Appetite 96 (2016) 333–346

Contents lists available at ScienceDirect

Appetite

journal homepage: www.elsevier.com/locate/appet

How French subjects describe well-being from food and eating habits? Development, item reduction and scoring definition of the Well-Being related to Food Questionnaire (Well-BFQ©)

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ARTICLE INFO

Article history:
Received 12 March 2015
Received in revised form
11 September 2015
Accepted 16 September 2015
Available online 25 September 2015

Keywords:
Well-being measurement
Eating habits
Food-related questionnaire
Questionnaire development
Qualitative research
Subject-reported outcomes

ABSTRACT

Providing well-being and maintaining good health are main objectives subjects seek from diet. This manuscript describes the development and preliminary validation of an instrument assessing well-being associated with food and eating habits in a general healthy population. Qualitative data from 12 groups of discussion (102 subjects) conducted with healthy subjects were used to develop the core of the Well-being related to Food Questionnaire (Well-BFQ). Twelve other groups of discussion with subjects with joint (n = 34), digestive (n = 32) or repetitive infection complaints (n = 30) were performed to develop items specific to these complaints. Five main themes emerged from the discussions and formed the modular backbone of the questionnaire: "Grocery shopping", "Cooking", "Dining places", "Commensality", "Eating and drinking". Each module has a common structure: items about subject's food behavior and items about immediate and short-term benefits. An additional theme – "Eating habits and health" – assesses subjects' beliefs about expected benefits of food and eating habits on health, disease prevention and protection, and quality of ageing. A preliminary validation was conducted with 444 subjects with balanced diet; non-balanced diet; and standard diet. The structure of the questionnaire was further determined using principal component analyses exploratory factor analyses, with confirmation of the sub-sections food behaviors, immediate benefits (pleasure, security, relaxation), direct short-term benefits (digestion and satiety, energy and psychology), and deferred long-term benefits (eating habits and health). Thirty-three subscales and 14 single items were further defined. Confirmatory analyses confirmed the structure, with overall moderate to excellent convergent and divergent validity and internal consistency reliability. The Well-BFQ is a unique, modular tool that comprehensively assesses the full picture of well-being related to food and eating habits in the general population.

1. Introduction

A standard unique definition of well-being is lacking (Dodge, Daly, Huyton, & Sanders, 2012). Amongst the many definitions that are currently available, a consensus exists on the fact that well-being is a multidimensional and complex concept, referring to a psychological state and a somatic state that involves physical, emotional, social, spiritual and intellectual aspects (Adams, Bezner, & Steinhardt, 1997; McGillivray & Clarke, 2006; Roscoe, 2009). Well-being is the result of the balance between the psychological, social and physical resources of an individual and his/her psychological, social and physical challenges (Dodge et al., 2012). It

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http://dx.doi.org/10.1016/j.appet.2015.09.021
0195-6663/

involves prosperity, happiness and health for others (Boarini, Johansson, & d'Ercole, 2006). It is also the result of the presence of positive feelings and pleasant emotions, the absence of negative feelings and emotions, a satisfying life, self-fulfillment and positive functioning (Andrews & Withey, 1976; Diener, 2000; Diener, Scollon, & Lucas, 2003; Frey & Stutzer, 2002; Ryff & Keyes, 1995). Recently, the World Health Organization (WHO) updated the definition of mental health as "a state of well-being […]" (WHO., 2014c). The positive dimension of mental health had been previously stressed in the WHO's definition of health as contained in its constitution, i.e. "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

A close link exists between pleasant emotions and food; in particular, the pleasure, or its absence associated with eating which could affect individuals' well-being (Kahneman, Schkade, & Fischler, 2010; Krueger, Kahneman, & Fischler, 2009). The pleasure of eating is often reduced to simple sensorial and taste dimensions but it is in actuality a much more complex phenomenon. Indeed, pleasure attributed to eating extends beyond the simple pleasure linked to the food itself, and can often also include environmental parameters such as the physical place and the social environment where meals are eaten (Barrett, Mesquita, Ochsner, & Gross, 2007). These parameters may or may not enhance the pleasure of eating further. In social sciences, the pleasure of eating also incorporates the concepts of appetence, personal preferences, inclinations, expectations and even addiction (Dupuy & Poulain, 2012).

