Impaired Health-Related Quality of Life in Preschoolers With Obesity

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Objectives To examine whether health-related quality of life (HRQOL) for treatment-seeking preschoolers with obesity (N = 60) differed from preschoolers in a nonclinical comparison sample (N = 457).

Methods Parents in both samples completed the parent-proxy form of the Pediatric Quality of Life Inventory (PedsQL). Between-group comparisons were conducted to examine differences for all scales and summary scores of the PedsQL.

Results Parent proxy-reported HRQOL was significantly lower for treatment-seeking preschoolers with obesity for all scales and summary scores except School Functioning. Differences on the Total Scale score met the criterion for being a clinically important difference.

Conclusions Our study suggests treatment-seeking families perceive worse HRQOL for children with obesity as early as the preschool years. Discussion of HRQOL may be a more effective strategy for health care professionals in broaching the topic of weight with parents and identifying families who may be more receptive to weight management suggestions for preschoolers.

Key words obesity; quality of life; weight management.

Current estimates suggest 12.1% of preschoolers are obese (BMI ≥ 95th percentile for age and sex; Ogden, Carroll, Kit, & Flegal, 2012). Excess weight gain during the preschool years is problematic because it has been found to track throughout childhood (Nader et al., 2006) to adulthood (Guo, Wu, Chumlea, & Roche, 2002) and because some preschoolers with obesity already exhibit risk factors for cardiovascular disease (Gopinath et al., 2011). Despite these alarming trends, obesity remains underrecognized in this age-group, and its impact on preschooler’s functioning appears to be underestimated. Numerous studies have documented that parents of preschoolers with obesity perceive their child as being of healthy weight (e.g., Carnell, Edwards, Croker, Boniface, & Wardle, 2005) and are not concerned about their child’s excess weight gain because they feel their child “will grow out of it” (Jain et al., 2001). Retrospective studies have also found that pediatricians document and address weight concerns less frequently in preschoolers compared with older children and adolescents (Barlow, Trowbridge, Klish, & Dietz, 2002). It is thus possible that the negative health consequences of obesity may seem too far off to prompt caregivers of preschoolers with obesity and their health care providers to take action.

Emerging evidence suggests that having obesity during the preschool years may have immediate physical and psychosocial consequences, however. Using data from the 1999–2008 National Health and Nutrition Examination Survey, Cockrell-Skinner et al. (2010) found parents were significantly more likely to report run/walk limitations for preschoolers with severe obesity (BMI ≥ 99th percentile) than for preschoolers who were of a healthy weight.
Socially, preschoolers with obesity may experience weight-based stigmatization, as experimental research has demonstrated that children as young as 3 years of age ascribe significantly more negative adjectives (e.g., ugly and stupid) to overweight figures and rate overweight figures as less preferred playmates than nonoverweight figures (Cramer & Steinwert, 1998; Margulies, Floyd, & Hojnoskii, 2008). Two studies have also found parents report significantly more peer problems for preschoolers with obesity than for preschoolers who are of a healthy weight. Findings have been mixed regarding whether preschoolers with obesity experience more emotional and behavioral problems than preschoolers who are not obese (Datar, Sturm, & Magnabosco, 2004; Griffiths, Dezateux, & Hill, 2011; Sawyer et al., 2006). Further investigation of the immediate consequences of obesity on preschooler functioning and development is clearly warranted.

Assessment of health-related quality of life (HRQOL) is one method for examining how being obese may affect preschoolers’ physical and psychosocial functioning. Multiple studies have demonstrated significantly lower HRQOL for older children and adolescents with obesity compared with their healthy weight peers (Tsiosos et al., 2009). Only one study has examined differences in HRQOL by weight for preschoolers (Wake, Hardy, Sawyer, & Carlin, 2008). Although not statistically different, parents in this large community sample did proxy-report lower physical and psychosocial functioning for preschoolers with obesity compared with preschoolers who were of a healthy weight. The authors concluded that even though parents do not report concern about their preschooler’s weight, they are likely to be concerned about more immediate health and behavioral problems that may result from excess weight gain (e.g., sleep difficulties and respiratory problems). However, it is not known whether these concerns can be leveraged to promote concern about weight.

