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Meal replacements as a weight loss tool in a population with severe mental illness

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ABSTRACT

Weight gain and worsening metabolic parameters are often side effects of antipsychotic medications used by individuals with severe mental illness. To address this, a randomized, controlled research study of a behavioral weight management program for individuals with severe mental illness was undertaken to assess its efficacy. Patients unable to meet weight loss goals during the first portion of the year-long study were given the option of using meal replacement shakes in an effort to assist with weight loss. Specific requirements for use of meal replacement shakes were specified in the study protocol; only five patients were able to use the shakes in accordance with the protocol and lose weight while improving metabolic parameters. Case studies of two subjects are presented, illustrating the challenges and obstacles they faced, as well as their successes. Taking responsibility for their own weight loss, remaining motivated through the end of the study, and incorporating the meal replacement shakes into a daily routine were factors found in common with these patients. Use of meal replacements shakes with this population may be effective.

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1. Introduction

Individuals with severe mental illness (SMI) may have a greater likelihood of obesity and chronic disease development than the general population due to weight gain and other metabolic side effects associated with second generation antipsychotic medications (Das, Mendez, Jagasia, & Labbate, 2012; Meyer et al., 2006; Newcomer & Haupt, 2006; Rosen & Wirshing, 2008; Tandon, Nasrallah, & Keshavan, 2010; Wirshing, 2004). Cognitive deficits, motivational barriers, substance use disorders, and limited financial resources may also be prevalent in this population, and can inhibit healthy lifestyles (Kwan et al., 2014).

To address medication-associated obesity, a randomized, controlled research study of a behavioral weight management program specifically designed for an SMI population was undertaken for 120 male and female United States Veterans (Kwan et al., 2014). Participants in this Institutional Review Board (IRB)-approved study were between the ages of 28–71 from various ethnic backgrounds. They had been diagnosed with one or more mental health conditions, including schizophrenia, schizoaffective disorder, bipolar disorder, post-traumatic stress disorder, or other psychotic disorders and had experienced a clinically significant increase in weight on current antipsychotic medication. Participants were randomized to either the multi-modal behavioral weight loss arm, based on the Diabetes Prevention Program (Diabetes Prevention Program Research Group, 2002) ("Lifestyle Balance") or the usual care arm. Both arms consisted of weekly meetings for the first eight weeks, followed by monthly meetings until the conclusion of participation at month 12. At each visit, the "Lifestyle Balance" program consisted of an individualized counseling session as well as nutrition education classes in a group setting with a registered dietitian (RD). Written informed consent was obtained from each study participant.

Within this weight management study, a subset of data was analyzed to assess the efficacy of meal replacements on weight loss in the SMI population. While there have been several behavioral weight loss approaches that have been found to be helpful in the SMI population (Brar et al., 2005; Das et al., 2012; Daumit et al., 2013; Kwan et al., 2014; McKibbin, Golshan, Griver, Kitchen, & Wykes, 2010; Wu, Wang, Bai, Huang, & Lee, 2007), research supporting the use of meal

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replacements is limited. While meal replacements, including shakes and bars, have been found to be effective in weight loss for the general population (Keogh & Clifton, 2012; Smith et al., 2010), only one previous study was found in a literature search that utilized meal replacements as a weight loss tool in an SMI population (Brown, Goetz, & Hamera, 2011; Brown, Goetz, Hamera, & Gajewski, 2014). In the Brown et al. (2014) study, participants in the treatment group, assigned to use two meal replacements per day in addition to side dishes and breakfast, lost a statistically significant amount of weight (2.2 kg) by the end of the 3-month intensive intervention phase compared to the control group. Difference in weight loss between the groups was not statistically significant after the subsequent 3-month maintenance phase and the following 6-month intermittent support phase. It is not clear whether meal replacements were in the form of shakes, bars, or calorie- and portion-controlled entrees.

Of the 120 total participants in the current study, 61 were randomized to Lifestyle Balance while the other 59 received usual care (Fig. 1). Of this number, 17 participants lost weight through the nutrition and exercise interventions alone. Another 17 participants dropped out due to personal life events or were terminated from the study for medical or psychiatric instability. Nineteen participants were offered the shakes; 6 participants refused them, and of the 13 participants who agreed to try the shakes as a weight management tool, only 5 were compliant with the study protocol for meal replacements.

