

BRIEF COMMUNICATION



Experienced weight stigma, internalized weight bias, and clinical attrition in a medical weight loss patient sample

Allison M. S. Verhaak^{1,2✉}, Jennifer Ferrand^{1,3}, Rebecca M. Puhl^{1,4}, Darren S. Tishler⁵, Pavlos K. Pappas⁵ and Devika Umashanker⁶

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BACKGROUND: Limited research has explored the relationship between weight bias and clinical attrition, despite weight bias being associated with negative health outcomes.

PARTICIPANTS/METHOD: Experienced weight stigma (EWS), internalized weight bias (IWB), and clinical attrition were studied in a Medical Weight Loss clinic, which combines pharmacological and behavioral weight loss. Patient sociodemographic, medical, and psychological (depression) variables were measured at consultation, and clinic follow-ups were monitored for 6 months. IWB was assessed with the Weight Bias Internalization Scale Modified (WBIS-M).

RESULTS: Two-thirds (66%) of study participants returned for follow-up appointments during the 6-month period ("continuers"), while 34% did not return after the initial consultation ("dropouts"). Clinic "dropouts" had higher WBIS-M scores at initial consultation than "continuers," ($\chi^2(1) = 4.56; p < 0.05$). No other variables were related to clinical attrition. Average WBIS-M scores (4.57) were similar to other bariatric patient studies, and were associated with younger age ($t = -2.27, p < 0.05$), higher depression ($t = 2.65, p < 0.01$), and history of EWS ($t = 2.14, p < 0.05$).

CONCLUSION: Study findings indicate that IWB has significant associations with clinical attrition. Additional research is warranted to further explore the relationships between EWS, IWB, and medical clinic engagement.

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INTRODUCTION

Individuals with overweight/obesity often experience weight stigma and discrimination, including being stereotyped as lacking willpower, lazy, and less competent than individuals with lower weight [1–3]. Some individuals may internalize these negative societal stereotypes and attitudes, known as internalized weight bias (IWB) [4]. Experiencing weight stigma and IWB have both been associated with negative psychosocial and health consequences, including higher caloric consumption, increased cardiovascular disease risk factors, and psychological distress [5–7]. Specifically, over 25 studies to date have documented significant, positive associations between IWB and depression symptoms [5]. Emerging research has also explored relationships among experienced weight stigma (EWS), IWB, and weight loss, with mixed findings [8–13]. In particular, some studies found no association between weight bias and behavioral [8, 9] or surgical weight loss interventions [11], while other studies documented links between higher levels of IWB/EWS and less weight loss or higher weight regain in behavioral [10, 13] and surgical [12] interventions. However, studies exploring the potential link between weight bias and clinical attrition are scarce, despite findings that support an association between higher IWB and decreased motivation for recommended health behaviors [14]. In general, previous studies of clinical attrition have defined attrition as loss to follow-up, or failure to complete a program for any number of

reasons, including self-discharge, lack of interest, or poor compliance [15]. One previous study showed increased attrition rate associated with higher levels of weight bias in a behavioral weight loss study [16]. Additionally, several studies have documented associations between higher depressive symptomatology and higher rates of program attrition in weight loss treatment [17–19]. The present study sought to explore relationships among EWS, IWB, and clinical attrition in a Medical Weight Loss (MWL) clinic, with the hypothesis that higher levels of EWS and/or IWB would be associated with higher attrition rates. In addition, the association of these variables with depression symptomatology was explored. MWL programs, which combine both pharmacological and behavioral weight loss, are often beneficial for patients who are having difficulty obtaining/maintaining weight loss, or who are ineligible for bariatric surgery but seek to obtain significant weight loss. To date, MWL samples have received little attention in the weight stigma literature.

MATERIALS AND METHODS

Participants were recruited from two MWL clinics of a large urban healthcare organization for a 12-month period, beginning January 2019. Study participation was open to new clinic patients aged 18+ who were English-speaking/-reading. New MWL clinic patients were most often referred from primary care physicians or surgical weight loss clinics (both pre-/post-operative) for weight management purposes. Those with bariatric surgery

¹Division of Health Psychology, The Institute of Living/Hartford Hospital, Hartford, CT, USA. ²Hartford HealthCare Headache Center, Ayer Neuroscience Institute, Hartford, CT, USA. ³Wellness Department/Medical Affairs, Hartford HealthCare, Hartford, CT, USA. ⁴University of Connecticut Rudd Center for Food Policy & Health; Department of Human Development and Family Sciences, University of Connecticut, Hartford, CT, USA. ⁵Hartford Hospital, Department of Surgery, Hartford, CT, USA. ⁶Obesity Medicine, Hartford HealthCare, Hartford, CT, USA. ✉email: allison.verhaak@hhchealth.org

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Table 1. Sample Characteristics ($N = 119$).

