Impaired Health-related Quality of Life in Caregivers of Youth Seeking Obesity Treatment

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Objective  To document and identify predictors of caregiver health-related quality of life (HRQOL) in a sample of youth seeking obesity treatment and examine whether it moderates the relation between parent proxy and youth self-report HRQOL.  Methods  Youth (5–18 years) and their caregivers (N = 120) presenting to a pediatric medical weight management program completed the Pediatric Quality of Life Inventory™ and caregivers completed the Short-Form 36.  Results  Caregivers were predominantly overweight/obese (90%) and half were African-American. Caregiver HRQOL was lower than “healthy” adults, similar to nontreatment-seeking adults with obesity, and better than treatment-seeking adults with obesity. Caregiver body mass index and socioeconomic status predicted caregiver physical HRQOL. Caregiver age predicted caregiver mental HRQOL. A moderation effect was not detected.  Conclusions  Given the significant degree of overweight and HRQOL impairment in caregivers of youth seeking obesity treatment, further examination of caregiver functioning in the context of pediatric obesity treatment outcomes is warranted.

Key words  biased reporting; overweight; obesigenic environment; parent proxy.

An expert committee convened by the American Medical Association in 2007 recommended that the term overweight be used to characterize children with a body mass index (BMI) between the 85th and 94th percentile and the term obesity to characterize children with a BMI ≥ 95th percentile (Barlow, 2007). As such, ~17.1% of youth age 2–19 years and 32.2% of adults were considered obese (i.e., BMI ≥ 30) in the US from 2003 to 2004 (Ogden et al., 2006). Ethnic minorities tend to be at higher risk for obesity with 20.0% of African-American and 19.2% of Mexican-American youth classified as obese, compared to 16.3% of Caucasian youth (Ogden et al., 2006). Medical comorbidities typically associated with adult obesity (e.g., type 2 diabetes and cardiovascular disease) are becoming increasingly prevalent in pediatric obesity (Dietz, 1998). In addition, children and adults with obesity are at increased risk for poor psychosocial functioning, such as low self-esteem (Friedman et al., 2005; Stern et al., 2007; Thompson et al., 2007) and poor health-related quality of life (HRQOL) (Fontaine, Bartlett, & Barofsky, 2000; Hughes, Farewell, Harris, & Reilly, 2007; Schwimmer, Burwinkle, & Varni, 2003; Zeller & Modi, 2006).

Often youth with obesity live within an “obesigenic” family environment, which is a commonly used term in the obesity literature to characterize families engaging in high caloric intake and low physical activity (Krahnstoever Davison, Francis, & Birch, 2005). Since caregivers initiate both medical and psychosocial services for their youth (Janicke, Finney, & Riley, 2001; Seid, Varni, & Kurtin, 2000), understanding caregiver functioning may be important to developing interventions for pediatric obesity. For example, caregiver obesity status has been identified as a strong predictor in the development and persistence of pediatric obesity (Agras, Hammer, McNicholas, & Kraemer, 2004; Krahnstoever Davison et al., 2005; Whitaker, Wright, Pepe, Seidel, & Dietz, 1997). In addition, compared to nonoverweight peers, youth presenting...
for obesity treatment are more likely to have a caregiver with obesity (Zeller et al., 2007). Given that a significant portion of caregivers of youth with obesity are obese themselves, they may be experiencing some degree of psychosocial maladjustment. Although psychosocial impairments in adults with obesity have been documented, few studies have examined this population in the context of caring for their child with obesity. Two groups of investigators, Epstein and colleagues and Zeller and colleagues, have reported that a large percentage of mothers of youth seeking obesity treatment (28–50%) experience psychological distress at rates higher than instrument norms (Epstein, Klein, & Wisniewski, 1994; Epstein, Myers, & Anderson, 1996) or demographically matched mothers of nonoverweight youth (Zeller & Daniels, 2004; Zeller et al., 2007). In addition, caregiver distress has been linked to lower HRQOL in this population by both parent proxy and self-report (Janicke et al., 2007).

