Appetite 120 (2018) 6–15

Contents lists available at ScienceDirect

Appetite

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

The Self-Efficacy Scale for Adherence to the Mediterranean Diet (SESAMeD): A scale construction and validation

Esther Cuadrado [a, b, *], Tamara Gutiérrez-Domingo [a, b], Rosario Castillo-Mayen [a, b], Bárbara Luque [a, b], Alicia Arenas [a, c], Carmen Taberneroa [a, d, **]

[a] Instituto Maimónides de Investigación Biomédica de Córdoba, Spain
[b] University of Cordoba, Spain
[c] University of Seville, Spain
[d] University of Salamanca, Spain

ARTICLE INFO

Article history:
Received 15 December 2016
Received in revised form
18 July 2017
Accepted 14 August 2017
Available online 17 August 2017

Keywords:
Self-efficacy
Diet adherence
Mediterranean diet
Health
Scale construction and validation

ABSTRACT

The Mediterranean diet has several beneficial impacts on health. Self-efficacy may be crucial for adhering to the diet. This study set out to develop a reliable and valid instrument that would enable measurement of the extent to which people are confident about their ability to adhere to the Mediterranean diet: the Self-Efficacy Scale for Adherence to the Mediterranean Diet (SESAMeD). The study was carried out in two stages. In Stage 1, a pilot questionnaire was administrated to 170 students to reduce and refine items. In Stage 2, the validity and reliability of the scale were evaluated among a sample of 348 patients who have suffered from cardiovascular disease. After items reduction, the scale consisted of 22 items. The factor structure of SESAMeD was tested across exploratory factorial analysis and confirmatory factorial analysis, with both analyses confirming a robust adjustment for the bi-factorial structure. The two factors identified were (a) self-efficacy for the avoidance of determined unhealthy foods not recommended in the Mediterranean diet and (b) self-efficacy for the consumption of determined healthy foods recommended in this diet. The pattern of relations between the SESAMeD and the SESAMeD subscales and other different psychological variables (outcome expectancies, motivation, affective balance, and life satisfaction) supported the validity of the bi-factorial structure and provided strong evidence of construct validity. The instrument can help health professionals and researchers to assess patients' confidence of their ability to adhere to the Mediterranean diet, a psychological variable that may affect adherence to this healthy food consumption pattern.

1. Introduction

The traditional Mediterranean diet (MeD) is a healthy dietary pattern coming from the culinary culture of the population bordering the Mediterranean Sea. This diet, which has been accepted as one of the healthiest food consumption patterns (Maiz & Balluerka, 2016), is a highly varied diet characterized by a high consumption of vegetables, fruits, legumes, cereals, and nuts; a contribution of culinary fat mainly in the form of olive oil; moderate consumption of fish and dairy; and a low intake of red wine and meats. The MeD presents an optimum balance among the different foods and dietetic components (Carbajal & Ortega, 2001), and it is characterized by low saturated fat intake, high intake of unsaturated fatty acids (with olive oil, nuts, or bluefish for example), and high antioxidant intake, improving the cellular health (Maiz & Balluerka, 2016). Accordingly, the variety of foods intake of the MeD, represented by an adequate balance between the different foods, has several beneficial impacts on mental and physical health (Muñoz, Fíto, Marrugat, Covas, & Schröder, 2009; Sánchez-Villegas, Henriquez, Bes-Rastrollo, & Doreste, 2006) and on chronic diseases and mortality (Estruch et al., 2006; Salas-Salvadó et al., 2010; Sofi, Abbate, Gensini, & Casini, 2015; Sofi, Cesari, Abbate, Gensini, & Casini, 2008). An inverse association has been shown between adherence to the Mediterranean diet and overall mortality (Trichopoulou, Bamia, & Trichopoulos, 2009),

* Corresponding author. University of Cordoba, Department of Psychology, Calle San Alberto Magno s/n, 14071 Córdoba. Spain.
** Corresponding author. University of Salamanca, Department of Social Psychology, Campus Miguel de Unamuno, 37007, Salamanca, Spain.
E-mail addresses: esther.cuadrado@uco.es (E. Cuadrado), carmen.tabernero@usal.es (C. Taberneroa).

http://dx.doi.org/10.1016/j.appet.2017.08.015
0195-6663/

neurodegenerative diseases (Féart et al., 2009; Lourida et al., 2013; Scarmeas et al., 2009), cardiovascular risks (Buckland et al., 2009; Estruch et al., 2006; Martínez-González et al., 2009; Mente, de Koning, Shannon, & Anand, 2009), metabolic syndromes (Kastorini et al., 2011), and type 2 diabetes (Salas-Salvadó et al., 2010), among afflictions.

Nevertheless, it is necessary to differentiate the traditional MeD from the current MeD. The dietary intakes of populations bordering the Mediterranean Sea have changed over the last several decades, with the adopting of a pattern of ingestion more typical of northern European society. Those modern Mediterranean patterns of consumption, contrary to the traditional MeD, include high consumption of meat and animal fat, to the detriment of vegetables, legumes and fruits; moreover, the consumption of processed and precooked foods (with high levels of saturated and trans fats) at the expense of fresh ones has also increased in the current diet of Mediterranean populations (Márquez-Sandoval, Bulló, Vizmanos, Casas-Agustench, & Salas-Salvadó, 2008). This dietary change from the traditional and healthy MeD to a less healthy and modern pattern of consumption among populations bordering the Mediterranean Sea shows the importance of increased adherence to the MeD.