	Mean (SD)	N (%)
Age (years)	49.0 (13.4)	
Sex		
Female		96 (80.7)
Male		23 (19.3)
Race/Ethnicity		
Caucasian		65 (54.6)
African American		18 (15.1)
Hispanic		23 (19.3)
Other		13 (10.9)
Initial BMI (kg/m ²)	41.4 (7.6)	
WBIS-M Mean Score	4.57 (1.27)	
Bariatric Surgery History		
Yes		31 (26.1)
No		88 (73.9)
Medications Prescribed		
None		60 (50.4)
Metformin		22 (18.5)
Topiramate		20 (16.8)
Phentermine		12 (10.1)
Other		5 (4.2)

history must have experienced at least 10% weight regain post-operatively for study inclusion to ensure patients had the capacity for weight loss that could be detected via statistical analyses. Participants were excluded if they were currently prescribed medications for weight loss (on-/off-label use) prior to clinic consultation. Baseline variables collected via electronic medical record (EMR) review and MWL clinic intake questionnaires included patient sociodemographics, initial body mass index (BMI), weight, bariatric surgery history, and measures of EWS and IWB. EWS was measured with three "yes/no" questions asking whether participants had ever been teased, treated unfairly, or discriminated against because of their weight during their lifetime. Participants' responses were coded as having EWS if they responded "yes" to at least one item. These items have been used in previous weight stigma studies. As part of the MWL clinic intake questionnaire, participants also completed the WBIS-M, a 10-item measure assessing the degree to which participants engage in self-devaluation for their weight status and apply negative weight-based stereotypes to themselves [4]. Responses are provided on a 7-point Likert scale (1 = "strongly disagree", 7 = "strongly agree"). Average scale item score was used in analyses, with higher scores indicating greater IWB. Study authors obtained informed consent at the MWL clinic appointment, and administered the Patient Health Questionnaire-9 (PHQ-9) to participants to measure depressive symptomatology [20]. Patients were monitored via EMR for a 6-month period to determine clinical attrition status in the MWL clinic and to track weight loss. Participants who attended any follow-up appointments in the 6-month period after initial consultation were designated as "continuers", while those who discontinued clinic treatment after consultation were designated as "dropouts". Please see the supplemental section for additional details pertaining to study procedures and measures.

Regarding statistical analyses, univariate analyses (Pearson's product-moment correlation; one-way ANOVA; chi-square) assessed relationships among patient variables of interest, depression, IWB, and EWS. Significant predictors were included in separate regression models to predict IWB (linear regression) and history of EWS (logistic regression). Group differences in clinical attrition status were explored using Kruskal–Wallis test due to unequal group sizes and heterogeneous group variances.

RESULTS

Pre-screening chart review was conducted for 302 patients. Nearly one-third were excluded due to exclusion criteria ($n = 98$; 32.4%), 19 (6.2%) declined to participate, and 65 (21.5%) canceled/no-showed consultation appointment. In total, 120 patients enrolled (sample characteristics: Table 1). Data missing values ranged from 4.2% to 10.9% for all variables, with highest value for missing items

on the WBIS-M as part of the MWL clinic intake questionnaire. One case was excluded from analysis due to an extreme value for initial BMI (5.50 standard deviations above the mean).

Experienced weight stigma (EWS)

Cronbach's alpha for the three items was 0.78. Over their lifetimes, participants reported experiencing teasing (57.9%), unfair treatment (37.7%), and discrimination (30.1%) due to weight. Nearly two-thirds of participants (62.3%) reported experiencing at least one of these events during their lifetimes. History of EWS was predicted by a logistic regression model ($N = 104$; $R^2 = 0.13$) that included higher WBIS-M scores (OR, 1.65; 95% CI, 1.16–2.35; $p < 0.01$) and history of bariatric surgery (OR, 4.35; 95% CI, 1.41–13.40; $p < 0.05$). No other variables were associated with EWS, including demographics, BMI, or depression.

Internalized weight bias (IWB)

The average WBIS-M score was 4.57 (± 1.27), similar to other studies of bariatric patients [12], but higher than previous studies of community samples [21]. Fifty participants (42.0%) had WBIS-M mean scores ≥ 5.00 , indicating relatively high levels of IWB. Cronbach's alpha was 0.89. Average WBIS-M scores were predicted by a linear regression model ($F(3,98) = 8.38$, $p < 0.01$, $R^2 = 0.18$) that included younger age ($t = -2.27$, $p < 0.05$), higher depression score ($t = 2.65$, $p < 0.01$), and history of EWS ($t = 2.14$, $p < 0.05$). No other variables were associated with WBIS-M scores.

Clinic attrition

Approximately two-thirds (66.4%; 79/119) of study participants returned for follow-up clinical appointments during the 6-month study period ("continuers"), while 33.6% (40/119) did not return after the initial consultation ("dropouts"). The COVID-19 pandemic may have affected follow-up appointments for 15 (12.6%) patients, for whom the 2-, 4-, and 6-month follow-ups occurred during or after March 2020. Only five of these 15 patients did not present for follow-up during those time periods, and these patients were excluded from additional analyses looking at differences between "continuers" and "dropouts." Clinic "dropouts" had higher WBIS-M scores at initial consultation than "continuers," ($\chi^2(1) = 4.56$, $p < 0.05$) (see Fig. 1). There was a trend toward significance for "dropouts" to have higher PHQ-9 scores at initial consultation than "continuers" ($\chi^2(1) = 3.71$, $p = 0.054$). No other group differences between "continuers" and "dropouts" were found, including demographics, initial BMI, bariatric surgery history, EWS, or medications prescribed.

