

# Obesity prevention using the Internet : development and evaluation of a video- and text-based version of a computer-tailored intervention

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# **VALORIZATION ADDENDUM**



The results of the studies presented in this dissertation provide knowledge with a high societal and economic value, which can be used for the development, optimization, and dissemination of web-based computer-tailored obesity prevention interventions. This valorization addendum will discuss the relevance of the study results, the target groups for which the results are of interest, the developed health products, the degree of innovativeness of these products, and the planning for valorization.

### **Relevance**

Currently, about 2 billion people worldwide are overweight or obese, which is nearly 30% of the global population (Finucane et al., 2011; Stevens et al., 2012; WHO, 2015). Overweight and obese people have a significantly increased risk of developing a wide range of health problems, such as coronary heart disease, type 2 diabetes mellitus, various types of cancer, musculoskeletal disorders, respiratory problems, and mental disorders (Ng et al., 2014; Visscher, van Bakel, & Zantinge, 2014; WHO, 2015; Wyatt, Winters, & Dubbert, 2006). Hence, overweight and obesity are associated with high direct medical costs. Research has, for example, shown that obese people spend 42% more on healthcare costs than people who have a healthy weight (Finkelstein, Trogon, Cohen, & Dietz, 2009). Overweight and obesity also have high indirect costs related to, for example, decreased productivity, restricted activity, and absenteeism (CDC, 2012; Finkelstein, Ruhm, & Kosa, 2005; Neovius, Neovius, Kark, & Rasmussen, 2012; Wyatt et al., 2006). Hence, successful weight gain prevention efforts have the potential to result in improved quality of life as well as substantial savings for both health care and society.

Web-based computer-tailored interventions are considered to be a cost-effective approach in the prevention of overweight and obesity as they can reach many people, have the potential to be effective, and can be distributed on a large scale for relatively low costs. These interventions aim to improve people's health status by providing tailored information and feedback via the Internet about, for example, people's BMI, dietary intake, physical activity level, and motivational beliefs. The studies in the second part of this dissertation show that in particular the (partial) delivery of intervention content via videos in a web-based computer-tailored intervention is an effective way to reduce adults' BMI and energy intake from energy-dense food products. Hence, the implementation of this intervention may contribute to the stabilization as well as the reduction of overweight and obesity prevalence rates among Dutch adults.

### **Target groups**

The research described in this dissertation was funded by ZonMw, the Netherlands Organization for Health Research and Development. This organisation aims to fund health research and stimulates use of scientific knowledge to improve healthcare in the Netherlands. ZonMw acts as an intermediary between policy, research, and practice.

Accordingly, the results presented in this dissertation are of interest to ZonMw and several other target groups.

First and most important, the results of this dissertation are of value for the actual target group of the intervention: Dutch adults with a healthy weight or overweight who want to prevent weight gain or achieve modest weight loss. The implementation of this intervention will offer these people a tool that can help them to manage their body weight.

Another important target group are health professionals, including among others occupational physicians, general practitioners, dieticians, and physical therapists. These people can use the results of the presented studies to optimize their own health services. Moreover, they are also the intermediaries that can help to implement the intervention on a large scale since they have a lot of personal contact with potential participants. The intervention can further also be implemented via national institutions involved in healthy eating, physical activity, and body weight, such as the Netherlands Institute for Sport and Physical Activity and the Netherlands Nutrition Centre Foundation. These organizations can inform administrators, policymakers, and professionals about the study results and the intervention.

The Dutch Ministry of Health, Welfare and Sport (Ministry of VWS) will also be interested in the results of the studies presented in this dissertation. The ambition of this ministry is to keep everyone in a healthy condition as long as possible and cure people with a disease as soon as possible. A primary aim is to achieve this goal by means of affordable and high-quality health care. The video version of the web-based computer-tailored obesity prevention intervention meets this aim as it can reach many people in an effective way for low costs.

The results of this dissertation may also be of interest for profit as well as non-profit organizations that are active in the field of obesity prevention and health promotion via the Internet. For example, in the Netherlands, there is a growth in commercial organizations that are specialized in the development and implementation of eHealth. In addition, non-profit organizations, such as a municipal health service (GGD), may use the results as input for improving their own health services.

The Dutch Association of eHealth (NVEH) will also be interested in the study results. The objectives of the NVEH are among others improving the quality of eHealth products and offering a platform for interaction between eHealth producers. The NVEH also aims to act as a point of mutual interest in eHealth for patient organizations, public authorities, health insurance companies, health professionals, research, and education. In the Netherlands, nearly all health insurance companies are, for example, active in the field of health promotion and prevention. Several health insurance companies also actually reimburse participation in online health promotion interventions.

Finally, the results will also be of interest for the Center for Healthy Living (in Dutch: Centrum Gezond Leven). This organization is part of the National Institute for Public Health and the Environment (RIVM), which is an agency of the Ministry of VWS.

The mission of the Center for Healthy Living is to contribute to the health of all Dutch citizens by presenting information about available and effective lifestyle interventions to health promotion professionals via their website. The center further presents information on the quality and efficiency of health promotion interventions.

