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Psychosocial Well-Being of Adolescents Before and After a 1-Year Telephone-Based Adiposity Prevention Study for Families



Sabine Herget, M.Sc.^a, Jana Markert, Ph.D.^a, David Petroff, Ph.D.^b, Ruth Gausche^c, Andrea Grimm^a, Anja Hilbert, Ph.D.^a, Wieland Kiess, M.D., Ph.D.^d, and Susann Blüher, M.D.^{a,*}

^a Integrated Research and Treatment Center AdiposityDiseases, University of Leipzig, Leipzig, Germany

^b Clinical Trial Centre, University of Leipzig, Leipzig, Germany

^c CrescNet gGmbH, University of Leipzig, Leipzig, Germany

^d Department of Women and Child Health, Center for Pediatric Research, University Hospital for Children and Adolescents, Leipzig, Germany

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ABSTRACT

Purpose: Body image and psychosocial well-being play an important role in influencing health behavior of obese adolescents. Effects of family-based interventions on self-image and mental well-being are poorly understood. The effects of a parent-delivered intervention on psychosocial well-being in obese adolescents were investigated.

Methods: A subset of secondary variables from the randomized-controlled Telephone-based Adiposity prevention study For Families (T.A.F.F. study) was analyzed. Multivariate analysis of variance and Pearson correlations were used to examine intervention effects on measures of body image, body dissatisfaction, self-efficacy, self-worth, and resilience and changes of standard deviation score of body mass index (BMI-SDS).

Results: A total of 154 randomized adolescents participated in this study (10–17 years). Body dissatisfaction decreased between baseline and follow-up ($p = .013$, confidence interval [CI], .03–.29), whereas self-efficacy increased ($p = .022$; CI, –1.73 to –0.14). Both were independent of the randomization arm. Initial body image was a negative predictor of self-efficacy after the intervention. Changes in body dissatisfaction and self-efficacy were positively correlated with changes in self-worth and resilience but were not related to changes in weight status.

Conclusions: Overweight/obese adolescents have a high level of body dissatisfaction, more pronounced in girls than in boys. Interactions within families during overweight and obesity interventions need to be investigated in relation to adolescent body self-concept.

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IMPLICATIONS AND CONTRIBUTION

Initially, high levels of body dissatisfaction decrease and self-efficacy increases after a telephone-based obesity intervention. These changes are positively correlated with changes in self-worth and resilience but not with weight status.

Conflicts of Interest: The authors have no conflicts of interest to disclose. The study protocol was registered at the German Clinical Trials Register/International Clinical Trials Registry Platform (DRKS00000803).

* Address correspondence to: PD Dr. med. Susann Blüher, Integrated Research and Treatment Center (IFB) AdiposityDiseases, Philipp-Rosenthal-Straße 27, 04103 Leipzig, Germany.

E-mail address: susann.blueher@medizin.uni-leipzig.de (S. Blüher).

Among adolescents, body image and body satisfaction affect mental health [1]. Obese adolescents frequently suffer from poor body image and low psychological well-being [2]. Family-based obesity interventions address parents as “agents of change” [3], but their impact on mental health of affected adolescents is poorly understood.

The Telephone-based Adiposity Prevention for Families (T.A.F.F.) trial is a 1-year randomized control study aiming to

facilitate health behavior change in the family setting [4]. The primary aim of the intervention was the reduction in the standardized deviation score for body mass index (BMI-SDS). The program was effective in improving weight status when followed according to the protocol [4]. Here, we present a subanalysis of the T.A.F.F. study and investigated whether the intervention had an effect on important measures of psychosocial well-being, namely body self-concept, self-worth, self-efficacy, and resilience and whether these constructs had an association with change in BMI-SDS.

