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## Parenting Stress Impacts Obesity-Specific Health-Related Quality of Life in a Pediatric Obesity Treatment-Seeking Sample

**Shanna M. Guilfoyle, Ph.D.,**

Division of Behavioral Medicine and Clinical Psychology, Department of Pediatrics, Cincinnati Children's Hospital Medical Center, Cincinnati, OH

**Meg H. Zeller, Ph.D.,** and

Division of Behavioral Medicine and Clinical Psychology, Department of Pediatrics, Cincinnati Children's Hospital Medical Center, Department of Pediatrics, University of Cincinnati College of Medicine, Cincinnati, OH

**Avani C. Modi, Ph.D.**

Division of Behavioral Medicine and Clinical Psychology, Department of Pediatrics, Cincinnati Children's Hospital Medical Center, Department of Pediatrics, University of Cincinnati College of Medicine, Cincinnati, OH

### Abstract

**Objective**—To document parenting stress in caregivers of treatment-seeking youth with obesity and examine whether parenting stress is a predictor of pediatric health indicators, including body mass index (BMI) and weight/obesity-specific health-related quality of life (HRQOL).

**Method**—Youth (5-18 years) and their caregivers presenting to a pediatric medical weight management program initial visit completed several self-report questionnaires assessing demographics, parenting stress, and weight/obesity-specific HRQOL. Youth height and weight were measured by trained clinic nurses and abstracted from patient medical records. Study staff measured caregiver height and weight.

**Results**—Participants included 120 caregivers and their youth ( $M_{age} = 11.0$ , 65.8% female, and 50% African-American). At treatment initiation, caregivers were primarily obese ( $M_{BMI} = 35.8$ ). One-fifth of caregivers of school-aged children (18%) had clinically elevated levels of parenting stress and 25% reported elevated spousal discord specific to parenting. Parenting stress did not significantly predict youth BMI. Parenting stress significantly predicted obesity-specific parent-proxy HRQOL for school-aged children, but not self-reported obesity-specific HRQOL.

**Conclusion**—Given that caregivers are critical components of pediatric weight management interventions, those with clinically elevated levels of parenting stress would likely benefit from brief problem-solving interventions and anticipatory guidance to address common obstacles when fostering healthier lifestyles for their youth.

### Keywords

parenting; psychosocial functioning; weight management

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Corresponding Author: Shanna M. Guilfoyle, Ph.D., Division of Behavioral Medicine and Clinical Psychology, Cincinnati Children's Hospital Medical Center, 3333 Burnet Avenue – MLC 7039, Cincinnati, OH 45229, Phone: (513) 636-8757, Fax: (513) 803-0415, shanna.guilfoyle@cchmc.org.

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Approximately 16.3% of youth ages 2 to 19 years in the United States are obese (Body Mass Index (BMI)  $\geq$  95<sup>th</sup> percentile for age and gender) (1). These youth are at heightened risk for medical comorbidities (e.g., type 2 diabetes, hypertension) (2), psychosocial difficulties (3), and health-related quality of life (HRQOL) impairment (4). Not only does compelling empirical evidence exist (5), but expert panel recommendations (2) strongly assert that pediatric obesity intervention should begin at the caregiver and family-level (6). Yet to date, there is only a small literature dedicated to understanding caregiver characteristics of obese youth who present for treatment and their potential associations with pediatric clinical health indicators (e.g., degree of obesity, HRQOL). In the broader pediatric literature, parenting stress has been shown to be elevated in caregivers who manage a child with a chronic medical condition (7,8), with unmanaged parenting stress shown to potentially compromise youth psychological well-being (9-11) and caregiver psychological functioning (12). Understanding parenting stress in the context of pediatric obesity remains a critical gap in the literature that may prove informative, providing interventionists a potentially modifiable caregiver factor to be targeted in treatment.

