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A personalized, multi-platform nutrition, exercise, and lifestyle coaching program: A pilot in women

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ABSTRACT

The aim of this pilot study was to examine if a personalized web-based multi-platform nutrition, exercise, and lifestyle coaching program, supported weight loss and the reduction of chronic disease risk factors in overweight or obese women. Twenty-eight women completed the program, which represented 50% of those who provided baseline data. The program consisted of a one-year curriculum with daily exercise, nutritional habits, and health behaviour lessons along with access to a one-on-one coach. The workouts, habits, and lessons were available via computer, tablet, and mobile device which, along with coaching, facilitated self-monitoring and accountability. At baseline and 12-months, weight, waist circumference, fat mass, muscle mass, blood pressure, total cholesterol, low density lipoproteins, high density lipoproteins, triglycerides, C reactive protein, and fasting glucose were collected. Over the 12 months, women who completed the program, (average age 49.64 (SD 10.99) years), lost 16.52 (SD 13.63) lbs ($P < 0.001$), and reduced waist circumference by 3.56 (SD 2.31) in ($P < 0.0001$). Diastolic blood pressure decreased by 3.77 (SD 7.25) mm Hg ($P = 0.02$) and high density lipoproteins increased by 0.16 (SD 0.28) mmol/L ($P = 0.01$). No other risk factors changed significantly. Compliance was a significant predictor of weight loss ($P < 0.01$). In conclusion, women who completed the web-based program experienced significant weight loss (8.62% of initial body weight) coming predominantly from body fat. Chronic disease risk factors also improved.

1. Introduction

Overweight and obesity are universally recognized as a risk factor for numerous health conditions such as type 2 diabetes, hypertension, some types of cancer, cardiovascular disease, poor quality of life, functional limitations, and mental health concerns (Dixon, 2010; Luo et al., 2007). Although it is well established that a reduction in weight of 5–10% substantially decreases the risk of morbidity and premature mortality (Clinical Guidelines on the Identification, 1998; Mokdad et al., 2003; Poirier et al., 2006), adherence to weight loss interventions is generally poor (Coons et al., 2012). Consequently, a reduction in obesity and/or obesity-related health conditions remains a serious challenge, in particular to primary care providers who receive limited training and support in obesity management but who are expected to counsel and treat the condition (Flodgren et al., 2010).

Multi-platform interventions, which are web-based and can be accessed on a mobile device, a tablet, and/or a computer, may present a promising opportunity to provide innovative, engaging, and effective support to adults seeking assistance with obesity management when developed using best practice recommendations and evidence. These types of interventions have the ability to reach individuals worldwide, including those in rural or remote locations or those with transportation limitations, provide support that is convenient and accessible 24-hours per day, offer multiple options for peer and health professional support, and be offered at a low cost (Neve et al., 2010; PWC, 2012).

Although there is evidence to suggest that interventions based on the web are successful in promoting weight loss, well-designed and evaluated weight loss interventions of this nature are sparse (Coons et al., 2012; Neve et al., 2010). Further, many of the interventions evaluated to date fail to include all of the key components associated with successful weight loss and weight loss maintenance, which include self-monitoring (e.g., nutrition, exercise, specific habits), goal-setting, behaviour change psychology, access to coaching from a health professional (including regular tailored feedback), a multi-component approach (including dietary counselling, exercise and healthy lifestyle habit promotion, and behaviour change), utilization of multiple channels to deliver messages (such as email, social media, discussion

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forum), and an adequate duration (minimum six months in length) (Coons et al., 2012; Neve et al., 2010; Kirk et al., 2012; Korda and Itani, 2013). Thus, evidence of the effectiveness of a comprehensive, web-based and multi-platform weight loss intervention is needed. Assessing the effectiveness of programs like this is imperative as it would be a logical and feasible method of reaching adults worldwide who struggle with weight management. Additionally, if demonstrated effective in the reduction of morbidity and mortality, a web-based multi-platform intervention would provide primary care providers with a safe and accessible treatment option for their patients.

The aim of this pilot study was to examine the changes after a web-based multi-platform nutrition, exercise, and lifestyle coaching program in anthropometrics and body composition (weight, waist circumference, body fat mass, muscle mass), blood pressure, and blood chemistry (total cholesterol, low density lipoprotein (LDL), high density lipoproteins (HDL), triglycerides, C reactive protein (CRP), fasting glucose) of overweight or obese adults. This program was one year in duration and included detailed exercise programming, progressive nutritional habits, daily lessons utilizing behaviour change psychology, and one-on-one coaching to achieve individualized goals.

