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Distance learning strategies for weight management utilizing social media: A comparison of phone conference call versus social media platform. Rationale and design for a randomized study

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ABSTRACT

Management of obesity in the context of the primary care physician visit is of limited efficacy in part because of limited ability to engage participants in sustained behavior change between physician visits. Therefore, healthcare systems must find methods to address obesity that reach beyond the walls of clinics and hospitals and address the issues of lifestyle modification in a cost-conscious way. The dramatic increase in technology and online social networks may present healthcare providers with innovative ways to deliver weight management programs that could have an impact on health care at the population level. A randomized study will be conducted on 70 obese adults (BMI 30.0–45.0 kg/m^2) to determine if weight loss (6 months) is equivalent between weight management interventions utilizing behavioral strategies by either a conference call or social media approach. The primary outcome, body weight, will be assessed at baseline and 6 months. Secondary outcomes including waist circumference, energy and macronutrient intake, and physical activity will be assessed on the same schedule. In addition, a cost analysis and process evaluation will be completed.

1. Introduction

Approximately 69% of U.S. adults are classified as overweight or obese (BMI > 25) [1]. Obesity is associated with significant comorbidity; it is estimated that for every one-point increase in body mass index (BMI), health care costs increase by 8% [2] and the estimated cost of obesity in the U.S. was $147 billion in 2008 [3]. Current clinical guidelines recommend behavioral based programs, which include energy restriction and physical activity to produce clinically relevant weight loss of 5% or more of total body weight [4–10]. Management of obesity in the context of the primary care physician visit is of limited efficacy (1.4–2.5 kg weight loss at 6 months [11], in part because of limited ability to engage participants in sustained behavior change between physician visits. Furthermore, numerous barriers prevent individuals from participating in weight management programs, including cost, transportation, time, family and job commitments, and others. These same barriers are frequently cited as reasons why individuals who do participate subsequently drop out of treatment. Therefore, healthcare systems must find methods to address obesity that reach beyond the walls of clinics and hospitals and address the issues of lifestyle modification in a cost-conscious way.

Alternative strategies to deliver weight management programs have produced promising results. Delivery of weight management services through over-the-phone group visits with a health educator following a social cognitive theory-based curriculum on diet, exercise, and healthy lifestyle across 18 months has been shown to produce equivalent weight loss with significantly lower costs compared to traditional face to face delivery. [12]. However, over the past decade the use of internet-delivered health care/health behavior change interventions, including weight management, has greatly expanded. With the dramatic increase in technology and online social networks (OSN), individuals have started to pursue information, share experiences, ask questions and provide support to peers about health online [13–15]. OSN may present health care providers innovative ways to deliver weight management programs that could have an impact on health care at the population level by minimizing barriers such as cost, time to deliver materials, and access to hard-to-reach populations as 70% of all households in the United States report internet use and this will only increase

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in the future [16]. Several short-term studies have shown that incorporating social media into weight loss interventions led to favorable weight loss outcomes [17–19]. Using OSN to produce health behavior change is in its early stages of development and, while several studies show promise, more research is needed to acquire information about optimizing these interventions to increase their efficacy.

2. Materials and methods

2.1. Overview of study design

The purpose of this feasibility study is to compare weight loss between an established cost effective weight management delivery system (group conference call) and OSN (Facebook) delivered weight management intervention. Seventy obese men and women have been randomly assigned to a 6-month weight loss program that will be delivered by group conference call (n = 34) or Facebook (n = 36). The behaviorally-based conference call group is considered the reference treatment in this study because this method has been shown to produce clinically significant weight loss while reducing barriers and cost [12]. Behavioral group meetings for both the conference call and OSN groups will be conducted weekly. Outcomes were assessed at baseline and will be assessed at 6 months. We expect equivalent and clinically significant (≥5%) weight loss in both groups. Change in weight was selected as the primary outcome. Secondary outcomes include waist circumference as an indication of reduction in chronic disease risk, and measures of dietary intake and physical activity to help explain both group and individual differences in weight change. A cost analysis and extensive process evaluation will also be completed. We expect similar participant and provider costs in the OSN group. Approval for this study was obtained from the Human Subjects Committee at the University of Kansas Medical Center. Recruitment, randomization and baseline testing have been completed thus far for the study.