For dietary intervention to succeed, strong adherence to the diet is required by patients and participants (Downer et al., 2016). Nevertheless, the food preferences of individuals often make changes in dietary patterns difficult, and dietary interventions often have low adherence (Douketis, Macie, Thabane, & Williamson, 2005; Downer et al., 2016). Food choices of individuals are usually determined by taste and preference rather than by considerations of which foods are healthy (Food Marketing Institute, 1997; Nestle et al., 1998). And this statement is even truer for children, who reject foods they do not like more consistently than adults (Nestle et al., 1998). Nevertheless, food preference and food consumption in adults may have a not-so-direct link (Nestle et al., 1998). Self-efficacy may have a relevant influence on food consumption, by mediating and moderating the relation that food preferences have with food consumption. Research about self-efficacy has demonstrated that, when people lack confidence about their own ability to perform a particular behavior, they are very unlikely to carry out that behavior (Bandura, 2006). In this sense, the confidence people have in their ability to adhere to the MeD (self-efficacy for adherence to the MeD) may be crucial for adhering and being faithful to the MeD and thereby improving their health. Accordingly, it has been demonstrated that healthy nutrition behavior is predicted by self-efficacy beliefs regarding adherence to the diet (Renner & Schwarzer, 2005): the more individuals perceive that they are able to adhere to the diet, the healthier their nutritional behavior is. In the same way, Warziski, Sereika, Styn, Music, and Burke (2008) have demonstrated that self-efficacy regarding the ability to change eating habits has a positive impact on adherence to the diet and weight loss. Moreover, individuals' high self-efficacy levels on making healthier choices have a direct effect on nutrition (Anderson, Winett, & Wojcik, 2007). Savoca and Miller (2001) have found that dietary self-efficacy acts as a mediator between favorite foods and food selection and eating patterns. Nevertheless, although there are different instruments to measure adherence to the MeD (Bach et al., 2006; Schröder et al., 2011), to our knowledge, there is no instrument to measure self-efficacy on adherence to the MeD.

This study set out to develop a reliable and valid instrument that would enable measurement of the extent to which people are confident about their ability to adhere to the MeD. The construct reliability and validity of the developed scale—called the Self-Efficacy Scale for Adherence to the Mediterranean Diet (SESAMeD)—will be tested, and the relationship between the SESAMeD and other variables will be evaluated in order to test the external validity of the scale. The instrument is aimed at informing health professionals and researchers about patients' confidence of their ability to adhere to the MeD, a psychological variable that may affect such adherence.

1.1. Self-efficacy to adhere to the Mediterranean Diet: Concept, measurement, and related variables

Adherence to the MeD can be defined as the conformity of individuals to the traditional Mediterranean dietary pattern (Sofi et al., 2008). This dietary pattern is represented by (a) the consumption of specific healthy components considered to be part of this diet, such as olive oil, fruits, vegetables and legumes, fish, nuts, and seeds, and a moderate intake of red wine during meals on the one hand; and, on the other hand, (b) the avoidance of specific foods presumed not to be part of the MeD, such as red and processed meats and dairy products (Sahyoun & Sankavaram, 2016; Sofi et al., 2008). We expected that the confidence individuals have about their ability to adhere to the MeD would be composed of two different types of self-efficacy, which correspond to those two different aspects of the adherence to the MeD. As such, we expected self-efficacy for adherence to the MeD to be a bidimensional construct. In accordance with this presumption, we elaborated our SESAMeD instrument with two different subscales: one related to the self-efficacy individuals have for their ability to avoid specific foods considered not to be part of the traditional MeD (subscale entitled SESAMeD Part 1), and the other related to the self-efficacy individuals have for their ability to consume different specific healthy foods presumed to be part of the MeD (SESAMeD Part 2).

As we have pointed out before, health beliefs, such as self-efficacy to adhere to a healthy diet and outcome expectancies, predict healthy nutrition behaviors (Anderson et al., 2007; Renner & Schwarzer, 2005). Several researchers have found that self-efficacy regarding healthy nutrition correlates with outcome expectancies and that both variables predict nutrition behaviors (Anderson et al., 2007; Renner & Schwarzer, 2005). In this sense, Anderson et al. (2007) have found self-efficacy on nutrition to be positively related with positive outcome expectations, and negatively with negative outcome expectations. Accordingly, we expected to find a positive correlation between the SESAMeD (and the two subscales of the SESAMeD) and positive outcome expectancies, such as weight loss, as well as a negative correlation between the SESAMeD (and the two subscales) and negative expectancies, such as being bored with eating foods imposed by the diet.

Another variable potentially connected to adherence to the diet is framed in self-determination theory (SDT). According to SDT, people need to adopt a sense of autonomy and competence in order to internalize, integrate and, subsequently, self-regulate and sustain healthy behaviors (Deci & Ryan, 2000; Ryan & Deci, 2000). As such, as has been pointed out (Ryan, Patrick, Deci, & Williams, 2008), a great adherence to the diet, which would be maintained in the long term, is promoted by autonomous, intrinsic motivation (when patients are inherently motivated by the diet and endorse the values of the healthier dietary pattern), but not by controlled motivation, such as introjected regulation (when individuals act in order to receive approval or praise or to avoid disapproval or feeling guilty) or external motivation (in which people are moved to get external rewards). Moreover, autonomy produces a gain in the sense of competence or self-efficacy (Ryan et al., 2008); and, as such, intrinsic motivation and self-efficacy would be positively correlated. In this sense, self-efficacy has been positively related to intrinsic motivation, but not to extrinsic motivation (Walker, Greene, & Mansell, 2005). As a result, we expected intrinsic motivation to be positively correlated with the SESAMeD, and controlled