It is well documented that caregiver obesity is a strong predictor in the development and persistence of pediatric obesity (13-15). Not surprisingly, approximately two-thirds of mothers who seek comprehensive weight management treatment for their child/adolescent are also obese themselves (16,17). While it is well documented that obese youth who seek treatment experience compromised HRQOL (4,18), several studies have demonstrated that caregivers of youth seeking obesity treatment report experiencing elevated levels of psychological distress (i.e., symptoms of depression and anxiety) (17,19-22) and their own HRQOL impairment (16). In turn, within a treatment-seeking sample, links between greater impairment in youth HRQOL and caregiver HRQOL impairment have been documented (16). Taken together, findings suggest an association between the impaired psychosocial functioning of both obese youth and their caregivers.

We currently have a limited understanding of the stress caregivers of obese youth may experience in their parenting role when presenting to, or during the course of, pediatric obesity treatment or its association with child functioning. The broader pediatric literature has linked elevated levels of parenting stress to caring for a child with a chronic medical condition (7,8, 23), as caregivers must attend necessary and frequent pediatric clinic appointments, ensure daily adherence to prescribed treatment regimens, and manage their personal emotions about their child's health status. These demands can be considered by some caregivers as overly burdensome, particularly when integrated with general parenting demands that may already be stress-inducing. These demands are similar to those placed on caregivers initiating weight management treatment for their youth. Noteworthy, however, is that obesity appears unique as compared to other pediatric chronic conditions in that the prescribed treatment will often be managed by caregivers who share the same chronic condition. Caregivers, even those who are of a healthy weight, likely experience increased levels of parenting stress at the time of treatment initiation in anticipation of (or previous failure in) supporting their youth in the engagement of healthy lifestyle behaviors. These healthy lifestyle behaviors may be in contrast to the caregiver's own lifestyle, family mealtime structure (e.g., quick, pre-prepared meals), schedules (e.g., lack of time for exercise), and perceived needs (e.g., lower-cost foods).

Poor caregiver functioning, as illustrated by studies examining caregiver psychological distress (21) and compromised psychosocial/mental health HRQOL (16), has been associated with impaired HRQOL in obese treatment-seeking youth. As such, parenting stress may have detrimental consequences on clinical health indicators for obese youth, such as poor HRQOL and increased weight status. A recent study by Ohleyer and colleagues (2007) provide some initial evidence to support this assertion, linking higher parenting stress to elevated levels of psychopathology in obese youth (11). The presence of significant parenting stress is likely to

inhibit a caregiver's ability to appropriately assess and intervene regarding their youth's compromised psychosocial functioning and medical status.

The purpose of the current study was to: (1) document parenting stress in a sample of caregivers of obese treatment-seeking youth, and (2) examine the impact of demographic factors, caregiver BMI, and parenting stress on youth weight and weight/obesity-specific HRQOL. Generic measures have been primarily used in past studies to assess HRQOL in pediatric obesity. Given that weight/obesity-specific HRQOL measures have received increasing attention in the past few years (24,25) and tend to more precisely assess HRQOL in obese youth, they were used as the primary outcome. Caregivers of treatment-seeking youth were hypothesized to report elevated levels of parenting stress. Parenting stress was hypothesized to predict both youth BMI and weight/obesity-specific HRQOL beyond the effects of both caregiver demographics and caregiver BMI.

## Method

### Participants and Procedures

Over an 18-month period, a consecutive cohort of a 131 youth (BMI  $\geq$  95<sup>th</sup> percentile) and their caregivers were approached for study participation at a Midwest pediatric medical weight management program during their pre-medical screening or initial clinic visit. Recruitment occurred prior to participation in a behavioral weight management program. Study inclusion criteria were as follows: 1) youth 5-18 years of age and 2) ability to provide written informed consent/assent from both caregivers and their youth. Exclusion criteria included non-English speaking caregivers and caregiver-report of child developmental delay. Consent/assent was obtained after families were informed about the study. Youth height and weight were measured by trained clinic nurses and abstracted from patient medical records immediately following the clinic visit. Study staff measured caregiver height and weight in triplicate, with means used for analyses. These measurements were obtained with participants in street clothing with shoes removed. For purposes of the current study, all questionnaires were specific to youth age with caregivers completing three questionnaires (i.e., *Demographic Background Questionnaire*, *Parenting Stress Index or Stress Index for Parents of Adolescents*, *Sizing Them Up*) and youth completing one questionnaire (*Sizing Me Up or Impact of Weight on Quality of Life*) prior to the weight management intervention. Institutional Review Board approval was obtained prior to study implementation for a larger study protocol.

