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A Pilot Study of Interpersonal Psychotherapy for Preventing Excess Weight Gain in Adolescent Girls At-risk for Obesity

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Abstract

Objective—Interpersonal psychotherapy (IPT) is effective at reducing binge episodes and inducing weight stabilization in obese adults with binge eating disorder.

Method—We piloted the administration of IPT to girls at-risk for excess weight gain (BMI 75th-97th percentile; IPT-WG) with and without loss of control (LOC) eating. Thirty-eight girls (12-17y) were randomized to IPT-WG or a standard-of-care health education group.

Results—All 38 girls completed the programs and all follow-up visits through 6 months. Thirty-five of 38 returned for a complete assessment visit at 1 year. Among girls with baseline LOC (n=20), those in IPT-WG experienced greater reductions in such episodes than girls in health education (p=.036). Regardless of LOC status, over 1 year girls in IPT-WG were less likely to increase their BMI as expected for their age and BMI percentile (p=.028).

Discussion—IPT-WG is feasible and acceptable to adolescent girls at-risk for adult obesity and may prevent excess weight gain over 1 year.

Keywords

Obesity prevention; interpersonal psychotherapy; adolescence; loss of control eating

Binge eating disorder (BED) is associated with overweight and obesity.1› 2 Although full-syndrome BED is less common in youth than adults, the prevalence of loss of control (LOC) eating among overweight adolescents is substantial.3 LOC eating is defined as episodes of eating during which loss of control is experienced, regardless of the amount of food consumed. Prevalence estimates for LOC eating range from 6% to 40% in adolescent

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[1]For complete descriptions of each program, see Weissman et al., 2000; Wilfley et al., 2000; and Young & Mufson, 2003.

samples.4-6 Similar to BED in adulthood, even infrequent episodes of LOC eating in youth are associated with psychological distress, greater disturbed eating cognitions, and greater adiposity.3 Binge and LOC eating have been shown to prospectively predict increased weight and fat gain.7-10 These data suggest that LOC eating is a risk factor for excessive weight gain in youth, and may provide an important target for preventive interventions. Another potent risk factor for adult obesity is childhood overweight (body mass index, BMI, $kg/m^2 \geq 95^{th}$ percentile).11 Even youth who are above average weight (BMI $\geq 50^{th}$ percentile), but not overweight, are at risk for gaining too much weight as they grow.12, 13 Given that few studies demonstrate effective long-term weight loss and maintenance,14 prevention has been suggested as *the* most important approach to reducing the prevalence of obesity.15

To date, there is a dearth of intervention research in adolescents with binge or LOC eating. Only one study provides preliminary evidence that reducing binge episodes using a modified treatment for BED may impact body weight in youth.16 Since many adults with BED report becoming overweight following, not prior to, binge eating on a regular basis,17, 18 decreasing LOC eating episodes in adolescents may reduce the likelihood of excess weight gain and prevent the onset of adult obesity. A number of psychotherapeutic interventions are effective in the treatment of BED in overweight and obese adults.19 For those effectively treated, weight stability typically ensues.19 Cognitive behavior therapy and interpersonal psychotherapy (IPT), two well-tested treatments for BED, were both developed from therapies designed to treat depression. IPT for BED is based on the assumption that binge eating occurs in response to poor social functioning and consequent negative moods.20 IPT focuses upon improving the interpersonal difficulties, and social deficits21 that may perpetuate LOC eating.22 IPT may be particularly appropriate for adolescents at high-risk for adult obesity19 since heavier youth report teasing, social isolation, and compromised interpersonal functioning.23 Indeed, improving social support has been shown to increase weight loss and assist with weight maintenance in overweight adults24 and children.25 Importantly, IPT has been adapted for the treatment of adolescent depression26 and has been shown to effectively improve interpersonal functioning and negative affect in such youth.27, 28 IPT has also been adapted and studied as a preventive intervention for otherwise healthy adolescents with elevated depressive symptoms.29

We therefore conducted a pilot study of IPT for the prevention of excessive weight gain (IPT-WG) in adolescents at-risk for inappropriate gain by virtue of their current body mass index (BMI, kg/m^2). We hypothesized that IPT-WG would be acceptable to adolescent girls. Secondarily, we expected that compared to a standard-of-care health education (HE) program, girls assigned to IPT-WG would be more likely to stabilize or reduce their BMI growth. Because the main purpose of this study was to demonstrate acceptability and feasibility, it was deemed reasonable to recruit girls with *and* without LOC eating. This would also allow for the examination of possible differential patterns of response to IPT-WG and HE for girls with and without such episodes.