The current study begins to address this question by examining whether parents seeking treatment for their preschooler with obesity evaluated their child’s HRQOL differently than parents of a nonclinical comparison sample of preschool-aged children. HRQOL was measured using the Pediatric Quality of Life Inventory (PedsQL) parent proxy-report form. HRQOL data for preschoolers with obesity were collected as part of a larger pilot study to develop a clinic- and home-based behavioral obesity intervention for preschoolers and their families. As this study was an iterative process, data for 18 preschoolers who participated in an earlier iteration have been published (Stark et al., 2011), whereas data for the latter iterations consisting of 42 preschoolers have not. Using a methodology similar to Schwimmer et al. (2003), we compared baseline parent proxy-reported HRQOL for our sample of treatment-seeking preschoolers with obesity with a nonclinical comparison sample of preschoolers drawn from the PedsQL database. Based on the HRQOL literature for older pediatric age groups, and the limited information on physical and psychosocial functioning for preschoolers with obesity, we hypothesized that parent proxy-reported HRQOL would be significantly lower for treatment-seeking preschoolers with obesity compared with preschoolers in the nonclinical comparison group on the Total Scale score and Physical and Psychosocial Health Summary scores of the PedsQL.

**Methods and Procedures**

**Participants**

Treatment-Seeking Preschoolers With Obesity

Families were recruited from midwestern pediatric practices serving primarily suburban communities. Invitation letters signed by pediatricians were sent to a randomly selected group of families identified through chart review as having a child between the ages of 2 years and 5 years, 11 months old whose BMI ≥ 95th percentile for age and sex but who was <100% over his or her ideal body weight. Similar to recruitment strategies we have used in previous pediatric chronic illness studies (Stark et al., 2009), ‘‘do not contact’’ postcards were included with the invitation letters to provide families the ability to decline any contact by the study staff. Research staff attempted to contact all families who did not return postcards within 10 days after they were mailed to provide a more detailed explanation of the study and to determine whether families met the following additional inclusion criteria: preschoolers (a) were not diagnosed with a medical condition (e.g., Prader–Willi Syndrome) or taking medications known to impact weight (e.g., Ritalin), (b) had no limitations or disabilities that would preclude engaging in moderate physical activity, and (c) were not enrolled in another weight management program; and families (a) were English speaking, (b) living within 50 miles of the medical center, and (c) had at least one parent who was overweight (BMI ≥ 25). Only families with at least one overweight parent were included because we wanted to target preschoolers who were at greatest risk for remaining obese (Whitaker, Wright, Pepe, Seidel, & Dietz, 1997). All preschoolers were <6 years of age at the time of recruitment, but one child turned 6 years old by the date of the baseline assessment.

Sixty families met all inclusion criteria and were enrolled in the study, representing 26% of all families solicited for participation and who could be reached by phone. This recruitment rate is comparable with other
pediatric obesity intervention trials (Nguyen et al., 2012). The three most common reasons for declining participation included that families were too busy (n = 45; 35%), did not perceive preschoolers as overweight (n = 23; 17%), and no specific reason (n = 17; 13%). Families completed the PedsQL during their baseline assessment, which occurred before randomization to one of the following treatment groups: (a) 18-session clinic and home-based behavioral intervention, (b) 10-session clinic-based behavioral intervention only, or (c) a one-time enhanced standard of care visit. For all participants, the parent completing the PedsQL was the mother. The institutional review committee approved the parent study, and informed consent was obtained before data collection.

