Appetite 102 (2016) 32–43

Contents lists available at ScienceDirect

Appetite

journal homepage: www.elsevier.com/locate/appet

Internalized weight stigma moderates eating behavior outcomes in women with high BMI participating in a healthy living program

Janell L. Mensinger [a, b, *], Rachel M. Calogero [c], Tracy L. Tylka [d]

[a] Reading Health System, Sixth Avenue and Spruce Street, West Reading, PA 19611, USA
[b] Drexel University, College of Nursing and Health Professions 1601 Cherry Street, 3 Parkway Building, 9th Floor, MS 9503, Philadelphia, PA 19102, USA
[c] University of Kent School of Psychology, Keynes College Canterbury CT2 7NZ, UK
[d] The Ohio State University, Department of Psychology 225 Psychology Building, Columbus, OH 43210, USA

ARTICLE INFO

Article history:
Received 1 September 2015
Received in revised form
15 January 2016
Accepted 26 January 2016
Available online 29 January 2016

Keywords:
Internalized weight stigma
Disordered eating
Intuitive eating
Obesity
Health at every size
Conventional weight-management

ABSTRACT

Weight stigma is a significant socio-structural barrier to reducing health disparities and improving quality of life for higher weight individuals. The aim of this study was to examine the impact of internalized weight stigma on eating behaviors after participating in a randomized controlled trial comparing the health benefits of a weight-neutral program to a conventional weight-management program for 80 community women with high body mass index (BMI > 30, age range: 30–45). Programs involved 6 months of facilitator-guided weekly group meetings using structured manuals. Assessments occurred at baseline, post-intervention (6 months), and 24-months post-randomization. Eating behavior outcome measurements included the Eating Disorder Examination-Questionnaire and the Intuitive Eating Scale. Intention-to-treat linear mixed models were used to test for higher-order interactions between internalized weight stigma, group, and time. Findings revealed significant 3-way and 2-way interactions between internalized weight stigma, group, and time for disordered and adaptive eating behaviors, respectively. Only weight-neutral program participants with low internalized weight stigma improved global disordered eating scores. Participants from both programs with low internalized weight stigma improved adaptive eating at 6 months, but only weight-neutral program participants maintained changes at follow-up. Participants with high internalized weight stigma demonstrated no changes in disordered and adaptive eating, regardless of program. In order to enhance the overall benefit from weight-neutral approaches, these findings underscore the need to incorporate more innovative and direct methods to reduce internalized weight stigma for women with high BMI.

1. Introduction

Widespread concerns over the "obesity epidemic" have dominated the scientific literature on weight for the greater part of the 21st Century. A consequence of this increased attention on obesity is a pervasive stigmatization of people with a higher weight status—a stigmatization that is on the rise among adults and children (Andreyeva, Puhl, & Brownell, 2008; Harriger, Calogero, Witherington, & Smith, 2010; Latner & Stunkard, 2003). Indeed, weight discrimination has been well-documented in educational, workplace, and healthcare settings (e.g., Giel, Thiel, Teufel, Mayer, & Zipfel, 2010; Neumark-Sztainer, Story, & Harris, 1999; Puhl & Latner, 2007; Puhl, Latner, King, & Luedicke, 2014; Puhl, Luedicke, & Heuer, 2011; Puhl & Peterson, 2014; Ruggs, Hebl, & Williams, 2015; Sabin, Marini, & Nosek, 2012). Even healthcare professionals who have chosen a career path specializing in the medical management of obese patients demonstrate anti-fat attitudes, as assessed implicitly in laboratory research (Schwartz, Chambliss, Brownell, Blair, & Billington, 2003). Given these data, it is no surprise that higher weight individuals report avoiding preventive healthcare and suffer from receiving suboptimal medical treatment (Phelan et al., 2015; Wee, McCarthy, Davis, & Phillips, 2000).

Weight-neutral approaches to promote health, actively attempt to reduce the perpetuation of weight stigma and promote size acceptance by shifting the focus of interventions away from weight loss (i.e., typical of conventional weight-management programs) to

* Corresponding author. Present address: Drexel University, College of Nursing and Health Professions 1601 Cherry Street, 3 Parkway Building, 9th floor, MS 9503, Philadelphia, 19102 PA, USA.
E-mail addresses: janell.l.mensinger@drexel.edu (J.L. Mensinger), R.Calogero@kent.ac.uk (R.M. Calogero), tylka.2@osu.edu (T.L. Tylka).

http://dx.doi.org/10.1016/j.appet.2016.01.033
0195-6663/

well-being and self-care, regardless of weight status (Tylka et al., 2014). Notably, Health at Every Size® (HAES) models characterize the weight-neutral approach (Bacon, 2010; Bombak, 2014; O'Hara & Gregg, 2014; Robison, Putnam, & McKibbin, 2007), and studies that have tested weight-neutral programs demonstrated improvements (compared to baseline values) in many physical health, eating, and well-being indices such as: lower total cholesterol, low-density lipoprotein cholesterol, triglycerides, systolic blood pressure, disinhibited eating, bulimic symptomatology, drive for thinness, body dissatisfaction, poor interoceptive awareness, and depression (e.g., Bacon et al., 2002; Bacon, Stern, Van Loan, & Keim, 2005; Mensinger, Calogero, Stranges, & Tylka, 2016; for reviews, see Cadena-Schlam & Lopez-Guimera, 2014; Clifford et al., 2015; and Schaefer & Magnuson, 2014). Although this body of research demonstrated effectiveness for weight-neutral programs, what is less clear is whether there are moderators that strengthen or weaken their effectiveness. Moderators answer the question of *when* or *for whom* a given relationship exists or an effect occurs (Karazsia, van Dulmen, Wong, & Crowther, 2013).