Methods

Study Procedures

Letters were sent to area healthcare providers and flyers were posted on public and internet bulletin boards, and parent listservs for high schools in the greater Washington, DC metropolitan area, requesting participation of adolescent girls who “are gaining too much weight.” Interested families were informed that the study was aimed at preventing excess weight gain. Girls with BMI scores between the 75^{th} and 97^{th} percentile were included. Pediatric growth chart trajectories were described and the idea of weight maintenance vs. weight loss as ideal outcome was explained. Participants underwent two screening visits to

determine study eligibility. A computerized randomization program was used to assign girls to either IPT-WG or the HE comparison group. Randomization stratification was balanced by the reported presence or absence of LOC eating. Girls then participated in the weekly group intervention for 12 weeks. Participants returned for follow-up visits at 6 months and 1 year after the initiation of the group programs. All visits took place at the Hatfield Clinical Research Center, NIH. This study was approved by the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development institutional review board. Girls were modestly compensated for participation; they received $40 following each completed assessment and $50 at the end of the protocol for attending ≥10 of the 12 group sessions.

Measures

Primary Study Outcome Measure—The number of group sessions attended and completion of follow-up visits.

Secondary Study Outcome Measures—At baseline, 6 month, and 1 year following the initiation of the programs, height and weight were measured and BMI (kg/m^2) was calculated as previously described.30 The Eating Disorder Examination version 12OD/C.2 31 was administered to determine the presence or absence of LOC in the month prior to assessment as described previously30 at baseline and at the 6 months follow-up. The Eating Disorder Examination has demonstrated very good psychometric properties in adolescent samples.32

Group Programs

Following randomization, each girl attended an individual 1.5 hour pre-group meeting with her respective group leaders to learn about group format and participation. For both programs, group sessions were 75-90 minutes in length. IPT-WG1 was developed based upon the IPT-Adolescent Skills Training (IPT-AST);33 manual for the prevention of depression and IPT for the treatment of BED.34 IPT-WG differs from other adaptations of IPT in that it was developed to specifically address the particular needs of adolescent girls at high-risk for adult obesity due to their current BMI percentile and LOC eating behaviors. Groups were co-led by a PhD-level psychologist and a graduate student in clinical psychology. As designed for IPT-AST, IPT-WG focuses on psycho-education and general skill-building that can be applied to different relationships within the framework of the interpersonal problem areas.33 Similar to IPT-BED, throughout the program, episodes of LOC eating and overeating are linked to interpersonal functioning.34 Groups were audio-taped and selected sessions were reviewed by the second (DEW) and third (JFY) authors to assure treatment adherence and provide supervision.

The *HE* group was based upon the “Hey-Durham” health program for high school students. 35 For the present study, it was adapted to match the same number of sessions as IPT-WG and was used as an “attention-only” comparison. The curriculum topics included avoiding alcohol, drug and tobacco use, identifying signs of depression and suicide, nonviolent conflict resolution, sun safety, domestic violence, and very basic information on nutrition, body image and exercise. Information was provided in a didactic manner. Groups were co-lead by a master’s level registered dietitian, and a bachelor’s level student. The first author (MTK) reviewed selected audio-taped sessions to confirm that the program was adhered to and that no aspects of IPT-WG were addressed.