Nonclinical Comparison Sample

To provide a context for interpretation of HRQOL for the sample of preschoolers with obesity, we used previously published data for 457 preschoolers between the ages of 2 and 5 years old that were collected during the PedsQL 4.0 generic core scales field test (Varni, Seid, & Kurtin, 2001) and validation study (Varni, Burwinkle, Seid, & Skarr, 2003) as a nonclinical comparison group. For both studies, the PedsQL was completed either in physician offices during well-child visits, by telephone or via a statewide mailing, and included families from diverse socioeconomic backgrounds. Children included in the nonclinical comparison sample were not diagnosed with an acute or chronic health condition or receiving care in specialty clinics providing services to children with acute or chronic health conditions (Varni, Burwinkle, Seid, & Skarr, 2003; Varni, Seid, & Kurtin, 2001). Data from the PedsQL database were randomly matched to our sample of treatment-seeking preschoolers with obesity based behavioral intervention only, or (c) a one-time enhanced standard of care visit. For all participants, the parent completing the PedsQL was the mother. The institutional review committee approved the parent study, and informed consent was obtained before data collection.

Measures

Demographic Information

In both samples, parents self-reported preschooler age, gender, and race/ethnicity. Although the nonclinical comparison sample comprised families from diverse socioeconomic backgrounds (Varni, Burwinkle, Seid, & Skarr, 2003; Varni, Seid, & Kurtin, 2001), information on parent education, marital status, and annual family income was available only for the treatment-seeking sample of preschoolers with obesity.

Anthropometric Data

For the sample of treatment-seeking preschoolers with obesity, trained personnel used standard anthropometric procedures (Cameron, 1986) to collect height and weight measurements for children and parents. Centers for Disease Control and Prevention growth curves were used to calculate child BMI z-score (z-BMI) and BMI percentile (Kuczmarski et al., 2000). Parent BMI was calculated as kg/m². Anthropometric data were not available for the comparison sample as it was not consistently collected as part of the field test and validation studies.

The Pediatric Quality of Life Inventory 4.0 Generic Core Scales (PedsQL 4.0)

The PedsQL 4.0 (Varni, Seid, & Kurtin, 2001) is a 23-item inventory that uses a 5-point Likert scale to assess HRQOL. Raw item totals are converted to scale scores with higher scores representing better HRQOL. The PedsQL 4.0 comprises three summary scores (Total Scale Score, Physical Health Summary, and Psychosocial Health Summary) and four multidimensional scale scores (Physical Functioning, Emotional Functioning, Social Functioning, and School Functioning). The parent proxy-report form has demonstrated good reliability and validity (Varni, Burwinkle, Seid, & Skarr, 2003; Varni, Limbers, & Burwinkle, 2007). The PedsQL parent proxy-report form has demonstrated good reliability and validity (Varni, Burwinkle, Seid, & Skarr, 2003; Varni, Limbers, & Burwinkle, 2007; Varni, Seid, & Kurtin, 2001) and has been shown in studies with older pediatric samples to discriminate between children with and without obesity (Schwimmer et al., 2003). Minimal clinically important difference scores are available for the parent proxy-report version of the PedsQL and represent the point at which parents perceive child HRQOL is low enough to warrant seeking care or a change in care to promote HRQOL improvements (Varni, Burwinkle, Seid, & Skarr, 2003).

Results

Descriptive data by group are reported in Table I. Although the sample of treatment-seeking preschoolers with obesity and nonclinical comparison sample differed significantly on age, they did not differ on gender or race/ethnicity. Treatment-seeking preschoolers with obesity had a mean z-BMI of 2.37 (SD = 0.58; minimum = 1.62,
maximum $= 4.34$) and a mean BMI percentile of 98.39 (SD $= 1.47$; minimum $= 95$, maximum $= 100$). The identified overweight parents of preschoolers with obesity had a mean BMI of 35.75 (SD $= 7.82$; minimum $= 25.48$, maximum $= 62.46$) and were primarily mothers (77%). As a whole, demographics on the obese sample indicated parents were married (88%), had a college or university-based degree (52%), and had an annual family income $>$75,000 (63%).