HRQOL is a global, multidimensional construct that captures individual perspectives of physical, psychological, and social functioning (Schipper, Clinch, & Olweny, 1996) and has increasingly been recognized as an important patient-reported outcome (U.S. Food and Drug Administration, 2006). Several factors impact the HRQOL of children and adults with obesity, such as health (e.g., degree of overweight) (Fontaine et al., 2000; Friedlander, Larkin, Rosen, Palermo, & Redline, 2003), psychosocial (e.g., depressive symptoms) (Fabricatore, Wadden, Sarwer, & Faith, 2005; Janicke et al., 2007; Zeller & Modi, 2006), and sociodemographic factors [e.g., gender, socioeconomic status (SES)] (Kolotkin, Head, Hamilton, & Tse, 1995; Zeller & Modi, 2006). For example, increased weight status in youth has been associated with lower HRQOL in community-based samples (Friedlander et al., 2003) and treatment-seeking samples (Zeller & Modi, 2006; Zeller, Roehrig, Modi, Daniels, & Inge, 2006). Furthermore, predictors of HRQOL may vary between community- and treatment-seeking samples, such that psychosocial factors have greater impact on HRQOL in community samples and functional limitations better predict HRQOL in treatment-seeking samples (Arif & Rohrer, 2006; Swallen, Reither, Haas, & Meier, 2005; Williams, Wake, Heskerth, Maher, & Waters, 2005). Similar trends have been found in adults (Fontaine et al., 2000; Kolotkin, Crosby, & Williams, 2002; Ware, Snow, Kosinski, & Gandek, 1993). In pediatric populations, HRQOL is often assessed via complementary measures, parent-proxy and self-report HRQOL (Eiser & Morse, 2001; Quittner, Davis, & Modi, 2003). However, discrepancies have been identified between parent-proxy and self-report, such that lower HRQOL tends to be reported across all domains in parent-proxy reports versus self-report (Ingerski, Janicke, & Silverstein, 2007; Schwimmer et al., 2003). Caregiver functioning has been implicated as a contributing factor to the lack of convergence and respondent bias (Janicke et al., 2007; Quittner et al., 2003).

Prior developmental literature suggests that mothers meeting criteria for depression and/or anxiety have been found to have cognitive biases [i.e., the depression–distortion hypothesis; (Beck, 1967)] that lead to overestimated reporting of internalizing (e.g., depression, anxiety) and externalizing symptoms (e.g., aggression) in their children (Chilcoat & Breslau, 1997). Within the pediatric asthma literature, an inverse association between caregiver negative affect and lower parent-proxy HRQOL was detected (Price, Bratton, & Klinnert, 2002). These data suggest that caregiver depression and negative affect influence parent-proxy reporting of child functioning. Since caregivers of youth with obesity are likely to be obese themselves and exhibit physical and psychosocial impairments (Agras et al., 2004; Janicke et al., 2007; Zeller et al., 2007), HRQOL offers a broader approach to understanding caregiver functioning in pediatric obesity. Thus, it is plausible that caregiver HRQOL influences parent-proxy HRQOL, and in turn, the relation between parent-proxy and child self-report HRQOL. To our knowledge, one study has demonstrated that caregiver HRQOL moderates the link between parent-proxy and self-report HRQOL in youth with congenital heart disease (CHD) (Goldbeck & Melches, 2005).

At present, no studies have directly examined HRQOL in both caregivers and their youth with obesity. The primary study aims were to (a) document the HRQOL of caregivers of youth seeking obesity treatment and compare their scores to three previously published samples, (b) identify sociodemographic (i.e., marital status, ethnicity, and SES) and anthropometric (i.e., age, BMI) predictors of caregiver HRQOL, and (c) examine caregiver HRQOL as a moderator of the relation between parent-proxy and youth self-report HRQOL, covarying caregiver weight status. This covariate was included due to the high likelihood of caregiver obesity status in this population (Zeller et al., 2007). The authors hypothesized that (a) caregiver HRQOL scores would be lower than normative scores from a “healthy” US sample and similar to adult obese samples, (b) caregiver and child BMI and SES would account for significant variance in caregiver HRQOL, and (c) the association between parent-proxy and youth self-report HRQOL would be weaker with lower caregiver HRQOL.
Methods

Participants

Study participants included a final sample of 120 youth with obesity (zBMI\textsubscript{mean} = 2.5, SD = 0.3) and their primary caregivers who presented for care at a pediatric medical weight management program. Program entry required youth to have a BMI ≥ 95th percentile. Study inclusion criteria were as follows: (a) youth 5–18 years of age and (b) 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. Caregiver demographic data are presented in Table I. The mean age for youth was 11.0 years, 65.8% were females, 50.0% were African-Americans, 44.2% were Caucasians, and 5.8% were biracial/others.