A study recruitment rate of 98% ( $N = 129$ ) was attained. Nine families were excluded from the present analyses for the following reasons: 4 children were one of two siblings enrolled in the weight management program, but randomly chosen for study participation, 3 children were unable to comply with study protocol or had difficulty completing questionnaires, and 2 caregivers had difficulty reading measures. This resulted in a final study sample of 120 caregivers and their youth. Demographic data are presented in Table 1.

### Measures

**Demographic Background Questionnaire**—Caregivers completed a background questionnaire, which assessed caregiver and youth age, gender, and race/ethnicity, caregiver marital status, caregiver education and occupation, and socioeconomic status (SES). Revised Duncan scores were calculated to provide an occupation-based measure of SES (26,27), with higher scores reflecting better occupational attainment.

**Anthropometric Data**—Height and weight were used to calculate BMI (kilograms per meter squared) for caregivers and standardized BMI (zBMI) using an age- (to the nearest month) and sex-specific median, *SD*, and power of the Box-Cox transformation (LMS method) based on

the 2000 national norms presented by the Centers for Disease Control and Prevention for youth (28).

## Parenting Stress

**Parenting Stress Index (PSI; (29))**—The PSI is a 120-item self-report measure of parenting stress for caregivers of children ages 3 months to 10 years. For the current study, only the 7 subscales that comprise the Parent Domain (PSI-PD; 54 items) were assessed: Competence, Isolation, Attachment, Health, Role Restriction, Depression, and Spouse. The PSI-PD is the total parent domain score (range: 54 – 270) and is a summation of all 7 subscales. Higher scores reflect greater parenting stress. To ease clinical interpretation, percentile scores were calculated for each subscale. The range of scores is as follows: normative (15<sup>th</sup> to 85<sup>th</sup> percentile) and clinically elevated (> 85<sup>th</sup> percentile). The PSI subscales and the PSI-PD have adequate to excellent reliability and validity (29). Within the current sample, internal consistency for the subscales ranged from  $\alpha = .55 - .84$ .

**Stress Index for Parents of Adolescents™ (SIPA™; (30))**—The SIPA™ is a 112-item self-report measure of parenting stress that is an upward developmental adjustment of the PSI for use with youth ages 11-19 years. For the purpose of the current study, only the four subscales included in the Parent Domain (SIPA-PD) were utilized: Life Restrictions, Relationship with Spouse/Partner, Social Alienation, and Incompetence/Guilt. The SIPA-PD is calculated by summing the 4 subscales, with summative scores ranging from 34-170. Higher scores represent greater parenting stress. Percentile scores were calculated for each subscale and are as follows: normative (< 85<sup>th</sup> percentile); borderline (85<sup>th</sup> to 89<sup>th</sup> percentile); clinically significant (90<sup>th</sup> to 94<sup>th</sup> percentile); and clinically severe (95<sup>th</sup> to 100<sup>th</sup> percentile). The SIPA subscales and the SIPA-PD have good test-retest reliability and content and convergent validity (30). Within the current sample, internal consistency for the subscales ranged from  $\alpha = .67 - .83$ .

## Health-Related Quality of Life

**Sizing Them Up (24)**—Sizing Them Up is a 22-item, parent-proxy measure of obesity-specific HRQOL for youth 5 – 18 years. The measure is comprised of 6 subscales: Emotional Functioning, Physical Functioning, Teasing/Marginalization, Positive Social Attributes, Mealtime Challenges, and School Functioning. Each subscale measures the impact of weight/size on the subscale construct. The 6 subscale scores comprised a summary score (i.e., Total Quality of Life). Sizing Them Up has demonstrated adequate to excellent internal consistency and test-retest reliabilities, good convergent validity, and responsiveness to change (24). Within the current sample, internal consistency for the subscales ranged from  $\alpha = .58 - .89$ .