As shown in Table II, parents reported significantly lower Total HRQOL for treatment-seeking preschoolers with obesity compared with preschoolers in the nonclinical comparison sample ($p < .001$). The between-groups difference of 4.79 met the criterion for being considered a meaningful clinically important difference ($>4.50$; Varni, Burwinkle, Seid, & Skarr, 2003). Parents also reported significantly lower Physical ($p < .05$) and Psychosocial ($p < .001$) Health for treatment-seeking preschoolers with obesity compared with preschoolers in the nonclinical comparison sample.

**Table II. Age-Adjusted Group Means for Parent Proxy-Report on the PedsQL 4.0 Generic Core Scales**

<table>
<thead>
<tr>
<th></th>
<th>Treatment-seeking sample with obesity ($N = 60$)</th>
<th>Nonclinical comparison sample ($N = 457$)</th>
<th>Absolute difference</th>
<th>MCID$^a$</th>
<th>95% CI (lower, upper)</th>
<th>$d$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total HRQOL</td>
<td>83.01</td>
<td>88.52</td>
<td>4.79</td>
<td>4.5</td>
<td>$-7.73, -1.85$</td>
<td>$-0.44$</td>
<td>.001</td>
</tr>
<tr>
<td>Physical health</td>
<td>86.46</td>
<td>91.08</td>
<td>3.78</td>
<td>6.92</td>
<td>$-0.34, -7.22$</td>
<td>$-0.3$</td>
<td>.03</td>
</tr>
<tr>
<td>Psychosocial health</td>
<td>80.84</td>
<td>86.86</td>
<td>5.42</td>
<td>5.49</td>
<td>$-2.21, -8.62$</td>
<td>$-0.46$</td>
<td>.001</td>
</tr>
<tr>
<td>Emotional functioning</td>
<td>75</td>
<td>82.79</td>
<td>7.44</td>
<td>7.79</td>
<td>$-3.45, -11.43$</td>
<td>$-0.51$</td>
<td>.0002</td>
</tr>
<tr>
<td>Social functioning</td>
<td>84.38</td>
<td>90.47</td>
<td>5.42</td>
<td>8.98</td>
<td>$-1.79, -9.06$</td>
<td>$-0.4$</td>
<td>.004</td>
</tr>
<tr>
<td>School functioning$^b$</td>
<td>84.68</td>
<td>87.93</td>
<td>2.46</td>
<td>9.67</td>
<td>$-6.65, 1.72$</td>
<td>$-0.17$</td>
<td>.25</td>
</tr>
</tbody>
</table>

Note. Higher scores equal better HRQOL. $d = $effect size. Effect sizes are designated as small (.20), medium (.50), and large (.80).

**Discussion**

Consistent evidence documents that parents perceive worse HRQOL for older children and adolescents with obesity compared with those who are of a healthy weight (Tsiros et al., 2009). Less is known about whether being obese may impact functioning and development during the preschool years. To our knowledge, the current study is only the second investigation of the relationship between preschoolers with obesity compared with preschoolers in the nonclinical comparison sample. In examining the specific domains of the Psychosocial Health Summary score, parents reported significantly lower Emotional and Social Functioning (both $p < .01$), but not School Functioning, for treatment-seeking preschoolers with obesity compared with preschoolers in the nonclinical comparison sample.

Exploratory item-level analyses indicated that significantly lower physical, emotional, and social functioning reported for treatment-seeking preschoolers with obesity was driven by specific behaviors (Table III). Physically, treatment-seeking preschoolers with obesity were described by their parents to have significantly lower energy and significantly greater difficulty walking, running, participating in sports and exercise, and lifting heavy objects compared with preschoolers in the nonclinical comparison sample. Emotionally, treatment-seeking preschoolers with obesity were described by their parents as experiencing significantly higher levels of worry and anxiety and significantly greater difficulties sleeping than preschoolers in the nonclinical comparison sample. Socially, parents reported treatment-seeking preschoolers with obesity had significantly greater difficulty engaging in “things other children their age could do” and experienced significantly more teasing from peers compared with preschoolers in the nonclinical comparison sample.
weight and HRQOL for preschoolers. Similar to Wake and colleagues (2008), we found parents proxy-reported worse HRQOL for preschoolers with obesity compared with preschoolers in the nonclinical comparison sample. However, between-group differences in HRQOL for the current study reached statistical significance, whereas those in the Wake et al. study did not. This difference is not surprising because parents of preschoolers in our sample were treatment seeking and because it supports HRQOL trends observed for older samples of children with obesity (Tsiros et al., 2008) and high rates of weight-based teasing and overweight figures (Cramer & Steinwert, 1998; Margulies et al., 2008). Integration of our findings with the larger HRQOL literature indicates that HRQOL is compromised at an early age for children with obesity and that parents who are more cognizant of functional impairments may be more likely to engage their children in a weight management program.

