



Compensatory beliefs, nutrition knowledge and eating styles of users and non-users of meal replacement products



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ABSTRACT

Meal replacement products (MRPs) are used to regulate body weight, but the underlying eating behavior-related characteristics of MRP consumers are unknown. The study was based on an online survey of 490 women (221 who consume MRPs and 269 who do not) in Switzerland. Nutrition knowledge of calories, balanced meal composition and eating styles (restrained, emotional, external eating, overeating tendencies) were measured. In addition, compensatory beliefs regarding the effects of MRPs were assessed. The results showed that consumers of MRPs believed more strongly that MRPs can compensate for overeating, and that health behaviors key to successful weight regulation, such as physical exercise, do not have to be implemented when MRPs are consumed. Using binary logistic regression modeling, age, weight goal, compensatory beliefs regarding overconsumption, nutrition knowledge related to balanced meal composition, restrained eating and overeating tendencies were significant predictors of MRP consumption during the previous year. It was found that MRPs might be used as a license to indulge in palatable food, based on the perception that they can compensate for calorie overconsumption. Furthermore, they might help people with restraint eating tendencies and those who regularly overeat to compensate for overeating episodes and maintain dietary goals, even after excess food intake. Whether this approach is successful remains to be explored in future studies.

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1. Introduction

For decades, millions of people in Western societies have been preoccupied with losing weight. The weight loss market offers a vast array of related products and services, such as books, commercial weight loss programs or dietary supplements to cater people's desire for successful weight loss. One such product line is meal replacement. Meal replacement products (MRPs) are consumed instead of a meal, they are portion-controlled, and their advertisements promise quick and easy weight loss. The first generation MRPs were unpalatable, and people's compliance with the dietary regime was thought to be low. Today, MRPs are considerably more attractive in terms of taste and form of application, and thus compliance with MRP-based dietary interventions has been reported to be high (Davis et al., 2010). Some researchers recommend MRPs for weight loss interventions (e.g. Shikany, Thomas,

Beasley, Lewis, & Allison, 2013); however, their effectiveness is controversially discussed (Heymisfield, van Mierlo, van der Knaap, Heo, & Frier, 2003; Lowe, Butryn, Thomas, & Coletta, 2014; Rothacker, Staniszewski, & Ellis, 2001; Shikany et al., 2013). One problem is that ambiguous evidence exists regarding whether or not participants compensate for lower energy intake by eating more calories or larger portions at the next meal(s) (Heymisfield et al., 2003; Levitsky & Pacanowski, 2011; Markey, Le Jeune, & Lovegrove, 2015; Rolls, Pirraglia, Jones, & Peters, 1992). Such compensatory behavior might be initiated by changes in physiological conditions (e.g., increased hunger), or might be driven by convictions such as compensatory beliefs. The prevalence of compensatory beliefs related to MRPs was not previously considered, although the associated behaviors of biased perceptions regarding the compensatory effect of MRPs could prevent successful weight regulation. In general, there is a lack of knowledge about the eating behavior of people who use MRPs as part of their weight management program. Together with their underlying beliefs regarding MRPs, their nutrition knowledge and eating styles might not only be relevant factors in the decision to use such products, but could also determine weight-regulation success.

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1.1. Compensatory beliefs regarding meal replacement products

Weight regulation can be challenging for people, and maintaining weight loss is often unsuccessful in the long term (Madigan, Daley, Kabir, Aveyard, & Brown, 2015; Williams, Germov, & Young, 2007). Dieting individuals experience a mental conflict between the pleasure of indulging in palatable food and their long-term goal of weight regulation (Stroebe, Mensink, Aarts, Schut, & Kruglanski, 2008). Some people resolve this “guilty-pleasure” dilemma (Giner-Sorolla, 2001) by using certain beliefs to justify their unhealthy behavior. These beliefs are based on the assumption that unfavorable eating behaviors can be compensated for or “neutralized” by healthy behaviors such as going to the gym (Knäuper, Rabiau, Cohen, & Patriciu, 2004; Poelman, Vermeer, Vyth, & Steenhuis, 2013). The spontaneous formation of compensatory beliefs when confronted with tempting foods is a strategy for coping with food temptations, which is commonly followed by individuals allowing themselves to indulge (Kronick & Knäuper, 2010).

Previous researchers have proposed scales to measure compensatory beliefs related to various health behaviors (Knäuper et al., 2004) or to dietary behavior specifically (Poelman et al., 2013). In the present study, we adopted this approach, but in contrast to previous studies, the compensatory behavior in the present study is based on MRP consumption. In particular, the use of MRPs might be accompanied by the belief that such products can compensate for self-regulation failures or unhealthy food habits, and it might also be used as a strategy for coping with food temptations. Such compensatory beliefs related to MRPs might be characteristic of MRP consumers. Thus, in the present study, a scale was developed that aimed to capture the compensatory beliefs that might be relevant to MRP consumption. The compensatory beliefs of users and non-users of MRPs were compared, and further it was explored whether stronger belief in the compensatory effects of MRPs was associated with MRP consumption.