Procedure

Eligible families were recruited during a premedical screening or initial clinic visit at a Midwest pediatric medical weight management program. Over an 18-month period, consecutive cohorts of a 131 families were approached for study participation. Consent/assent was obtained after families were informed about the study. A recruitment rate of 98% (N = 129) was attained. Nine families agreed to participate, but were excluded for the following reasons: four families had obese siblings enrolled in the weight management program and one sibling was randomly chosen to be included in analyses, two families had children diagnosed with neuropsychological disorders and were unable to comply with study protocol, one caregiver did not speak English, one caregiver had low reading level, and one child refused to complete study questionnaires after assenting to the study. This resulted in a final study sample of 120 caregivers and their youth. Youth height and weight taken at the clinic visit were abstracted from medical charts. Caregiver height and weight were measured in street clothing with shoes removed by study staff in triplicate, with the means used for analyses. Although part of a larger study protocol, caregivers completed three questionnaires and youth completed one questionnaire for the current study. Internal Review Board approval was obtained prior to study implementation.

1zBMI scores, which are standardized scores accounting for child age and gender used in pediatric populations, were computed for youth using age- (to the nearest month) and sex-specific median, SD, and power of the Box-Cox transformation (least mean squares method) based on national norms from the Centers for Disease Control (Kuczmarski et al., 2002). Specific details to calculate zBMI scores using the least-mean-square method are available at www.cdc.gov/nchs/about/major/nhanes/growthcharts/datafiles.htm.

Table I. Caregiver Demographic Information (N = 120)

<table>
<thead>
<tr>
<th></th>
<th>Percentage (%)</th>
<th>M (SD)</th>
<th>Range</th>
</tr>
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<tbody>
<tr>
<td>Age</td>
<td>40.1 (8.2)</td>
<td>21.9–63.0</td>
<td></td>
</tr>
<tr>
<td>Mothers</td>
<td>83.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fathers</td>
<td>5.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grandparents</td>
<td>7.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (e.g., legal guardians)</td>
<td>4.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anthropometrics (BMI)</td>
<td></td>
<td>35.77 (9.33)</td>
<td>20.80–66.90</td>
</tr>
<tr>
<td>Healthy (BMI 18.5–24.9)</td>
<td>9.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight (BMI 25.0–29.9)</td>
<td>24.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obese (BMI 30.0–40.0)</td>
<td>33.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely obese (BMI ≥ 40.0)</td>
<td>32.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/Remarried</td>
<td>38.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>35.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>23.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SES\textsuperscript{a}</td>
<td></td>
<td>34.7 (19.9)</td>
<td>15.0–81.9</td>
</tr>
</tbody>
</table>

\textsuperscript{a}Based on Duncan TSEI2. Higher scores indicate greater occupational attainment. Examples of similar occupations based on mean Duncan score: attendants, clerical staff, and water.

Measures

Demographic Background Questionnaire/Anthropometric Data

Caregivers completed a background questionnaire, which assessed caregiver and youth age, gender, and race/ethnicity, caregiver marital status, education, and occupation. Revised Duncan scores were calculated from caregiver occupation to provide an occupation-based proxy of SES (Mueller & Parcel, 1981). Weight and height data were used to calculate caregiver BMI (kg/m\textsuperscript{2}) as well as youth zBMI.