## **Products**

The main products of this dissertation are the video and text version of the web-based computer-tailored obesity prevention intervention. This dissertation shows that both the video and text version of the intervention are able to prevent obesity (i.e. maintain weight or achieve modest weight loss) among Dutch adults with a healthy weight or limited overweight, regardless of their educational level. Overall, the video version turned out to be the most promising intervention as this version yielded the best short-term effects, the largest effect sizes, and was appreciated significantly better than the text version.

The intervention consists of six sessions and each session takes about ten to fifteen minutes to complete. In the first session, participants receive general information and tailored feedback about their body weight, dietary intake, physical activity level, and socio-cognitive beliefs toward improving their diet and physical activity level. The aim of this feedback is to help participants set an appropriate weight goal (maintain current weight or achieve modest weight loss) and behavior change goal (improve physical activity, dietary intake, or both). In session two, participants receive detailed feedback on the chosen behavior in order to help them with planning how to take feasible steps toward a successful behavior change. After this second session, participants can start with the desired changes according to their set goals and plans. The aim of session three till six is to help participants carry out and maintain the behavior change by evaluating their progress and providing tailored feedback about how to deal with barriers. These sessions are similar in content and can be used with at least one week between each session.

## **Innovation**

Compared to existing interventions, in particular the video version of the intervention can be considered as innovative. Nearly all previous web-based computer-tailored interventions have used text-driven messages to deliver intervention content. The use of videos as delivery format is an innovative strategy that may fit better with people's current preferences as videos can deliver intervention content livelier and more interactively. In addition, the studies presented in this dissertation are one of the first that have examined the hypothesis that the use of videos to deliver intervention content would be suitable for persons with a low educational level in particular since these people generally have lower literacy skills and more difficulties with the translation of abstract text into concrete actions. The results of these studies provide important new evidence that the use of videos as delivery format in web-based computer-tailored interventions can achieve clinically relevant effects on BMI and energy intake, regardless of people's educational level. The

finding that the video version of the intervention was equally effective for both lower and higher educated participants is also very relevant since many previous weight management interventions have only found to be effective for people with a high educational level (Magnée et al., 2013).

Besides the delivery format, our intervention is also innovative because of its content. For example, only few interventions have been based on the small changes approach which assumes that small and relatively easy to achieve behavior changes of approximately 100 kilocalories per day can prevent weight gain (Hill, 2009; Hill, Wyatt, & Peters, 2012). In addition, in contrast to many static and predetermined interventions, our intervention also offers a lot freedom. Participants can, for example, decide themselves which goals they want to achieve and whether or not they want to follow certain intervention parts.

### **Schedule & Implementation**

Based on the promising results, large scale implementation of the video version of the web-based computer-tailored obesity prevention is recommended.

A potential way to facilitate large scale implementation of the video version is by submitting it for certification to the Center for Healthy Living. This center can certify the intervention as an evidence-based intervention and promote it as an appropriate obesity prevention intervention. To obtain this certificate, a committee of experts will assess the quality of the intervention based on several criteria, such as whether the intervention has been accurately described and documented, the empirical and theoretical foundation of the intervention, and the extent to which its effectiveness has been proven by means of appropriate studies. We are of the opinion that the intervention and the related studies meet all these criteria. After the quality assessment, the results of this procedure are published online in a database on the website of the Center for Healthy Living.

The video version of the web-based computer-tailored obesity prevention can be implemented in several ways. The preferred and presumed best way to implement the intervention among the most relevant target group is by collaborating with healthcare organizations, such as general practices, occupational health centers, lifestyle agencies, and eHealth organizations. Yet, the findings of this dissertation show that the implementation will only be successful when sufficient attention is paid to the development of appropriate implementation strategies. If these strategies will, for example, not address the barriers and facilitators that are considered to be relevant for the decision-maker, there is a high chance that the implementation will fail. Hence, to improve the implementation of the video version it is recommended to tailor implementation strategies to the unique perceptions of the person within an organization who has the responsibility for the implementation of the intervention. The implementation can also be improved by involving decision-makers during the further optimization process of the intervention. This offers the possibility to integrate their preferences in the intervention, which will increase the likelihood that the

intervention will be implemented adequately (Bartholomew, Parcel, Kok, Gottlieb, & Fernandez, 2011). Regardless of the chosen implementation strategy, it is also important that an organization will actively promote the intervention among potential implementers. For this purpose, Vision2Health can be consulted. This organization has the aim to take ownership of effective web-based lifestyle interventions and to offer these interventions to potential implementers.

When these recommendations are followed, the video version of the web-based computer-tailored obesity prevention intervention can have a large public health impact for relatively low costs. The only costs associated with the implementation of the intervention will be the hosting costs of the tailoring software package and the website. As these costs are not very high, there are hardly any risks associated with the large scale implementation of the intervention. Nevertheless, someone (e.g. the implementing organization) should take responsibility for bearing these costs, otherwise the intervention cannot be used in practice.