One such mechanism that has received substantial attention and could act as a moderator of weight-neutral programs' effectiveness is internalized weight stigma. *Internalized weight stigma* refers to the adoption and personal endorsement of negative weight-based societal stereotypes (Carels et al., 2013; Durso & Latner, 2008; Tylka et al., 2014). Individuals with high internalized weight stigma judge themselves based on these very stereotypes (Pearl, Puhl, & Dovidio, 2014)—thus, they assume personal responsibility for their weight and view their bodies as unattractive and in need of modification due to their size. This self-judgment may prompt additional body shame and body hatred, which may then result in decreased psychological well-being and physical health (Durso et al., 2012; Muennig, 2008; Wirth, Blake, Hebert, Sui, & Blair, 2014). Preliminary evidence suggests that individuals with greater internalized weight stigma report lower engagement in physical activity (Carels et al., 2009; Pearl et al., 2014; Vartanian & Novak, 2011), higher caloric intake during weight loss programs (Carels et al., 2009; Schvey, Puhl, & Brownell, 2011), and greater eating disorder symptomatology (Carels et al., 2010; Durso et al., 2012; Puhl, Moss-Racusin, & Schwartz, 2007; Schvey, Roberto, & White, 2013; Schvey & White, 2015)—all of which may interfere with the effectiveness of health promotion programs. It is plausible, then, that internalized weight stigma poses a barrier to receiving the full benefit from participating in such programs.

To evaluate this proposition, the present study examined internalized weight stigma as a moderator of the effectiveness of a weight-neutral program and a conventional weight-management program for women of high BMI, with a particular focus on their eating behavior outcomes. More specifically, we predicted that women with high internalized weight stigma would be less likely to benefit from a weight-neutral program than those with low internalized weight stigma. Indeed, women with high internalized weight stigma may find it harder to engage in adaptive eating behaviors as well as harder to disengage from disordered eating if they have internalized societal weight-based stereotypes and therefore blame themselves for their high weight. Furthermore, without a special focus on interventions for reducing internalized weight stigma, implementing size acceptance principles characteristic of weight-neutral programs may be particularly challenging to this subset of people with high BMI. In contrast, conventional weight-management programs promise a method of escaping the stigmatized group through dietary prescriptions and lifestyle modifications that assure weight loss. Therefore, we predicted those with high internalized weight stigma in a conventional weight-management program may not differ as much in their changes in eating behaviors compared to their low internalized weight stigma counterparts.

In summary, to test these assertions, three specific hypotheses were examined: (a) internalized weight stigma would have a more negative impact on eating behaviors over time in the weight-neutral program compared to the conventional weight-management program; (b) participants with high levels of internalized weight stigma would see smaller declines in disordered eating and less improvement in adaptive eating over time compared to those low in internalized weight stigma, regardless of intervention; and (c) participants in the weight-neutral program would experience greater declines in disordered eating and larger improvements in adaptive eating behaviors than those in the conventional weight-management program. In addition, change in internalized weight stigma between and within both programs from baseline to post-treatment and follow-up was explored. If either program is able to reduce participants' internalized weight stigma directly, then additional support would be accrued for the program's clinical relevance.

2. Materials and methods

2.1. Design and procedure

Participants for this longitudinal, randomized controlled trial were recruited from a suburban community setting in Southeastern Pennsylvania in late Fall 2008 through a local coupon magazine advertisement, flyers placed in physicians' offices, and the sponsoring hospital's website. Research staff conducted phone screens with interested study applicants to determine preliminary eligibility. If they met the initial criteria, applicants were instructed to consult their primary care physician to obtain a signature on a requisite clearance form that described the study and its eligibility criteria. They then attended an intake session with a trained research assistant who garnered participants' informed consent and ascertained participants' BMI by measuring body weight and height without shoes using a Detecto balance beam scale and a wall-mounted stadiometer to the nearest 0.1 kg and 0.1 cm, respectively.

At the end of the baseline assessment, study participants were handed a sequentially numbered envelope containing a randomly assigned intervention group (1:1 ratio), a welcome letter, and instructions regarding the study. Follow-up assessments occurred immediately post-intervention (6 months) and at 24-months post-randomization. Incentives of $20 were provided for attending follow-up assessments. Research technicians with health science training (nurses and public health backgrounds) collected study measurements for all time points in the laboratory of the Clinical Research Center at the sponsoring hospital. Although self-report measures were used, study personnel read the questions to participants, and participants' answers were provided orally in a structured interview-like format, in order to ensure clarity of all questions and completeness of the data. The study protocol and procedures were approved and monitored by the Institutional Review Board of the Reading Health System.

2.2. Eligibility criteria

To be eligible for the study, participants had to be female, between 30 and 45 years old, have a BMI between 30 and 45 kg/m^2, practice birth control if heterosexual and pre-menopausal, and be physically inactive (i.e., scoring in either the 'inactive' or 'light intensity activity' categories on the Stanford Brief Activity Survey; Taylor-Piliae et al., 2006). Women were excluded if they were current smokers, were not fluent in English, were taking medications known to affect weight, were presently participating in a