Data Analyses—Analyses were conducted using SPSS for Windows, 16.0.36 An independent t-test was used to compare number of sessions attended between IPT-WG and HE. A general linear model with repeated measures with a group interaction term was used to examine change over time in LOC episodes. Effect size is expressed as partial η^2. To

examine weight maintenance in growing girls of various ages, we calculated the expected BMI change for each participant based upon the Center for Disease Control pediatric BMI growth chart data37 versus the actual change in BMI over the course of the year. Residualized change scores were created by regressing BMI at the one year follow-up onto baseline BMI and saving the unstandardized residuals. Residualized change scores are an estimate of pre- to post-group change that are not susceptible to regression to the mean because pre-group levels are controlled.38 A categorical variable was created grouping girls who experienced less than their expected BMI growth versus those whose BMI growth was greater than expected. A binary logistic regression was used to examine the frequency of less than vs. more than expected BMI growth at follow-up by group (IPT-WG vs. HE). Age and race (coded White or Non-White) were used as covariates. We conducted both a 1 year completer analysis for 35 girls, and an intent-to-treat analysis for 38 girls. For the latter analyses, the last measured observation at 6 months was used for the 3 girls who did not return for 1 year weight and height measurements. Differences were considered significant when p values were ≤ 0.05 and all tests were two-tailed.

Results

Primary Study Aim

Participant flow is shown in Figure 1. The final sample included 38 girls; sample characteristics are in Table 1. All girls completed the 12 week programs and attended 80% of the 12 week sessions (9.7±2.2 for IPT-WG vs. 9.5±2.5 for HE, t=0.19, p=0.85; Table 1). All 38 participants also completed the 6 month follow-up visit. Thirty-five girls attended a 1 year follow-up assessment, while 2 (one girl from each group) mailed in questionnaires and one HE girl did not participate. Findings did not differ when only girls reporting baseline LOC (n=20) were examined.

Secondary Study Aim

Of the girls who reported LOC eating at baseline (n=20), the adjusted mean number of baseline episodes for each group did not significantly differ (IPT-WG, n=11: 3.5 ± 5.4 vs. HE, n=9: 1.2 ± 1.9, F=3.0, p=.09, partial η^2=.08). Among girls who reported LOC at baseline, those in IPT-WG experienced significantly greater reductions in such episodes than those in HE at 6 month follow-up (IPT-WG: .53 ± 0.9 vs. HE: .21± 0.5, F=4.7, p=.036, partial η^2=.12). Further, examining only the 35 girls who had measured heights and weights at 1 year, significantly more girls in IPT-WG (83.3%, n=15) than in HE (52.9%, n=9) experienced less than expected BMI growth (B = 2.4, Wald Statistic = 4.8, (Exp)B = 10.5, p = 0.028). This finding remained in the intent-to-treat analysis with all 38 girls (B = 1.7, Wald Statistic = 3.9, (Exp)B = 5.3, p = 0.048). Neither finding was significant when examining only girls with baseline LOC.

Discussion

In this pilot study for the prevention of excess weight gain in adolescent girls, we found both interpersonal psychotherapy and a standard-of-care health education program to be feasible and acceptable to participants. In a pre-specified secondary analysis, we found very preliminary support that IPT-WG may reduce LOC eating and prevent excess BMI gain.

On average, girls participating in both groups attended 80% of the group programs. Further, only 1 participant did not complete the final follow-up assessment although 1 girl in each group provided only self-reported data at the 1 year follow up. Our research team made a concerted effort to maintain positive rapport and regular contact with study families, and girls were offered modest financial compensation. Given that compensation was delayed

until the completion of groups, it was unlikely to have had a significant influence on girls' weekly attendance. Nevertheless, providing compensation may have potentially improved attendance rates since research in other literatures have shown that compensation influences treatment compliance.39 However, our high level of adherence to the study protocol may speak to an overarching desire on the part of the public to prevent obesity and find approaches that may bolster standard weight loss programs.

Among girls reporting baseline LOC eating, those in IPT-WG experienced significantly greater reductions in such episodes compared to those in HE. This result may provide a mechanism for the finding that more girls in IPT-WG than HE experienced less than expected BMI growth at follow-up. Although only half of the sample reported LOC eating at baseline, the focus of IPT-WG on linking interpersonal functioning and negative affect to LOC episodes and times of overeating may have decreased excessive energy intake. Emotional eating, even in the absence of reported LOC episodes, is common among youth.40, 41 Some,42 but not all43 studies have found emotional eating to be associated with overweight in youth and predictive of overeating in cross-sectional structural models.44 Therefore, IPT-WG may have reduced such episodes of overeating, thereby resulting in greater BMI maintenance than a health education program.