**Sizing Me Up (25)**—Sizing Me Up is a self-report measure of obesity-specific HRQOL for youth 5 – 13 years and is comprised of 22 items and five subscales: Emotional Functioning, Physical Functioning, Teasing/Marginalization, Positive Social Attributes, and Social Distress/Avoidance. The Total Quality of Life score is a summation of the subscales. Item phrasing was chosen to orient children to respond to questions in context of his/her size (e.g., “were teased by other kids because of your size”). Sizing Me Up has demonstrated good internal consistency and convergent and discriminant validity (25). Within the current sample, internal consistency for the subscales ranged from  $\alpha = .67 - .86$ .

**Impact of Weight on Quality of Life (IWQOL-Kids; (31))**—The IWQOL-Kids is a 27-item measure of weight-related HRQOL for adolescents 11-18 years of age. Items were developed to orient the respondent to weight-specific concerns (i.e., “Because of my weight”). The measure is comprised of four subscales: Physical, Body Esteem, Social Life, and Family Relations. The IWQOL-Kids Total score is a summation of the four subscales. The IWQOL-Kids has demonstrated excellent reliability and validity (31). Within the current sample, youth

ages 14-18 completed the IWQOL and internal consistency for the subscales ranged from  $\alpha = .75 - .92$ .

## Data Analyses

Descriptive statistics for all measures were calculated, including standardized means and standard deviations, frequencies, means, and clinical cut-off percentiles when appropriate. Lower scores for weight/obesity-specific HRQOL indicate greater impairment. Given that study questionnaire age groupings assessing weight/obesity-specific HRQOL created sub-samples (e.g., youth either completed *Sizing Me Up* or IWQOL-Kids), sample sizes are noted when appropriate. Percentile rankings for both the PSI-PD and SIPA-PD were collapsed into one variable to reflect an overall parenting stress variable. Relations between parenting stress and youth weight/obesity-specific HRQOL were examined using Pearson correlations, but were conservatively interpreted ( $p < .01$ ). Finally, three parallel hierarchical linear regressions were conducted to predict obesity health indicators including youth zBMI, self-reported HRQOL, and parent-proxy HRQOL. For each regression, Step 1 included caregiver BMI, age, SES, and ethnicity and Step 2 included parenting stress. Of note, the regression employed to examine self-reported HRQOL only included *Sizing Me Up* data (i.e., youth 5-13 years). This measure was completed by a larger sub-sample ( $n = 97$ ) and could not be combined with IWQOL-Kids data (youth 14-18 years;  $n = 23$ ), as *Sizing Me Up* and IWQOL-Kids are conceptually disparate (i.e., obesity-specific versus weight-related). A criterion of  $p < .05$  was considered statistically significant. Analyses were performed using SPSS 15.0 (SPSS Inc., Chicago, IL).

## Results

As previously reported (16), 90.7% of caregivers in the current study were classified as overweight (24.6%), obese (33.9%), or extremely obese (32.2%). Youth zBMI ranged from 1.73-3.34 (see Table 1).

Caregivers reported similar levels of parenting stress on a majority of the parenting stress subscales compared to normative data (see Table 2). Approximately 18% of caregivers of youth aged 5-10 (i.e. PSI-PD) identified clinically elevated levels of parenting stress (i.e., above the 85<sup>th</sup> percentile) on the Parent Domain scale. Twenty-five percent reported clinically elevated levels of Spousal Stress and 14% met clinical cut-off scores for the Attachment domain. For caregivers of youth ages 11-18 (i.e., SIPA-PD), approximately 9% identified clinically elevated levels of parenting stress on the Parent Domain scale and 13% met clinical cut-offs for the Life Restrictions domain.

