1992), which contains 10 statements rated using a 7-point Likert scale ranging from “strongly disagree” to “strongly agree”. The questionnaire also collected information about participant medical, lifestyle and demographic characteristics (age, gender, education, income).

Laminated colored information sheets were provided to assist participants in completing the questionnaire. The information sheets included the definition of a functional food, and pictures and descriptions of 50 different functional food examples, which encompassed various food forms (beverage, breads, cereal, cheese, cookies, crackers, eggs, granola bars, margarine, pasta, salad dressing, yogurts) and common bioactive ingredients (antioxidants, dietary fiber, omega-3 fatty acids, plant sterols, prebiotics, probiotics). A functional food was defined in partial accordance with the Health Canada definition as a food that is “similar in appearance to, or may be, a conventional food, is consumed as part of a usual diet, and is demonstrated to have physiological benefits and/or reduce the risk of chronic disease beyond basic nutritional functions” (Health Canada, 1998). However, the current study excluded conventional foods to limit the definition of a functional food to foods that had undergone processing or manipulation to add or increase the level of a bioactive.

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