Pediatric Quality of Life Inventory (PedsQL\textsuperscript{TM}) 4.0

The PedsQL\textsuperscript{TM} (Varni, Burwinkle, Seid, & Skarr, 2003; Varni, Seid, & Kurtin, 2001) is a 23-item generic HRQOL measure developed for children ages 5–18, with both self-report and parent-proxy reports. Youth completed the PedsQL\textsuperscript{TM} Child-Report (ages 5–7, 8–12, and 13–18) and caregivers completed the PedsQL\textsuperscript{TM} Parent-Report (ages 5–7, 8–12, and 13–18). The PedsQL\textsuperscript{TM} consists of four subscales: Physical, Emotional, Social, and School. The measure uses a five-point Likert scale (0 = “never a problem” to 4 = “almost always a problem”). Psychosocial Functioning Scale Score (Emotional, Social, and School subscales) and a Total Scale Score were calculated. Higher scores represent better HRQOL. The PedsQL\textsuperscript{TM} has demonstrated good reliability for both the self-report (α = .71–.89) and parent-proxy report (α = .74–.92) versions, as well as excellent validity in pediatric populations.
Internal consistency for the current sample was as follows: youth self-report (α = .66–.79) and parent-proxy (α = .81–.85).

The Short-Form 36 Health Survey (SF-36), Version 1
The SF-36 (Ware & Kosinski, 2001) is a 36-item standardized, generic measure of adult HRQOL. The SF-36 consists of eight subscales that capture health concepts: Physical Functioning, Role-Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role-Emotional, and Mental Health. Subscale scores were transformed to range from 0 to 100. Two summary scores were calculated: Physical Health Composite Score (PCS) and Mental Health Composite Score (MCS). Summary scores were transformed and then standardized based upon scores from the general US population (i.e., norm-based scoring) to have a mean of 50 and a SD of 10. Such scoring eases score interpretation, particularly for meaningful comparisons across subscales (Ware et al., 1993). The PCS is primarily comprised of the Physical Functioning, Role-Physical, Bodily Pain, and General Health domains. The MCS is primarily comprised of the Vitality, Social Functioning, Role-Emotional, and Mental Health domains. Higher scores represent better HRQOL. The summary scores have good test–retest reliability (PCS, r = .94; MCS, r = .89) and internal and external validity (Ware & Kosinski, 2001). Within the current sample, internal consistency for the subscales ranged from α = .67 to .94.

Statistical Analyses
Descriptive statistics were computed to examine HRQOL in caregivers of youth presenting for obesity treatment. Z-tests were performed to compare the SF-36 scores of these caregivers to scores from three previously published samples: (a) normative data from “healthy” adults (i.e., healthy weight, absence of chronic illness) (Ware et al., 1993), (b) nontreatment-seeking adults with obesity (Fontaine et al., 2000), and (c) treatment-seeking adults with obesity (Fontaine et al., 2000). Standardized effect sizes, using Cohen’s d, were then estimated to determine the strength of the group differences (Cohen, 1992). Next, two hierarchical linear regression analyses were conducted to identify the strongest sociodemographic/anthropometric predictors of caregiver HRQOL (e.g., SF-36 PCS, MCS scales). Finally, bivariate correlations and two hierarchical linear regression analyses were specified and conducted to test the moderation hypothesis within the context of physical health and psychosocial/mental health HRQOL. Of note, only overlapping constructs between the SF-36 (i.e., PCS and MCS) and the PedsQL™ (i.e., Physical Health Score and Psychosocial Functioning Scale Score) were tested in these moderation analyses. Caregiver BMI was entered as a covariate, caregiver HRQOL as the moderator, youth self-report HRQOL as the predictor variable, and parent-proxy HRQOL as the dependent variable. For each set of regression analyses, the predictor and moderator variables were centered and interaction variables created before entry into the regression models (Aiken & West, 1991; Holmbeck, 1997, 2002). Evidence of a moderation effect was detected if the interaction term was statistically significant at a .05 criterion. SPSS 15.0 (SPSS Inc., Chicago, IL, USA) was employed to analyze the regression analyses.

Results
SF-36 Descriptive Data and Normative Values
A majority of the SF-36 subscale and composite scores from caregivers of youth seeking obesity treatment were significantly impaired compared to published, normative SF-36 data on “healthy” adults (Ware et al., 1993) (Table II). Compared to published data on adults with obesity not seeking treatment (Fontaine et al., 2000), caregivers of youth with obesity had similar SF-36 scores, with the exception of a significantly lower General Health score. Compared to published data on adults seeking obesity treatment, caregiver SF-36 scores were significantly higher on the Role Physical, Bodily Pain, and Vitality subscales (Fontaine et al., 2000).