Strengths of this study include the use of a comparison group and the ethnically diverse sample. As is the case with most pilot studies, the primary limitation is a lack of statistical power which precludes definitive conclusions about efficacy and does not allow for determination of mechanisms of change. The study included girls with and without LOC eating. Our primary aim was to determine whether such a prevention program was feasible and would be acceptable to adolescent girls, thereby providing a rationale for including girls with and without LOC eating episodes. Another potential limit was that among girls with LOC eating, those in the IPT-WG had more baseline episodes than girls in the HE group, although not significantly so. Girls were randomized to the groups based upon the presence or absence of LOC eating, as opposed to episode frequency. This resulted in an inadvertent imbalance of episode frequency between groups. Although this insignificant baseline difference was not optimal, the repeated measures analysis controls for the baseline number of episodes, suggesting that our findings are significantly meaningful. The inclusion of girls with BMI percentiles up to the 97th percentile might be considered a limitation. The participation of girls in the 75th through 97th percentiles meant that our groups included those who met criteria for overweight (BMI >95th percentile).37 It has been recommended that youth between the 95th and 97th percentile require weight reduction45 as opposed to prevention. However, specialized pediatric obesity programs are not readily available in many areas, and are often utilized for children with obesity-related comorbidities or more severe obesity. Our rationale for including otherwise healthy youth up to the 97th percentile was to offer a potentially beneficial impact to girls who might not seek weight loss treatment.

In conclusion, preventive approaches are acceptable to adolescent girls at risk for adult obesity. An adequately powered study of girls who endorse LOC eating is underway to determine whether IPT-WG is effective at preventing inappropriate weight gain in youth.

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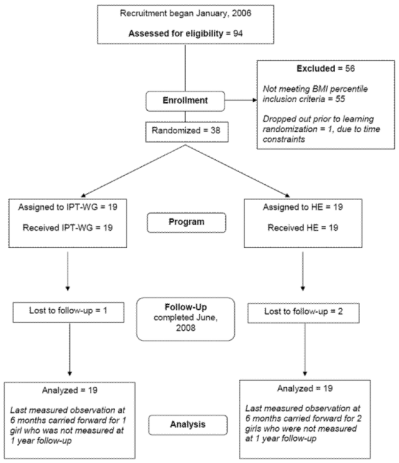

Figure 1.
Study participant flow.

Table 1

Sample characteristics at baseline and 1 year[¥] Follow-up, N = 38.

	IPT-WG = 19		HE = 19	
	Mean ± SD		Mean ± SD	
	Baseline	1y Follow-up	Baseline	1y Follow-up
Age (y)	14.7 ± 1.2	15.4 ± 1.2	15.4 ± 0.2	16.1 ± 1.2
BMI (kg/m2)	25.1 ± 2.8	25.9 ± 3.3	25.6 ± 3.1	26.2 ± 3.6
BMI z-score	1.3 ± 0.4	1.2 ± 0.5	1.3 ± 0.4	1.2 ± 0.5
BMI percentile	88 ± 12.0	86 ± 10	88 ± 10	86 ± 09
Sessions attended	9.7 ± 2.2		9.5 ± 2.5	
	Percentage		Percentage	
Race/ethnicity	42% Black 37% White 16% Asian 5% Hispanic		53% Black 37% White 5% Asian 5% Hispanic	
BMI growth ≤ expected[*]	--	79%	--	47%

Note. IPT-WG = Interpersonal psychotherapy for the prevention of excess weight gain; HE = Health education; BMI = Body mass index; BMI z-score = BMI adjusted for age and sex;

[¥]For 3 girls, the last measured observation at 6 month follow-up was used.

[*]More girls in IIPT-WG experienced less than expected BMI growth (p=.048).