The contribution of food towards health maintenance and the prevention of chronic diseases no longer needs to be proven (Nutrition.gov, 2014; WHO., 2014a). A healthy diet is essential for good health and for the body to function properly and efficiently and to obtain energy. Being in good health and ageing well, in addition to acquiring well-being through one's diet, has become an essential research goal for more and more people (Cohen & Babey, 2012). This is reflected by their permanent search in adopting both healthy diet and healthy lifestyle. Similarly, the interest of governing bodies and agencies as well as food production and processing industries in how diet contributes to health and well-being is growing (Ministère de l'Agriculture, 2009). More recently, the European Food Safety Authority (EFSA) is acknowledging an increasing number of food and health-related claims.

To screen food related products and support these claims, well-defined endpoints and appropriate validated questionnaires are essential; evidence of patient input during the questionnaire development is also essential to ensure its appropriateness and relevance to the future users (FDA, 2009). To date, most of the existing questionnaires in nutrition have been developed for marketing purpose, or subject surveys. Other questionnaires are disease-specific, mainly focusing on symptoms. While validated in health, these questionnaires are likely to be not sensitive enough in general populations who are not necessarily ill. Many generic questionnaires allowing self-evaluation of well-being have been developed, exploring one or more of the dimensions of this concept. Examples include the Quality of Well-being Scale (Kaplan, Anderson, & Ganiats, 1993), the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), the BBC Well-being Scale (Kinderman, Schwannauer, Pontin, & Tai, 2011). Other food-specific questionnaires exist like the Food Benefits Assessment (FBA) (Guyonnet et al., 2008), the Food Choice Questionnaire (FCQ) (Steptoe, Pollard, & Wardle, 1995), the Food Expectancy Questionnaire (FEQ) (Reid, Bunting, & Hammersley, 2005), the Qualcibo (Schunemann et al., 2010) and the recent WellSense Profile (King et al., 2015). However, they either measure nutrition from a quality of life perspective (Qualcibo), or are interesting for population characterization but not as a well-being outcome (FCQ, FEQ), or only partially capture well-being related to food (WellSense Profile focuses on well-being from food products only; FBA has very few items about well-being). No questionnaires currently exist that are able to measure comprehensively the concept of well-being in the specific context of food and eating habits. Most of these questionnaires have been developed by experts in nutrition and based on review of the literature, and/or participants completing survey questions. Only the FBA and the Qualcibo have been developed based on subjects' input.

Many studies have shown close links between well-being and good health, a better social, family and professional life, and increased productivity (Diener & Seligman, 2004; Lyubomirsky, King, & Diener, 2005 ; Rozin, Fischler, Imada, Sarubin, & Wrzesniewski, 1999). However, a qualitative approach aimed at documenting people's definition and perception of well-being in the specific context of food has been lacking. Only a recent study reported evidence of the association between food-related well-being and physical health, as well as the emotional and more hedonic aspects for subjects (Ares, De Saldamando, Gimenez, & Deliza, 2014).

To address these recommendations and needs, we designed the Well-being and Food Questionnaire (Well-BFQ), a new instrument to evaluate wellbeing in the context of diet in healthy population. The Well-BFQ is a generic innovative measure that provides insight in the way a person links food to wellbeing. An iterative and thorough qualitative phase including exploratory and comprehension testing steps with a large number of subjects was performed in a general healthy population; a preliminary validation phase consisting of item reduction and scoring definition was then performed. The herein manuscript describes these phases.

2. Material and methods

2.1. Scientific committee

A scientific committee was established at the onset of the project to provide methodological and scientific support, and expertise at the milestones of the project. This committee included 9 members, each with expertise with one or more of the following areas: psychology and sociology (including quantitative and qualitative research, questionnaire development, subject sciences), biology applied to nutrition and nutrition. This diversity ensured the appropriateness and robustness of the methodology and the relevance of the decisions taken within the project in line with the interests of the nutrition community.

2.2. Development of the modules of the questionnaire

Participants. Two hundred French subjects were recruited to participate to the groups of discussions. Subjects were selected according to 4 age groups: 18–30 years old; 31–50, 51–64 and 65 and older, with a balance between men and women. Subjects were recruited in Lyon (France) and its suburbs by an independent recruiting agency. To be eligible, all subjects should not have had a food-related pathology (eating disorders), a pathology requiring a food regimen, and/or digestive or intestinal conditions requiring treatment. Two subgroups of subjects were defined. One subgroup consisted of healthy subject profiles: 1) strict healthy subjects, characterized by a body mass index (BMI) ranging from 18.5 to 30, and no treatment prescribed for any diseases, no prescribed slimming or restrictive diet, no weight loss-targeted dietary supplement, should not be pregnant and/or breast-feeding; 2) general healthy subjects, characterized as persons in good health with a BMI $\geq$ 18.5. The second subgroup consisted of subjects with