Methods

Telephone-based Adiposity Prevention for Families intervention

Families with overweight children (BMI-SDS \geq 90th percentile according to German reference values) aged 4–17 years were eligible for participation. The recruitment/enrolment process and study design have been previously described [4]. Briefly, the core of the intervention was 1 year, computer-aided telephone counseling (interviews 20–30 minutes each) by trained prevention managers according to a standardized manual (family therapy approaches/solution-focused systemic therapy). Each counseling interview was preceded by the release of a newsletter (14 issues) addressing the specific topic of the interview (medical background of obesity/associated comorbidities, dietary habits/eating behavior, physical activity/leisure time habits, and psychological support/stress management) [4]. The telephone counseling addressed the parents or caregivers of the child/adolescent and primarily targeted self-regulatory capacities by solution-focused counseling [4].

Participants

A total of 303 families with children and adolescents were enrolled in the T.A.F.F. study, and data of 289 of these were used for an analysis of BMI-SDS and further secondary study end points [4]. Only participants aged >10 years completed the questionnaire related to body image and all who did ($n = 154$) were included in the current analysis. Identical follow-up questionnaires were completed after 12 months. Participants were randomized to the intervention group (telephone-based coaching) or the control group (no intervention).

Measures

Anthropometric data. Body weight/body heights were measured as previously described [4]. BMI was calculated by the formula: weight in kilograms divided by the square of height in meters and was standardized to age and sex of the children applying German reference data. BMI-SDS, which provides a normalized measurement for the degree of overweight or obesity, was calculated according to the “LMS” method. According to Cole, “...the optimal power to obtain normality is calculated for each of a series of age groups and the trend summarized by a smooth (L) curve. Trends in the mean (M) and coefficient of variation (S) are similarly smoothed. The resulting L, M and S curves contain the information to draw any centile curve, and to convert measurements (even extreme values) into exact SD scores.” [5] A cutoff ≥ 1.28 SDS (90th centile) classifies overweight and a cutoff ≥ 1.88 SDS (97th centile) classifies obesity in German children, as previously described [4].

Body image and body dissatisfaction. Body image was assessed as previously described [4]. Six images of young silhouettes ranging from skinny (1) to obese (6) were displayed. Body image was assessed by marking the corresponding silhouette. Body dissatisfaction was measured by assessing the difference between perceived body image (a) and desired body image (b), which ranges from 0 to 5. Greater scores indicate greater body dissatisfaction. Validity tests have shown a correlation between strive for thinness and body dissatisfaction ($r = .46$).

Resilience. Resilience was measured by assessing personal and familial resources and perceived social support for mental health of youngsters [4]. A five-point Likert-scale (1) “never” to (5) “always” was used for 15 social situations. Scores ranged between 7 and 75. Greater values indicate a higher level of resilience.

Self-worth. Self-worth is one subscale of the KINDL-R questionnaire (<http://www.kindl.org/english/information/>) [6], measuring health-related quality of life. A five-point Likert-scale ranges from (1) “never” to (5) “always”. The score of self-worth (composed by the sum of four questions) ranges from 4 to 20 with greater scores indicating higher self-worth.

Self-efficacy. Self-efficacy was measured by the validated General Self-Efficacy scale based on a four-point Likert answering scale from (1) “do not agree” to (4) “agree completely” [4]. A total sum score ranges from 10 to 40 with greater values indicating greater self-efficacy.

Analyses

Mean values of body self-concept and psychosocial variables were computed and compared regarding baseline, final values, and intervention arms by the Student *t* test using a 95% confidence interval (CI).

A multivariate analysis of covariance was conducted to examine the effect of randomization arm on psychosocial variables after completion of the intervention taking baseline values into account as covariates.

Pearson correlations between changes in BMI-SDS and changes of body self-concept, resilience, self-worth, and self-efficacy over the duration of the intervention were analyzed.

Missing data were imputed using a conservative strategy that assumed that there were no mean changes to baseline but preserved the variance of the whole sample. Analyses were performed using the Statistical Package for Social Sciences (SPSS, version 20.0).

Results

Study population

There were 154 participants, 91 of whom were women (59.1%). Mean age at baseline was 11.8 ± 2.1 , and mean BMI-SDS was $2.02 \pm .54$. Ninety-nine of the participants (64.3%) completed follow-up questionnaires (45 intervention; 44 control group).

Psychosocial well-being

Body image. Body image at baseline of the overall sample of adolescents was $4.45 \pm .67$ (no gender differences) and was not

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