In the current study, significantly lower HRQOL described for treatment-seeking preschoolers with obesity spanned both the domains of physical and psychosocial functioning. Disparities for psychosocial functioning were greater and approached the criterion for being a clinically meaningful difference. Parents of treatment-seeking preschoolers with obesity reported the greatest level of impairment in their child’s emotional functioning, noting that their preschoolers experienced significantly more fear and worry than preschoolers in the nonclinical comparison sample in particular. Our use of a generic HRQOL measure precludes conclusions from being made as to whether parents attributed these emotional difficulties to preschooler’s weight status or whether they support previous findings from some studies suggesting preschoolers with obesity have poorer emotional and behavioral functioning compared with preschoolers who are at a healthy weight (Datar et al., 2004; Griffiths et al., 2011). Use of an obesity-specific HRQOL measure, such as the “Sizing Them Up” (Modi & Zeller, 2008), would aide in clarification of this relationship and could have important clinical implications regarding components beyond the standard lifestyle modifications that should be included in preschool obesity interventions to optimize treatment outcomes. Similar to emotional functioning, it is not known if the greater teasing reported by parents of preschoolers with obesity is related to their weight without an obesity-specific HRQOL. There is some support for this hypothesis in experimental literature where preschoolers have been found to ascribe significantly more negative adjectives to overweight figures (Cramer & Steinwert, 1998; Margulies et al., 2008) and high rates of weight-based teasing and