The protocol provided for the option of offering participants commercially available meal replacement shakes if nutrition counseling and physical activity recommendations did not yield appreciable reduction in body weight or other metabolic measures. According to the protocol, participants were eligible to receive meal replacement shakes if they: (1) agreed to replace one meal per day with a shake without eating any other food within 2 h of shake consumption; (2) agreed to record all food and beverage intake in a food diary; and (3) lost at least 0.45–0.91 kg (1–2 lb) in the first week of using the shakes. Participants were required to visit the study office once per week to obtain a new 7-day supply of shakes and check in with a study dietitian.

There was no pre-determined point at which study dietitians offered shakes as an option; it was based on participants' weight gain patterns, their ability to maintain consistent attendance at appointments, and their interest and motivation in the program. It was intended that intensive nutrition and exercise counseling be given a chance to work before meal replacements were offered, to give participants an opportunity to make behavioral changes on their own. The offer of meal replacements came as early as week 8 for one participant who specifically requested them, but the remaining participants received the offer anytime between their 5th- and 11th-month visits if it was apparent they were struggling with making changes.

A total of 5 participants used the meal replacement shakes and were successful in losing weight and improving metabolic parameters. In this paper, we highlight two success stories from the behavioral weight management study to demonstrate how motivated individuals with SMI can use meal replacements as a helpful tool for weight loss.

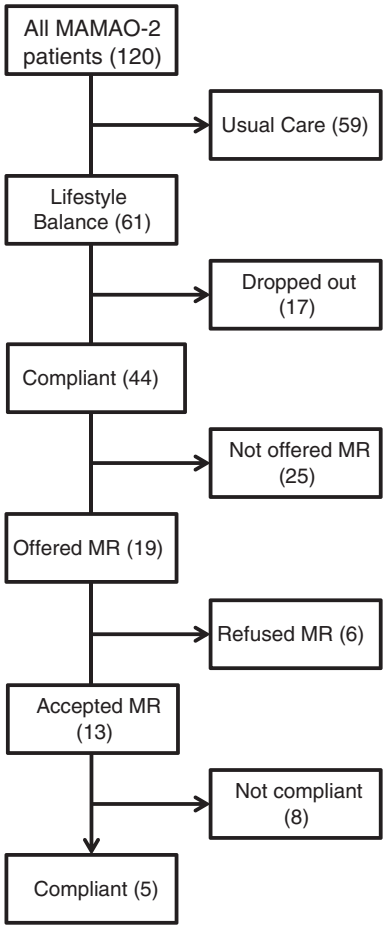

Fig. 1. MR = meal replacement.

2. Case reports

2.1. Ms. A

Ms. A, a 50-year-old obese Hispanic female (body mass index (BMI): 32.5 kg/m^2), had a baseline waist circumference of 106.7 cm. She was diagnosed with schizoaffective disorder and diabetes, and was routinely taking the antipsychotic medication ziprasidone, as well as metformin and simvastatin to manage her illnesses. Her elevated hemoglobin A1c (A1c) of 7.3% (estimated average blood glucose of 163 mg/dL) indicated a need to improve her type 2 diabetes.

During the first two months of the Lifestyle Balance program, the participant's participation became sporadic. Missed appointments and language barriers made it difficult for the research staff to communicate with her consistently. Despite previous exposure to health-related classes and visits with an RD, the participant was resistant to change and frequently consumed snacks without concern for any health consequences. By the seventh month, she expressed a strong interest in using meal replacement shakes. Because she has diabetes, she was instructed to drink one "High Protein" (low carbohydrate) shake per day (Table 1).

Throughout the remaining five months, the participant demonstrated improved adherence to appointments and submitted her report of daily food intake to the dietitian at each new appointment, which allotted her a new set of meal replacement shakes for the month. By the end of the study, the participant's total calorie intake was reduced by 250–500 calories per day from both physical activity and diet. She made additional changes by increasing her total minutes of exercise, and reducing her overall snack consumption. Compared to meal replacement initiation, the participant lost a total of 6.3 kg, reduced her waist circumference by 8.9 cm, and decreased her A1c from 6.4%

Table 1
Meal replacement nutrition facts.

	Regular	High Protein
Size (ml)	295	295
Kilocalories	180	180
Fat (g)	6	9
Protein (g)	10	20
Total carbohydrates (g)	24	3