Sociodemographic/Anthropometric Predictors of Caregiver HRQOL
The hierarchical regression analysis predicting caregiver PCS indicated that caregiver variables accounted for a statistically significant amount of variance [R² = .18, F(3,112) = 4.93, p < .01]. Specifically, caregivers with lower SES and higher BMI had lower physical HRQOL (Table III). However, a trend was detected, such that physical HRQOL decreased with youth age. The second hierarchical regression analysis revealed caregiver variables also predicted a statistically significant amount of variance in caregiver MCS [R² = .10, F(3,112) = 2.39, p < .05]. However, older caregiver age was the only significant predictor of better mental HRQOL (Table III). Youth variables (i.e., gender, zBMI, and age) added no significant incremental variance to predict caregiver PCS [R² change = .05, F(3,109) = 2.40, p = NS] or MCS [R² change = .10, F(3,109) = .30, p = NS].

Analyses of Moderation
Bivariate correlations indicated several significant associations between caregiver and youth HRQOL. Specifically, significant positive correlations were detected between
youth self-report and parent-proxy HRQOL on both the physical \((r = .43, p < .01)\) and psychosocial/mental health \((r = .39, p < .01)\) HRQOL domains. Specific to psychosocial/mental health HRQOL, caregiver HRQOL was significantly correlated with parent-proxy HRQOL \((r = .39, p < .01)\). Next, hierarchical regression analyses were conducted to predict parent-proxy HRQOL for (a) physical HRQOL and (b) psychosocial/mental health HRQOL. No significant interaction effects (e.g., self-report PedsQL™ Physical Health Scale × SF-36 PCS) were detected in the separate regression analyses: physical HRQOL \([R^2 = .20, F(1,113) = .05, p = NS]\) and psychosocial/mental health HRQOL \([R^2 = .29, F(1,112) = .02 p = NS]\). Due to the lack of significant interaction effects, post hoc probing was not warranted.

Discussion

The current study is the first to examine caregiver HRQOL in youth seeking obesity treatment and its potential contribution to parent-proxy HRQOL bias. As expected and similar to Zeller and colleagues (2007), over 90% of caregivers in this sample were overweight/obese, with 32% classified as extremely obese (i.e., BMI ≥ 40). These considerable rates of caregiver obesity lend support for the multi-generational nature of obesity and warrants further examination of the obesigenic environment of youth seeking obesity treatment.

Consistent with our hypotheses, caregivers in the current sample had impaired HRQOL compared to “healthy” adults on a majority of scales (Ware et al., 1993). However, their HRQOL was similar to non-treatment-seeking adults.

| Table II. Caregiver HRQOL in an Obese, Treatment-seeking Sample and Comparison Groups |
|---------------------------------|-----------------|-------------|-----------------|-----------------|-----------------|
| SF-36                           | Caregivers \((N = 120)\) | SF-36 US “Healthy” norms \((N = 2,474)\) | Nontreatment seeking \((N = 89)\) | Treatment seeking \((N = 312)\) |
| Physical functioning            | 74.3 (26.8)     | 84.2 (23.3) | –3.99***        | .39 M (SD) | .39 M (SD) |
| Role-Physical                   | 78.3 (34.3)     | 80.9 (34.0) | –0.80           | .08 M (SD) | .08 M (SD) |
| Bodily pain                     | 56.6 (28.0)     | 75.2 (23.7) | –3.63***        | .35 M (SD) | .35 M (SD) |
| General health                  | 62.0 (19.9)     | 71.9 (20.3) | –5.02***        | .46 M (SD) | .46 M (SD) |
| Vitality                        | 54.0 (18.4)     | 60.9 (20.9) | –3.96***        | .35 M (SD) | .35 M (SD) |
| Social functioning              | 77.7 (23.8)     | 83.3 (22.7) | –2.51**         | .24 M (SD) | .24 M (SD) |
| Role-Emotional                  | 76.1 (36.7)     | 81.3 (33.0) | –1.52           | .15 M (SD) | .15 M (SD) |
| Mental health                   | 70.4 (17.0)     | 74.7 (18.1) | –2.71**         | .24 M (SD) | .24 M (SD) |
| Physical health composite scale  | 48.2 (10.3)     | 50.0 (10.0) | –1.93*          | .18 M (SD) | .18 M (SD) |
| Mental health composite scale    | 47.7 (10.3)     | 50.0 (10.0) | –2.38*          | .23 M (SD) | .23 M (SD) |