<table>
<thead>
<tr>
<th>Physical functioning</th>
<th>Treatment-seeking sample with obesity (N = 60)</th>
<th>Nond clinical comparison sample (N = 457)</th>
<th>Difference</th>
<th>95% CI (lower, upper)</th>
<th>d</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>90.83</td>
<td>96.4</td>
<td>-4.37</td>
<td>-8.44, -0.30</td>
<td>-0.29</td>
<td>.04</td>
</tr>
<tr>
<td>Running</td>
<td>88.75</td>
<td>95.98</td>
<td>-5.96</td>
<td>-10.31, -1.60</td>
<td>-0.37</td>
<td>.01</td>
</tr>
<tr>
<td>Participating in sports/exercise</td>
<td>88.75</td>
<td>94.77</td>
<td>-4.81</td>
<td>-9.61, -0.01</td>
<td>-0.27</td>
<td>.05</td>
</tr>
<tr>
<td>Lifting something heavy</td>
<td>83.75</td>
<td>90.47</td>
<td>5.72</td>
<td>-10.92, -0.52</td>
<td>-0.3</td>
<td>.03</td>
</tr>
<tr>
<td>Bathing</td>
<td>94.17</td>
<td>92.01</td>
<td>2.15</td>
<td>-1.51, 5.87</td>
<td>0.17</td>
<td>.23</td>
</tr>
<tr>
<td>Helping to pick up his/her toys</td>
<td>77.92</td>
<td>80.89</td>
<td>-3.04</td>
<td>-10.17, 4.09</td>
<td>0.12</td>
<td>.4</td>
</tr>
<tr>
<td>Having hurts/aches</td>
<td>85</td>
<td>83.97</td>
<td>1.51</td>
<td>-4.22, 7.24</td>
<td>0.07</td>
<td>.61</td>
</tr>
<tr>
<td>Low energy level</td>
<td>82.5</td>
<td>94.08</td>
<td>-11.12</td>
<td>-15.05, -7.19</td>
<td>0.77</td>
<td>&lt;.001</td>
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<table>
<thead>
<tr>
<th>Emotional functioning</th>
<th>Treatment-seeking sample with obesity (N = 60)</th>
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<th>d</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeling afraid/scared</td>
<td>68.75</td>
<td>78.73</td>
<td>-9.72</td>
<td>-15.42, 3.98</td>
<td>-0.46</td>
<td>.001</td>
</tr>
<tr>
<td>Feeling sad/blue</td>
<td>82.92</td>
<td>84.12</td>
<td>-0.58</td>
<td>-5.58, 4.42</td>
<td>-0.03</td>
<td>.82</td>
</tr>
<tr>
<td>Feeling angry</td>
<td>67.92</td>
<td>73.4</td>
<td>-4.41</td>
<td>-10.96, 1.13</td>
<td>-0.22</td>
<td>.11</td>
</tr>
<tr>
<td>Trouble sleeping</td>
<td>72.08</td>
<td>86.82</td>
<td>-15.21</td>
<td>-21.18, 9.25</td>
<td>-0.69</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Worry</td>
<td>83.33</td>
<td>90.89</td>
<td>-7.79</td>
<td>-11.35, 2.23</td>
<td>-0.4</td>
<td>.004</td>
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</tbody>
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<tr>
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<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Playing with other children</td>
<td>80.42</td>
<td>84.93</td>
<td>-4.43</td>
<td>-10.78, 2.10</td>
<td>-0.18</td>
<td>.19</td>
</tr>
<tr>
<td>Other children not wanting to play with him/her</td>
<td>84.58</td>
<td>89.82</td>
<td>-4.29</td>
<td>-8.92, 0.34</td>
<td>-0.25</td>
<td>.17</td>
</tr>
<tr>
<td>Getting teased by other children</td>
<td>83.54</td>
<td>91.08</td>
<td>-6.54</td>
<td>-10.53, -1.96</td>
<td>-0.4</td>
<td>.004</td>
</tr>
<tr>
<td>Not able to do things other children his/her age can do</td>
<td>85.42</td>
<td>93.7</td>
<td>-7.79</td>
<td>-11.89, -3.69</td>
<td>-0.52</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Keeping up when playing with other children</td>
<td>87.92</td>
<td>92.82</td>
<td>-4.45</td>
<td>-9.56, -0.67</td>
<td>-0.24</td>
<td>.09</td>
</tr>
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Note: Higher scores equal better HRQOL. d = effect size. Effect sizes are designated as small (.20), medium (.50), and large (.80).
stigmatization documented for older children and adolescents with obesity (Puhl & Latner, 2007).

Our finding that parents proxy-reported significantly greater “trouble sleeping” for preschoolers with obesity than for preschoolers in the nonclinical comparison sample is interesting in light of the mounting evidence that inadequate sleep increases preschoolers’ obesity risk (Jiang et al., 2009; Snell, Adam, & Duncan, 2007). With respect to physical functioning, greater run/walk difficulties reported for preschoolers with obesity in our sample are consistent with findings reported by Cockrell-Skinner et al. (2010) and suggest obesity in early childhood may have implications for preschoolers’ gross motor development. Lower energy levels for preschoolers with obesity in our sample are also consistent with reports for older children and adolescents with obesity (Varni, Limbers, Bryant, & Wilson, 2010) and may dissuade parents from encouraging preschoolers to engage in the high rates of vigorous activity that appear to be associated with decreased obesity risk in early childhood (Metallinos-Katsaras, Freedson, Fulton, & Sherry, 2007).

Findings of this study must be interpreted within the context of its limitations and provide several important directions for future research. Although representative of the suburban population served by the pediatric practices from which we recruited, future studies are needed to examine whether parent proxy-reported HRQOL may differ for preschoolers from more socioculturally diverse backgrounds. Treatment-seeking families of preschoolers with obesity in our sample were invited to participate in a treatment outcome study, and only 26% of those solicited selected to participate. A study that concurrently recruits preschoolers with obesity from treatment-seeking and non–treatment-seeking families would provide more insight on aspects of functional impairment that may drive families to seek care for their preschooler with obesity.