Parenting stress was not significantly associated with any of the youth self-report HRQOL subscales (see Table 3). Only parenting stress, as reported by caregivers of youth ages 5-10 years, was significantly correlated with parent-proxy HRQOL measures (see Table 3). Specifically, significant negative associations were detected between parenting stress and parent-proxy HRQOL total scores ( $r = -.42, p < .01$ ), along with all subscales ( $r_s = -.30$  to  $-.41, p < .01$ ), with the exception of Teasing/Marginalization. Parenting stress for caregivers of adolescents was not significantly correlated with any of the self-report or parent-proxy HRQOL measures. Impact of Parenting Stress on Youth zBMI and Weight/Obesity-Specific HRQOL

## Predicting zBMI

Of the caregiver variables (Step 1), only SES ( $\beta = -0.19, p < .05$ ), significantly predicted youth zBMI ( $R^2 = .09, F(4, 107) = 2.51, p < .05$ ). Parenting stress (Step 2) did not add significant incremental variance to the model ( $R^2$  change = 0.001,  $p = \text{NS}, f^2 = 0.00$ ).



## Predicting HRQOL

Caregiver variables (Step 1) and parenting stress (Step 2) significantly predicted parent-proxy HRQOL but not youth self-reported HRQOL. Specifically, caregiver ethnicity ( $\beta = -0.27, p < .01$ ) accounted for a significant amount of the variance in parent-proxy HRQOL total scores ( $R^2 = .08, F(4, 107) = 2.41, p < .05$ ). African-American caregivers reported higher levels of HRQOL for their youth. Parenting stress (Step 2) accounted for an additional 13% of the variance in parent-proxy HRQOL ( $R^2$  change = .13,  $F(1, 106) = 16.66, p < .001, f^2 = 0.16$ ) beyond the effects of caregiver ethnicity.

## Discussion

The present study is the first to examine parenting stress and its associations with degree of obesity and weight/obesity-specific HRQOL in a clinical sample of youth presenting for pediatric obesity treatment. Approximately 20% of the caregivers exhibited significantly elevated parenting stress. More broadly, the current results mirror past findings that caregivers of obese youth are at greater risk for psychosocial impairment (i.e., psychological distress (17,22), HROQL impairment (16)). Interestingly, clinically elevated parenting stress detected in the current study (i.e., 20%) is relatively low when compared to other pediatric conditions (e.g., epilepsy, asthma), which have reported elevated parenting stress for up to 45% of caregivers (7,9). Caregivers of children with other chronic conditions may have reported increased parenting stress due to the anticipation and management of acute exacerbations (e.g., seizure, asthmatic episode). In contrast, obesity develops gradually and independent of its potential and often “silent” medical comorbidities (e.g., cardiovascular complications) (32). Consequently, obesity is often not associated with critical medical events requiring hospitalization, which are often stressful for caregivers, and may not even be recognized by caregivers as a health-risk (33,34).

Little is known about when and why families of youth with obesity present for treatment. Given that 80% of caregivers participating in the current study reported normative levels of parenting stress, general parenting stress is likely not an integral factor contributing to caregivers seeking youth weight management treatment. Caregiver obligation may contribute to seeking treatment, such as urgings by the PCP, poor youth HRQOL, or severe medical complications with little recognition of the treatment demands that may be prescribed for their family. Within the current study, families were treatment seeking, but had not yet started the active intervention phase of treatment. Parenting stress likely fluctuates throughout the course of treatment, similar to findings of psychological distress in caregivers of youth seeking obesity treatment (35). Parenting stress may increase when caregivers and their youth are advised to adhere to program demands (e.g., self-monitoring, clinic appointment attendance, multi-faceted treatment regimen) and attempt to modify their lifestyles (e.g., dietary modifications, increased physical activity). In fact, Zeller and colleagues (2003) have shown that attrition from pediatric weight management programs is quite high (55%) (36). Although speculation, increased parenting stress may contribute to these attrition rates, especially when children experience depressive symptoms (36), when modifications are made at mealtimes (17), and when the caregiver is overweight/obese themselves.