2.2. Participant eligibility

To improve the generalizability of the results, individuals with chronic medical conditions were allowed to participate because they represent the population of individuals typically seeking weight management. For instance, individuals with hypertension or type 2 diabetes were not automatically excluded if their condition was controlled by medication. Medical conditions and medication use may be considered potential confounders; however, randomization should ensure that health status will be similar across both study groups. *Inclusion criteria*: 1) Age 21 to 70 years. This age range was chosen as weight management for young or older individuals typically employs different behavioral strategies. 2) Body mass index (BMI) of 30 to 45 kg/m^2. The sample is restricted to this BMI range because individuals with a BMI greater than 30 kg/m^2 are at a higher risk and weight loss would have the greatest cost savings [7,9,20], and individuals with a BMI > 45 kg/m^2 require more aggressive weight loss interventions than we propose (e.g., surgery, medication, etc.) [7]. And 3) Have access to a computer, smart phone, or tablet with access to wireless internet or cell data. The Fitbit activity tracker and wireless scale, which was provided to participants, require wireless internet or cell data for real time data transferring. *Exclusion criteria*: 1) Unable to participate in moderate intensity PA (i.e., walking). 2) Participation in a weight loss or physical activity program in the previous 6 months as these proximal experiences may impact the results of this study. 3) Greater than 3, 30-min bouts of planned exercise/week. 4) Not weight stable (±4.6 kg) for 3 months prior to intake. 5) Unwilling to be randomized to 1 of the 2 study groups. 6) Report being pregnant during the previous 6 months, currently lactating, or planned pregnancy in the following 6 months. 7) Serious medical risk such as cancer, recent cardiac event (i.e. heart attack, stroke, angioplasty) in the previous 6 months as determined by the study's medical director to participate in the investigation. 8) Current use of antipsychotics or untreated depression. Care of individuals with complex psychiatric illness can be challenging due to balancing medication side effects and is outside the scope of this study. 9) Adherence to specialized diet regimens, e.g., multiple food allergies, vegan, macrobiotic. 10) Binge eating disorder as assessed by the Binge Eating Scale [21] and Eating Attitudes Test [22]. 11) Lack of access to a grocery store. These individuals would not have the ability to make food choices on their own thus would not be able to follow the diet protocol and the results would not have been generalizable to them.

2.3. Recruitment/randomization

Participants were recruited using university broadcast emails, flyers, the General Medicine Clinic at the University of Kansas Medical Center and the wait list for participation in the Center for Physical Activity and Weight Management's Weight Control Research Projects. Potential participants were asked to contact study staff via phone or email. Interested individuals were directed to complete an initial eligibility questionnaire through Research Electronic Data Capture (REDCap) version 6.4.4 hosted at The University of Kansas Medical Center [23]. Participants provided self-reported height and weight (BMI), medication use, previous attempts at weight loss, presence of chronic disease, current physical activity level, and special diet restrictions. Those satisfying the initial eligibility criteria were invited to an orientation session where the procedures were explained, the risks and benefits outlined, the commitments of the participants and investigators explained, and all questions answered prior to obtaining written informed consent. Those who chose to participate were directed to fill out all the remaining screening surveys including a brief health history, eating attitudes [22], binge eating scale [21], Global Physical Activity Questionnaire [24], and the Revised Center for Epidemiologic Studies Depression Scale [25] on REDCap. Eligible participants were enrolled in the study by the project coordinator and randomized in 1:1 ratio to the phone or OSN group stratified by sex. After randomization participants were scheduled to attend a separate 45-minute testing appointment for collection of baseline measures by research assistants. Fig. 1 presents a modified Consolidated Standards of Reporting Trials. The (CONSORT) diagram [26] describes the number of potential participants assessed for eligibility, the number of participants excluded or screened out, reason for screening failure, and the number randomized to the conference call or OSN groups. The baseline characteristics of the conference call and OSN clinic groups are presented in Table 1.

2.4. Intervention conceptual framework

This feasibility study will compare two approaches for the delivery of a behavioral weight management intervention (conference call and OSN) for weight loss. Similar to many current weight management programs, the interventions is grounded in social cognitive theory, problem-solving theory, and the relapse prevention model [27–31]. Key elements incorporated in both the phone and OSN interventions include: goal-setting, self-monitoring, direct reinforcement, interaction with health educators, and social support.

2.5. Standardized materials

To ensure that similar content is presented in both the conference call and OSN groups, all participants will receive identical lessons that will provide a basic outline for the intervention. Therefore, the diets and PA protocols, behavioral lesson topics, experiential learning assignments and attention (i.e. meeting and assessment schedules), will be identical for both groups. The lessons include detailed instructions for the weight loss phase including behavioral strategies, diet instructions, recipes, and guidelines for PA. The lessons are organized by clinic session and contain handouts, worksheets, and assignments specific to each topic. The lessons also provide general information and guidelines