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Review

Obesity treatment in disadvantaged population groups: Where do we stand and what can we do?

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ABSTRACT

Obesity is now the second leading cause of death and disease in the United States leading to health care expenditures exceeding $147 billion dollars. The socioeconomically disadvantaged and racial/ethnic minority groups are at significantly increased risk for obesity. Despite this, low income and minority individuals are underrepresented in the current obesity treatment literature. Additionally, weight loss outcomes for these high risk groups are well below what is typically produced in standard, well-controlled behavioral interventions and reach and access to treatment is often limited. The use of telecommunications technology may provide a solution to this dilemma by expanding dissemination and allowing for dynamic tailoring. Further gains may be achieved with the use of material incentives to enhance uptake of new behaviors. Regardless of what novel strategies are deployed, the need for further research to improve the health disparities associated with obesity in disadvantaged groups is critical. The purpose of this manuscript is to review the weight loss intervention literature that has targeted socioeconomically disadvantaged and racial/ethnic minority populations with an eye toward understanding outcomes, current limitations, areas for improvement and need for further research.

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Introduction

In the U.S., the prevalence of overweight (BMI 25–29.9) and obesity (BMI ≥ 30) remains a serious public health problem. Obesity and overweight are related to the development of a number of chronic disease conditions with an estimated cost to the U.S. healthcare industry currently exceeding 7% of all health expenditures (Thompson and Wolf, 2001). Obesity has become the second leading preventable cause of disease and death in the United States, secondary only to tobacco use (US Department of Health and Human Services and Public Health Service, 2001). While an estimated 1 in 3 US adults are obese (Ogden et al., 2012), the socioeconomically disadvantaged and racial/ethnic minority populations are at vastly increased risk (Ogden et al., 2010). Data from NHANES, BRFSS and the Add Health study show large racial/ethnic differences in obesity, especially for women (Wang and Beydoun, 2007). Additionally, low socioeconomic status (SES) is an independent

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risk factor for overweight and obesity, particularly also in women (Flegal et al., 2012; National Center for Health Statistics, 2007). When obesity rates are categorized by SES (generally measured by income and education), there is a trend such that less educated women are more likely to be obese compared to women with college degrees (Ogden et al., 2010). Likewise when income and obesity rates are compared, women with incomes <200% of poverty had higher rates of obesity than those 200% of poverty or higher (National Center for Health Statistics, 2007). All together, these data show the high risk for obesity particularly in low-income women. This high risk status has not, however, translated into greater research focus. In general, women are well represented in the weight loss and weight loss maintenance literature (Appel et al., 2003; Diabetes Prevention Research Group, 2002; Martin et al., 2008; Perri et al., 2008; Svetkey et al., 2003; Turk et al., 2009; Wing et al., 2004), but seldom are low-income groups targeted. As a result, there is very little evidence on how to efficiently and effectively promote and maintain weight loss for this high risk population (Kumanyika, 2008). This is true even though there is an otherwise expanding literature on obesity treatment. Achieving reductions in obesity rates for low-income and minority women is, therefore, of critical importance in lowering high obesity-related to social and healthcare costs, morbidity and mortality. Evidence suggests that lifestyle changes that produce even modest, sustained weight loss produce clinically meaningful health benefits and that greater weight losses can produce greater benefits. Sustained weight loss of as little as 3 to 5% is likely to result in clinically meaningful reductions in triglycerides, blood glucose and glycated hemoglobin and in the risk of developing type 2 diabetes. Greater amounts of weight loss will reduce blood pressure, improve lipid levels and reduce the need for medications to control blood pressure, blood glucose and lipid levels (Jensen and Ryan, 2014) (Foster et al., 2009; Goldstein, 1992). However, in the effort to eliminate health disparities, it is important to consider that one size does not fit all. The purpose of this manuscript is to review the weight loss intervention literature that has targeted socioeconomically disadvantaged and racial/ethnic minority populations with an eye toward understanding outcomes, current limitations, areas for improvement and need for further research.