Caregivers may be experiencing context-specific parenting stress (e.g., stress in their parenting role specific to caring for a child/adolescent with obesity) not captured by generic parenting stress measures, which may have contributed to the low rates of parenting stress detected. Caregivers may feel competent in their general parenting skills, but report greater parenting stress specific to their perceived competence to effectively implement healthful dietary modifications (e.g., knowledge, resources, parenting skills, spousal support), particularly when caregivers are obese. Obesity-specific parenting stress measurement may more effectively capture the relationship between parenting stress and child weight status, as well as health

indicators, such as HRQOL. Additionally, the sub-sample of caregivers reporting a lack of support specific to their parenting role (25%) would likely benefit from increased social support. Post-hoc analyses of the caregivers reporting clinically elevated spousal discord illustrated that the majority (75%) identified themselves as single, separated, divorced, or widowed.

Given that caregivers are viewed as exclusive agents of change in family-based obesity treatment (5,6,37), more optimal care could be provided in weight management treatment by providers assessing sources of support and parenting stress when families enter treatment. For example, when clinically elevated spousal discord is evident, increased support may be integral particularly during the active intervention phase. In fact, social support has been identified as a buffer to minimizing the potential detrimental impact of caregiver psychological distress on parent-proxy HRQOL of their obese youth (4,38). Furthermore, caregivers identified as experiencing clinical levels of parenting stress would likely benefit from brief behavioral and/or psychosocial interventions (8) (i.e., problem-solving strategies, anticipatory guidance) to manage common stressors, such as integrating more nutrition and physical activity into families' diets and schedule. Unmanaged parenting stress has the potential to compromise treatment outcomes and place caregivers at risk for psychological distress (23). Alternatively, managed stress likely bolsters a caregiver's ability to successfully implement weight management strategies (e.g., adherence to dietary recommendations), thus improving clinical health indicators.

Within the pediatric obesity literature, evidence suggests that caregivers with psychosocial impairment are more likely to report their children experiencing psychosocial deficits. Similar to Zeller and colleagues' findings (2004), the current study demonstrates that parenting stress significantly predicts parent-proxy weight/obesity-specific HRQOL, but not self-report HRQOL (22). This needs to be considered when utilizing parent-proxy measures, which are commonly used as reliable measures of child psychosocial functioning in outpatient pediatric clinic settings and subsequently guide clinical decision making. Furthermore, caregivers are a primary factor facilitating treatment initiation for youth. Parenting stress may be critical to determining a family's "readiness" to enter treatment and treatment success. On the other hand, parenting stress was not significantly associated with youth self-report HRQOL, suggesting that when parenting stress is evident, it is not affecting youth perceptions of their weight/obesity-specific HRQOL. However, this is not to negate that obese youth experience impaired HRQOL prior to entering weight management treatment, using both generic (4,21,38) and weight/obesity-specific methodology (24,25).

Although the current study represents the first to document and examine parenting stress in caregivers of youth seeking obesity treatment, and its subsequent impact on obesity clinical health indicators, study limitations exist with directions for future research. Given potential fluctuations in parenting stress during active treatment, the assessment and monitoring of obesity-specific parenting stress throughout the course of obesity treatment warrants further attention. Moreover, caregivers were predominantly unmarried females (83.3 % mothers, 11% aunts or grandmothers; 38% married), which is consistent with prior sociodemographic data found in other studies (11), living with their youth in single-parent homes and receiving minimal support from their spouses/partners, which may place youth at risk for poor treatment outcomes. Paternal factors impacting weight management treatment need increased consideration, particularly given that greater paternal acceptance has been linked to increased weight reduction following obesity treatment (39). Maternal and paternal parenting stress may differentially impact youth weight status and HRQOL throughout the course of obesity treatment. Although shared method variance could have contributed to the identified link between parenting stress and parent-proxy HRQOL, this association should not be dismissed. Parent-proxy continues to be a common and reliable method of pediatric HRQOL assessment,