Our choice for a nonclinical comparison sample replicates a methodology used in previous examination of HRQOL for children and adolescents with obesity (Schwimmer et al., 2003). Similar to this study, anthropometric data were not available for the comparison sample in our study. However, based on population estimates, we could assume that up to 12% of our comparison sample may have been obese. Although theoretically the inclusion of a small percentage of obese preschoolers in the comparison sample would lower our ability to find statistically significant differences between the two groups, the impact of this and other factors that could not be measured in the comparison sample is a limitation of the current study. In a next study, a control group of preschoolers who are of a healthy weight should be recruited concurrent with preschoolers who have obesity so that more definitive conclusions can be made regarding the impact of weight status on HRQOL for this age-group.

As was noted earlier, use of a generic HRQOL does not allow us to say with certainty that parents associated physical and psychosocial impairments reported for children with their preschooler’s weight status. Currently, there are no obesity-specific HRQOL measures for children aged <5 years. Future research should thus examine whether parent-proxy HRQOL measures such as “Sizing Them Up” (Modi & Zeller, 2008) can be adapted and validated for use with young children, as this would permit more finite conclusions to be made regarding whether parents perceived physical and psychosocial impairments for their preschoolers to be because of their child’s weight. An obesity-specific measure of HRQOL would also permit review of impairments that may be unique to preschoolers who experience excess weight gain (e.g., having difficulty finding age-appropriate clothing). Finally, future research should examine variables, such as parent’s own HRQOL and parenting stress that may moderate or mediate parent proxy-report of HRQOL for preschoolers who are obese, given the influence of these variables on HRQOL for adults (Jia & Lubetkin, 2005) and older children (Guilfoyle, Zeller, & Modi, 2010; Janicke et al., 2007).

Despite these limitations, findings from our study have important research and clinical implications. Although the negative consequences of obesity on HRQOL are well established for school-aged children and adolescents (Tsiros et al., 2009), researchers are only now beginning to examine how excess weight may impact physical and psychosocial functioning and development for preschoolers. This gap is both surprising and concerning, given the prevalence of obesity in children aged between 2 and 5 years has remained above 10% for the past decade (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010; Ogden et al., 2012). Pediatricians serve an important role in health promotion, particularly in families of young children. However, perceptions that parents do not see children’s excess weight gain as problematic or are not motivated to change are commonly reported barriers to their engaging families in discussions about the benefit and importance of addressing weight management in children with obesity (Kolagotla & Adams, 2004; Perrin, Flower, Garrett, & Ammerman, 2005). Although parents of preschoolers with obesity in our sample did not independently seek out a weight management program, they were receptive to suggestions for this type of intervention and reported a pattern of functional impairments similar to older samples of children and adolescents with...
obesity measured by both generic and obesity-specific HRQOL measures (Modi & Zeller, 2008; Tsiros et al., 2009). Parent completion and provider review of a HRQOL measure may be too cumbersome for time allotted during standard well-child visits. However, discussion of preschooler physical, emotional, social, and school functioning is not beyond the scope of such a visit. If screening reveals a preschooler has obesity, pediatricians could then guide questions regarding children’s functioning to domains that research has demonstrated are impaired for children (including preschoolers) with obesity. This strategy may be more helpful in broaching the topic of weight with parents who endorse impairments, but do not necessarily associate them with their preschooler’s having obesity. Highlighting the current impact of excess weight gain on preschoolers’ functioning may also be a more meaningful discussion and effective strategy for increasing the saliency of engaging in weight management strategies than discussion of potential future health problems that may arise should preschoolers’ obesity persist. Findings that weight loss is associated with improved HRQOL in older pediatric samples (Tsiros et al., 2009) may also help to increase a family’s openness and motivation for addressing excess weight gain for their preschooler with obesity.

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**References**