\(Z\)-values are significant at \(\ast p < .05; \ast\ast p < .01; \ast\ast\ast p < .001.\)

The current sample was comparable to the nontreatment seeking and treatment seeking, obese samples on anthropometric (e.g., \(M_{\text{BMI}} = 35.8, 32.5, 38.1\)), and demographic variables (e.g., \(M_{\text{age}} = 40.1, 36.4, 39.0\)); percentage of females = 83.3, 82.0, 73.7, respectively. All samples were without chronic illness not secondary to obesity and had comparable levels of SES.

| Table III. Regression Analysis Summary of Caregiver Sociodemographic and Anthropometric Predictors of Caregiver HRQOL |
|--------------------------------------|-----------------|-----------------|-----------------|-----------------|
|                                       | \(B\)           | \(SE\ B\)       | \(\beta\)       | 95% Confidence Interval |
| PCS                                   |                 |                 |                 |                 |
| SES                                   | 0.12            | 0.04            | .26**           | 0.04, 0.21      |
| Marital status\(a\)                  | –1.15           | 1.46            | –.07            | -4.05, 1.75     |
| Caregiver BMI                         | –0.30           | 0.10            | –.27**          | –0.49, –0.11    |
| Caregiver age                         | –0.02           | 0.01            | –.16            | –0.04, 0.00     |
| Caregiver ethnicity\(a\)             | –0.33           | 0.46            | –.06            | –1.23, 0.58     |
| MCS                                   |                 |                 |                 |                 |
| SES                                   | 0.08            | 0.04            | .18             | –0.00, 0.17     |
| Marital status\(a\)                  | –1.09           | 1.51            | –.07            | -4.09, 1.92     |
| Caregiver BMI                         | 0.13            | 0.10            | .12             | –0.07, 0.33     |
| Caregiver age                         | 0.02            | 0.01            | .22*            | 0.00, 0.04      |
| Caregiver ethnicity\(a\)             | –0.74           | 0.47            | –.15            | –1.68, 0.20     |

\(R^2 = .18\) for PCS Step 1; \(\Delta R^2 = .05\) for PCS Step 2; \(R^2 = .10\) for MCS Step 1; \(\Delta R^2 = .01\) for MCS Step 2.

\(p < .05; \ast p < .01.\)

\(a\)Marital status (i.e., married, unmarried) and caregiver ethnicity (i.e., Caucasian, African-American) are categorical variables.
with obesity and better than treatment-seeking adults with obesity (Fontaine et al., 2000). Given that 90% of our caregiver sample was overweight/obese, the finding of similar HRQOL scores to that of a population of adults with obesity was not surprising. Of interest is that our caregiver HRQOL scores were higher than scores from a sample of treatment-seeking adults with obesity. Based on the similarities of HRQOL scores between our caregivers and non-treatment-seeking adults with obesity, lower HRQOL scores may predict whether someone seeks obesity treatment. Although the weight histories and weight loss efforts of the caregivers in the current sample are unknown, the caregivers acknowledged the importance of seeking weight management intervention for their youth, even if caregivers were prompted to seek treatment by health care professionals. Possibly, these caregivers experienced similar stigmatizing and negative consequences associated with their own obesity, which may have initiated their efforts to seek treatment for their youth.

Data from the current study also support the strong contribution of BMI and SES on caregiver physical HRQOL and caregiver age on mental health HRQOL, which is consistent with the adult obesity literature (Fontaine et al., 2000; Kolotkin et al., 2002). For example, Fontaine and colleagues (2000) found that treatment-seeking adults with obesity had a higher degree of overweight and higher status employment compared to nontreatment-seeking adults with obesity. Furthermore, our data replicate prior research supporting a link between obesity and family SES (Zeller & Modi, 2006). Contrary to study hypotheses, child zBMI was not a significant predictor of caregiver physical or mental health HRQOL beyond caregiver variables. Our restricted range of weight status may have impacted our ability to fully test this hypothesis. Additionally, other variables (e.g., medical comorbidities and health-risk behaviors) may account for additional variance in caregiver HRQOL.