and parental perceptions likely influence treatment initiation and perceived treatment success. Some speculation has suggested that obese caregivers of obese youth may have bias perceptions of their youth's HRQOL based upon their past experiences (16). On the other hand, the compromised power observed (power = 0.63) in the present study due to the smaller sample of school-aged youth completing the self-report HRQOL measure may explain the non-significant findings. Sample size, along with limited age range, likely also limited analyses using the adolescent sample. Yet, parenting stress may be lower for adolescent caregivers and have less of an impact on adolescent HRQOL, given that adolescents typically exercise more autonomy in their daily lifestyle activities and become increasingly peer-focused. In fact, Zeller and Modi (2006) identified perceived social support from classmates, and not parents, as a predictor of better youth generic HRQOL (4).

Reasons caregivers initiate weight management treatment for their youth is critical to understanding their perceptions about their youth's condition, which may have important implications for treatment outcomes. Our cross-sectional study design precludes any temporal ordering of associations between parenting stress and youth weight status and HRQOL when families present for obesity treatment. While we proposed that parenting stress may impact the severity of obesity and HRQOL impairment in youth presenting for care, one could also argue that greater obesity and HRQOL impairment may impact the level of parenting stress experienced by caregivers. Future research may benefit from focusing on the impact of parenting stress across developmental periods and treatment stages, along with better understanding of parenting stress within the context of pediatric obesity. And finally, the study highlights the importance of examining youth living with obesity in a broader context of potentially modifiable familial factors (e.g., minimizing parenting stress, increasing sources of familial support) (17).

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**Table 1**  
**Demographics of Youth Seeking Obesity Treatment and their Caregivers (N = 120)**

	Caregivers			Youth		
	<i>n</i>	<i>Mean (SD)</i>	%	<i>n</i>	<i>Mean (SD)</i>	%
Age		40.1 (8.2)			11.0 (3.0)	
Child Sex						
Female				79		65.8
Male				41		34.2
Race						
African-American	60		50.0	60		50.0
Caucasian	60		50.0	53		44.2
Biracial	0		0.0	7		5.8
Anthropometric data						
BMI		35.8 (9.3)			34.1 (7.7)	
zBMI					2.5 (0.31)	
Relationship to Youth						
Mother	100					83.3
Father	6		5.0			5.0
Other (aunts, grandmothers)	14		11.6			11.6
Marital Status						
Married/Remarried	46		38.4			38.4
Single	42		35.0			35.0
Separated/Divorced/Widowed	32		26.7			26.7
SES <sup>a</sup>		34.7 (19.9)				

<sup>a</sup>Based on Duncan TSEI2. Examples of similar occupations based on mean Duncan score: attendants, clerical staff, waiter.

**Table 2**  
**Parenting Stress Descriptive Statistics**

	Mean Raw Scores (SD)	Raw Score Range	Mean Percentile	% Meeting Clinical Cut-off (n)
<i>Parenting Stress Index (n = 85)</i>				
Competence	27.2 (6.6)	16 – 46	42.1	10.6 (9)
Isolation	12.7 (5.0)	6 – 27	48.3	12.9 (11)
Attachment	12.6 (3.6)	7 – 24	52.0	14.1 (12)
Health	12.1 (3.7)	5 – 23	52.7	10.6 (9)
Role Restriction	17.5 (5.7)	7 – 31	43.7	12.9 (11)
Depression	18.4 (6.4)	9 – 33	41.5	11.9 (10)
Spouse	18.0 (5.9)	7 – 31	57.6	25.0 (20)
<b>Parent Domain</b>	118.0 (29.0)	66 – 198	44.6	18.3 (15)
<i>Stress Index for Parents of Adolescents (n = 35)</i>				
Life Restrictions	19.5 (7.1)	10 – 38	51.3	12.5 (4)
Relationship with Spouse	18.9 (6.6)	8 – 33	54.7	9.4 (3)
Social Alienation	11.5 (3.4)	7 – 21	48.1	2.9 (1)
Incompetence/Guilt	17.9 (5.8)	8 – 36	53.3	8.6 (3)
<b>Parent Domain</b>	50.0 (19.1)	35 - 97	50.0	8.6 (3)