1.2. Nutrition knowledge

People's food-related behavior is shaped by various influences, of which nutrition knowledge is one (Baranowski, Cullen, & Baranowski, 1999). Higher levels of nutrition knowledge were associated with slightly higher fruit and vegetable intake (Dickson-Spillmann & Siegrist, 2011; Wardle, Parmenter, & Waller, 2000), a lower percentage of energy derived from fat (Wardle et al., 2000), as well as adherence to a more Mediterranean-style eating pattern (Bonaccio et al., 2013). Studies have shown that the effect of nutrition knowledge, even when measured with validated questionnaires, on food-related behavior is modest at best (Wardle et al., 2000), and nutrition knowledge was not associated with body mass index (BMI) in previous research (O'Brien & Davies, 2006). Nevertheless, increasing people's nutrition knowledge is still a major public health strategy, and it is the focus in nutrition counseling (Flynn, 2015; O'Brien & Davies, 2006). Previous researchers have suggested, however, that only certain subgroups (e.g., individuals who are severely obese) might benefit from educational approaches to increasing nutrition knowledge (Parmenter, Waller, & Wardle, 2000). A question therefore arises about whether users of MRPs who might have problems with calorie overconsumption and consequently body weight regulation (e.g., weight gain, weight cycling) or who are dissatisfied with their body weight or body image are a subgroup of people who lack substantial nutrition knowledge. Based on that idea, this subgroup might be attracted to standardized, calorie-controlled meals such as MRPs that promise weight loss without the need to acquire nutrition knowledge. In contrast, it is also imaginable that users of MRPs who are interested in weight regulation might have consciously accumulated

knowledge related to calories and meal composition and, thus, might actually have higher levels of nutrition knowledge in these areas. Both results are possible, and no study has empirically tested whether a lack of nutrition knowledge is a characteristic predisposition for the use of MRPs as part of a private weight management program.

1.3. Eating styles

People's eating behavior can be characterized by certain eating styles. Eating in states of emotional arousal, such as anger, sadness, boredom or stress, has been defined as “emotional eating” (Van Strien, Frijters, Bergers, & Defares, 1986). People who strongly cognitively control their eating behavior in order to lose or maintain weight instead of relying on physiological signals eat in a restrained manner. Emotional and restrained eaters are vulnerable to disinhibited eating when their cognitive processes are exhausted or disrupted (Ruderman, 1985). People with external eating tendencies are especially sensitive to external eating-related cues and tend to eat when they see or smell food, regardless of their actual physiological hunger state (Van Strien et al., 1986).

In the manifestation of maladaptive eating behaviors, weight modulation plays a significant role (Polivy, 1996). Striving for some weight loss and fearing weight gain have been shown to be drivers of restrained eating among normal-weight individuals (Chernyak & Lowe, 2010). Unsuccessful restrained eaters fail to resist palatable food quite frequently because their need to fulfill their desire (e.g., eating a dessert) is stronger than the pull of maintaining their long-term goal (Stroebe, Van Koningsbruggen, Papies, & Aarts, 2013). MRPs might be considered to be an attractive opportunity to eat a sweet and creamy palatable food while, at the same time, working toward dietary goals. Moreover, palatability is a crucial factor for people who eat in an emotionally driven style because palatability is thought to improve mood (Macht & Gwenda, 2011). MRPs might be used as an alternative to the high-calorie sweet and creamy palatable food that emotional and restrained eaters crave when they are under (emotional) stress (Oliver, Wardle, & Gibson, 2000).

1.4. Aim of the present study

The published literature on MRPs mainly focuses on weight loss and improvements in body composition (Lowe et al., 2014; Shikany et al., 2013) but has failed to comprehensively address psychological eating-related factors such as the eating styles, nutrition knowledge and compensatory beliefs of MRP consumers. In addition, previous studies have mainly been conducted with overweight and obese clinical samples within a weight loss program (Lowe et al., 2014; Shikany et al., 2013). Research conducted on a heterogeneous sample from the general population is scarce, however. In order to identify prevalent beliefs about MRPs, eating styles and the nutrition knowledge of MRP users, an MRP user sample from the general population was compared with a non-user sample in considering these characteristics. The results of the present examination offer not only insights into the potential drivers of MRPs as a private weight management strategy but also possible factors that reduce participants' success in MRP-based weight loss interventions.

2. Methods

2.1. Sampling and participants

Two online surveys were conducted in Switzerland during September and October 2014. The surveys were carried out using the online platform Qualtrics (<https://www.qualtrics.com>). The

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