In the current study, the link between parent-proxy and youth self-report HRQOL did not vary by the level of caregiver HRQOL. This suggests that parent-proxy HRQOL in youth seeking obesity treatment does not seem to be influenced by caregiver HRQOL. However, our findings are in contrast to those of Goldbeck and Melches (2005), which found that caregivers of children with CHD with lower QOL were better able to accurately predict their child’s self-report QOL. Our data are also in contrast to the depression–distortion hypothesis. Multiple factors may contribute to such findings. First, our sample was demographically disparate (44% Caucasian, 62% single) to the CHD sample (100% Caucasian, 88% married). Second, the conditions of CHD and obesity have different long-term morbidities. Due to the considerable advances in diagnosis and treatment for CHD, many adults with CHD experience minimal symptoms and often live active and fulfilling lives. In contrast, caregivers of youth with obesity may be able to relate to their youth’s difficulties associated with physical tasks (e.g., running), social functioning (e.g., teasing and social isolation), and emotional functioning (e.g., depressive symptoms) and may share their own personal experiences with their youth leading to a shared experience. Furthermore, caregivers with obesity, compared to non-overweight caregivers, may more readily identify psychosocial functioning deficits in their youth based on their own experiences. Finally, the depression–distortion hypothesis is specific to caregiver symptoms of depression and this distortion may not be evident in the context of HRQOL or chronic disease.

Taken together, the overweight and impaired HRQOL status of caregivers and the youth they bring to obesity treatment warrants further support for family-based interventions, which will likely be more effective in addressing the contextual and familial factors associated with the obesigenic environment (Epstein, Paluch, Roemmich, & Beecher, 2007; Young, Northern, Lister, Drummond, & O’Brien, 2007). For example, many of the families in the current sample were low income, single-parent families, which suggests that access to nutritional foods and healthy meal management may be challenging (Young et al., 2007). Data from Zeller and colleagues (2007) indicated that caregivers of youth presenting for obesity treatment demonstrated greater psychological distress, more family conflict, and greater mealtime challenges compared to caregivers of youth of healthy weight. Furthermore, caregiver distress has been detected as an influential factor compromising successful outcomes in pediatric obesity treatment (Golan, 2006). The poor HRQOL of caregivers identified in the current sample and the potential difficulties associated with healthy eating found in other studies underscore the necessity of assessing and treating the contextual and psychosocial problems common to caregivers with obesity early in treatment. This is particularly vital in light of the considerable influence of caregivers on the course of treatment for children. Caregiver functioning should be considered when examining potential barriers to pediatric obesity treatment.

Although this is the first study to examine caregiver HRQOL in a sample of youth seeking obesity treatment, several limitations were noted with consequent directions for future research. The present findings highlight the importance of examining youth with obesity in a broader context of potentially modifiable familial factors (Zeller et al., 2007). Even though the large sample size was an
asset to the current study, the sample was treatment-seeking and caregivers were primarily mothers and thus not generalizable. Additionally, our sample consisted of primarily African-American and Caucasian families because they were the families presenting to treatment in this geographic region. Given the high attrition rates found in economically disadvantaged and ethnic minority youth (Zeller et al., 2004), future research with a larger and more ethnically diverse sample of obese youth (e.g., Hispanic, Native-American), along with greater inclusion of fathers, are important next steps in the field. The cross-sectional design of the current study also warrants a longitudinal examination of caregiver HRQOL throughout the course of pediatric obesity treatment. To aid in these endeavors, models need to be developed to understand the reciprocal impact of youth and caregiver factors (e.g., weight, HRQOL) in the persistence of obesity. Additionally, research has advocated for the use of disease-specific measures of HRQOL (Quittner et al., 2003). Given the weight status of both our youth and their caregivers, the use of weight-specific HRQOL measures [e.g., impact of weight on quality of life [IWQOL] (Kolotkin et al., 1995), IWQOL-Kids (Kolotkin et al., 2006), Sizing Them Up (Modi et al., in press), Sizing Me Up, (Zeller & Modi, manuscript under review)] may highlight areas of functioning that warrant intervention.

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