**Table 3**  
**Weight/Obesity-Specific HRQOL Descriptive Data and Intercorrelations with Parenting Stress**

	<i>Mean (SD)</i>	<b>Parenting Stress (School-aged Children)</b>	<b>Parenting Stress (Adolescents)</b>
<b>HRQOL (School-aged Children)</b>	<i>n</i> = 97	<i>n</i> = 85	<i>n</i> = 12
Emotional Functioning	60.65 (30.90)	-0.09	-0.12
Physical Functioning	69.14 (24.22)	-0.28	-0.05
Teasing/Marginalization	68.90 (31.97)	-0.09	-0.16
Positive Social Attributes	51.64 (23.27)	-0.11	-0.46
Social Distress/Avoidance	83.01 (20.44)	-0.14	-0.47
Total Quality of Life	66.00 (17.58)	-0.21	-0.38
<b>HRQOL (Adolescents)</b>	<i>n</i> = 23		<i>n</i> = 23
Physical	70.47 (18.92)	---	0.36
Body Esteem	50.97 (26.49)	---	-0.19
Social Life	74.09 (20.49)	---	0.22
Family Relations	90.94 (15.21)	---	-0.24
Total	69.32 (16.74)	---	0.00
<b>HRQOL (Parent-Proxy)</b>	<i>n</i> = 120	<i>n</i> = 85	<i>n</i> = 35
Emotional Functioning	63.49 (23.49)	-0.30**	-0.25
Physical Functioning	73.78 (17.64)	-0.41**	-0.10
Teasing/Marginalization	72.31 (23.27)	-0.27	-0.21
Positive Social Attributes	60.21 (19.13)	-0.34**	0.05
Mealtime Challenges	65.56 (26.79)	-0.35**	-0.19
School Functioning	96.94 (10.58)	-0.33**	-0.15
Total Quality of Life	68.15 (16.19)	-0.42**	-0.21
Adolescent Module	68.55 (16.89)	---	-0.34

\*\*  
 $p < .01$ .



**Table 4**  
**Summary of Hierarchical Regression Analyses Predicting Obesity-Specific Indicators**

<b>zBMI</b>				
<b>Step and predictor variables</b>	<b>R<sup>2</sup></b>	<b>ΔR<sup>2</sup></b>	<b>β</b>	<b>95% Confidence Interval</b>
Step 1 (Caregiver variables)	0.09*	0.09*		
BMI			0.16	0.00, 0.01
Ethnicity			0.07	-0.02, 0.04
Age			-0.11	0.00, 0.00
Socioeconomic Status			-0.19*	-0.01, 0.00
Step 2	0.09	0.00		
Parenting Stress			-0.03	0.00, 0.00
<b>Self-Report Obesity-Specific HRQOL</b>				
Step 1 (Caregiver variables)	0.06	0.06		
BMI			-0.17	-0.71, 0.07
Ethnicity			-0.11	-2.83, 0.85
Age			0.02	-0.04, 0.04
Socioeconomic Status			0.13	-0.09, 0.26
Step 2	0.09	0.03		
Parenting Stress			-0.18	-0.22, 0.02
<b>Parent-Proxy Obesity-Specific HRQOL</b>				
Step 1 (Caregiver variables)	0.08*	0.08*		
BMI			-0.12	-0.53, 0.07
Ethnicity			-0.27**	-3.34, -0.63
Age			0.02	-0.03, 0.03
Socioeconomic Status			0.06	-0.14, 0.14
Step 2	0.21**	0.13**		
Parenting Stress			-0.36**	-0.28, -0.10

Note. Only self-reported HRQOL data from youth 5-13 years were included in the regression analysis. This resulted in a sub-sample of 97.

\*\*  
*p* < .01,

\*  
*p* < .05.