%Total body weight loss (TBWL)

For those determined to be "continuers", only 53.1% (42/79), 30.3% (24/79), and 36.7% (29/79) had follow-up appointments at 2-, 4-, and 6-month time points, and these participants lost 2.7%, 5.0%, and 5.2% TBWL, respectively. Limited follow-up weight data was due to both clinical attrition and patients being seen for follow-up outside of the desired time points. Due to limited numbers at follow-up, additional analyses related to predictors of %TBWL were not reported in this study.

DISCUSSION

The present study assessed relationships among EWS, IWB, and clinical attrition in a MWL clinic sample. History of EWS was associated with bariatric surgery history, and IWB was associated with younger age, higher depressive symptomatology, and history of EWS. Our findings indicate that IWB had negative implications for clinic attrition. Patients lost to follow-up demonstrated higher IWB at baseline than those who completed clinic follow-up. A similar phenomenon has been observed within a behavioral weight loss research program, in which participants with greater weight bias displayed higher program attrition rates [16]. Weight stigma, weight bias, and negative affect may contribute to reduced goal motivation

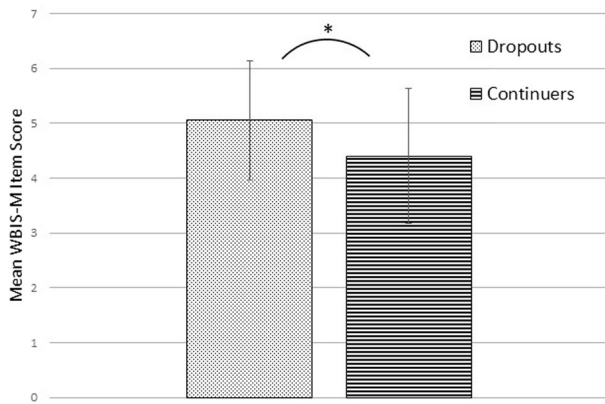


Fig. 1 Differences in Mean WBIS-M Item Scores by Clinic Attrition Status; * $p < 0.05$.

in weight loss attempts [16], which may be reflected in lower engagement with obesity medicine specialists. To the authors' knowledge, this is the first study to highlight the relationship between IWB and attrition within the medical clinic setting. Although there was a trend toward higher depression scores associating with greater clinic attrition, IWB was the only significant predictor of attrition in the present study. This contrasts with previous studies showing an association between greater depressive symptomatology and higher clinical attrition; however, as IWB was not included in those studies, it is plausible that the negative affect observed may have been more closely related to IWB than depressive symptoms, particularly since these constructs have demonstrated a close relationship. In addition, EWS was not associated with clinical attrition in the present study. One previous study suggested an association between greater weight stigmatizing experiences and greater weight loss [22]. Current findings may be due to different methods of measuring EWS among studies (i.e., 3-item survey versus lengthier questionnaires). In addition, several key variables were not associated with EWS in this study (including initial BMI and depression scores), while history of bariatric surgery was significant; as over one-fourth of the current sample had a history of bariatric surgery, this study's sample may be uniquely vulnerable, potentially making detection of differences amongst groups more challenging.

Several study limitations should be noted. The study sample was homogenous in several areas, including geographic location and gender (80.7% female), therefore, the generalizability of results may be limited. Additionally, due to high clinical attrition rates observed and variable clinic scheduling, weight loss data at desired time points was very limited. Other factors that may contribute to clinical attrition (including financial considerations/socioeconomic status) were not examined.

Additional research is warranted to further explore the relationships between EWS, IWB, clinic engagement, and weight loss outcomes, including the potential delivery of psychological interventions to address impact of weight stigma/weight bias on patient outcomes and engagement with obesity medicine specialists.

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AUTHOR CONTRIBUTIONS

AMSV: study conceptualization, data collection, data analysis and interpretation, and writing original draft. JF: study conceptualization and review and editing of manuscript. RMP: study conceptualization, data interpretation and review and editing of manuscript. DST: study conceptualization and review and editing of manuscript. PKP: study conceptualization and review and editing of manuscript. DU: study conceptualization; data collection, and review and editing of manuscript.

COMPETING INTERESTS

RMP: research grant funding from Weight Watchers, Inc. DST: consultant for Medtronic. DU: consultant for Novonordisk. No additional competing interests for any other authors.

ADDITIONAL INFORMATION

Supplementary information The online version contains supplementary material available at <https://doi.org/10.1038/s41366-022-01087-2>.

Correspondence and requests for materials should be addressed to Allison M. S. Verhaak.

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