2. Methods

2.1. Participants

During June and July of 2014, adults aged 18–65 years living in British Columbia, Canada with a Body Mass Index (BMI) > 24.9 kg/m^2 were recruited from Festubert Family Practice in Duncan, British Columbia by a primary care physician. Inclusion criteria were as follows: men and women aged 18–65 years of age with a BMI > 24.9 kg/m^2, daily access to the Internet, basic fitness equipment or access to a fitness facility, and the ability to participate in moderate-to-vigorous physical activity. Individuals were excluded if inclusion criteria were not met as well as females who were pregnant or wanting to become pregnant over the course of the study period, and an inability to communicate in English. Ethical approval was obtained from Quorum Review IRB; one of the largest independent review boards providing ethics review to the human clinical trials industry.

2.2. Study design

This study utilized an observational design to explore whether a web-based multi-platform nutrition, exercise, and lifestyle coaching program resulted in changes to anthropometrics and body composition, blood pressure, and blood chemistry in overweight or obese adults. Potential participants were identified by a chart review completed by a primary care physician and then approached via phone call or during a regular appointment. After being identified, each participant completed a brief questionnaire to screen for conditions that would limit his or her ability to safely participate in moderate-to-vigorous physical activity or commit to a year-long program (e.g., Do you currently have any injuries that might restrict or limit your ability to work out?). If a limiting condition was identified, the participant was not invited to participate further. At the baseline measurement session, each participant met with the physician to ensure there were no contraindications to participation in the program. Informed consent was obtained from each participant after a full explanation of the study was provided by the primary care physician.

All eligible participants were enrolled in the one-year web-based multi-platform *Precision Nutrition Coaching Program*. This included two study visits (baseline and 12 months) to obtain anthropometric and body composition measurements, blood pressure, and fasting blood work. Participants also completed an online demographics and medical history questionnaire at baseline and 12 months. The *Precision Nutrition Coaching Program* is a commercially available program. Participants were charged a monthly fee to be involved.

Both men and women were recruited to participate in this study ($n = 9$ and $n = 68$, respectively) however, only 3 men completed the one-year program (Fig. 1). Therefore, only women were included in the analysis. Twelve participants were lost between recruitment and baseline due to the identification of a limiting condition (i.e., an injury that would prevent participation in moderate-to-vigorous physical activity) or acknowledgement that commitment to a one-year program was not feasible. Participants who formally opted out of the program ($n = 15$) indicated the following reasons for leaving: 1) the program was not working for them, 2) no reason, 3) health-related reasons, 4) too busy, 5) were not following the program. Twenty-eight women completed the full 12-month program and provided follow-up data.

2.3. Intervention

The *Precision Nutrition Coaching Program* curriculum consists of three main components: 1) an exercise program, 2) daily nutritional habits, and 3) daily health behaviour lessons. Participants were provided with individual login information and were able to access the complete program via desktop/laptop computer, tablet, or mobile phone (http://www.precisionnutrition.com/). See Fig. 2 for screen shots of the program and Table 1 for program details. Each day, participants recorded whether or not they completed the workout and habit, which was used to determine program compliance (program compliance =

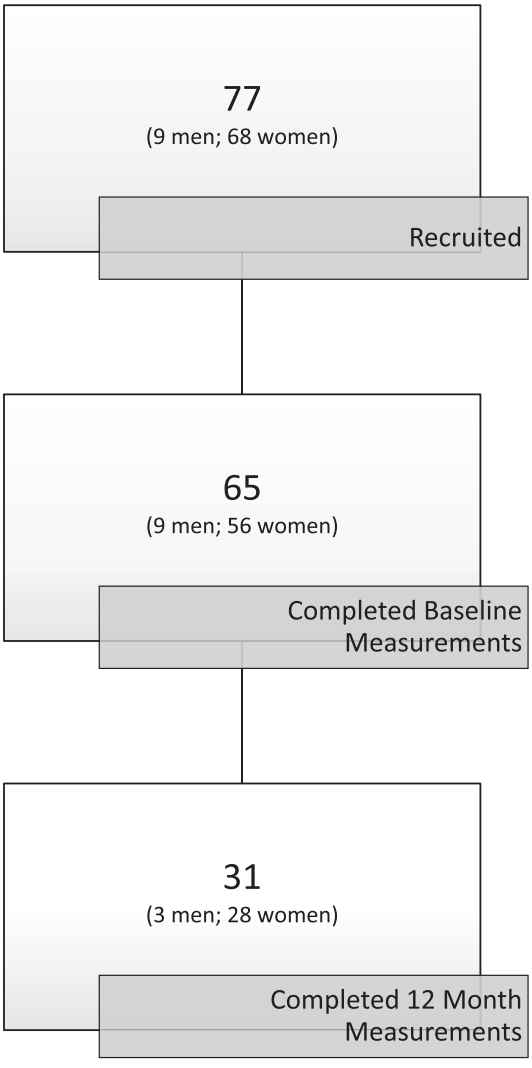

Fig. 1. Participant flow chart.