Obesity treatment: the gold standard

Comprehensive lifestyle interventions for weight loss are delivered for 6 months or longer with the gold standard including on-site, high intensity (≥14 sessions in 6 months) treatment provided in individual or group sessions by a trained interventionist. Ideally, therapy should continue for a year or more (Jensen et al., 2013). Components of such interventions include 1) self-monitoring of diet, physical activity and body weight, 2) reducing energy intake, and 3) increasing energy expenditure (Alhassan et al., 2008; Baker and Kirschenbaum, 1993; Wing and Phelan, 2005). Furthermore, intensive interventions should incorporate a variety of behavioral skills, including stimulus control, stress management, and problem solving which bolster individuals' ability to implement these behavioral changes across a variety of contexts and situations (Wadden et al., 2012). This type of intensive behavioral intervention has been shown to produce clinically significant weight loss (Wadden et al., 2005). Both the Diabetes Prevention Program (DPP) (2002) and the Look AHEAD trial are examples of high quality behavioral weight loss interventions (Diabetes Prevention Research Group, 2002; Look AHEAD Research Group, 2007). Participants in lifestyle intervention arm of the DPP (45% minority) lost an average of 5.6 kg over an average follow-up of 2.8 years (Diabetes Prevention Research Group, 2002). The Look AHEAD trial subjects (37% minority) in the intensive lifestyle intervention lost 8.6% (8.6 kg) of their initial weight with 55% losing ≥7% (Look AHEAD Research Group, 2007). Further analysis of the influence of demographics on weight loss showed that education and income did not predict achievement of weight loss goals in either study (Diabetes Prevention Research

Group, 2004; Wadden et al., 2009). However, ethnicity and race did predict outcomes in the Look AHEAD trial with African American and Hispanic subjects losing less weight than non-Hispanic whites (6.8%, 8.0% and 9.5%, respectively) (Wadden et al., 2009). Therefore, the data from these two important trials show that the influence of race, ethnicity and culture may have a more profound impact on weight loss outcomes than SES per se. Despite this, meaningful weight loss is achievable even in trials with high minority enrollment, however, these interventions have been expensive, time consuming for both participants and providers and often inaccessible, particularly for minority as well as, or including, those of low SES.

Obesity treatment in disadvantaged population groups

Few weight loss trials that have been conducted in the U.S. have involved low-income minority (African American and Latina) participants (Bennett et al., 2012; Clark et al., 2010; Faucher and Mobley, 2010; Jordan et al., 2008; Mitchell et al., 2012; Ockene et al., 2012; Samuel-Hodge et al., 2013). Most of these trials have recruited participants from community or public health clinics (Bennett et al., 2012; Clark et al., 2010; Faucher and Mobley, 2010; Jordan et al., 2008; Ockene et al., 2012; Samuel-Hodge et al., 2013) and conducted in-person intervention sessions either in individual or group settings (Clark et al., 2010; Faucher and Mobley, 2010; Jordan et al., 2008; Mitchell et al., 2012; Ockene et al., 2012; Samuel-Hodge et al., 2013) with length of interventions ranging from 8 weeks to 12 months. The Be Fit, Be Well trial was an exception to this as participants were given an option of choosing web or phone interfaces. This trial was also conducted over 24 months and was, therefore, longer than many others (Bennett et al., 2012). While one trial in Mexican American women focused solely on portion size reduction (Faucher and Mobley, 2010) the remaining studies were more typical behavioral weight loss trials where intervention delivery was done by trained professionals. In summary, the vast majority of these trials were similar in approach and utilized many of the same components as the highest quality, tightly controlled obesity treatment trials. Unfortunately, the weight loss outcomes, which ranged from 1 to approximately 3.5 kg, were well below what is expected. Generally speaking, behavioral weight loss trials have not produced 12-month outcomes greater than 3.5 kg in these high risk groups, independent of setting (clinical vs. non-clinical). (Osei-Assibey et al., 2010). Moreover, among studies that reported on loss of percent of baseline weight, only approximately 20% of participants achieve the clinically relevant marker of 5% (Bennett et al., 2012; Mitchell et al., 2012). One exception to this is the study by Samuel-Hodge et al. (2013) that reported an average loss of 3.7 kg for study completers but overall, 42% of participants achieved a 5% weight loss. Albeit better, this is still in contrast to the Look AHEAD trial where 55% of participants lost ≥7% (Look AHEAD Research Group, 2007). Retention in the trials was also variable with attrition rates ranging from 6% (Ockene et al., 2012) to 56% (Faucher and Mobley, 2010). On average this is higher than what is typically observed in other weight loss trials where follow-up at one year can be consistently in the 90% tile range (Diabetes Prevention Research Group, 2002; Harvey-Berino et al., 2010; Look AHEAD Research Group, 2007).

Treatment challenges

As stated previously, efficacy trials indicate that behavioral weight management interventions can result in clinically meaningful weight loss (Diabetes Prevention Research Group, 2002; Look AHEAD Research Group, 2007). Limited evidence is available however, on how to adapt these proven interventions to real world settings and diverse population groups (Akers et al., 2010). There are a number of challenges and barriers for low income groups that are commonly cited including lack of access, transportation, resources, limited literacy, language barriers, insufficient time and childcare issues (Bennett et al., 2012; Jordan et al., 2008; Warner et al., 2013). Some have also cited participant