

# Impact of Psychosocial Risk on Outcomes among Families Seeking Treatment for Obesity

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**Objectives** To test the hypothesis that children with elevated psychosocial risk would have increased attrition and worse weight outcomes in weight management treatment.

**Study design** This was a prospective cohort study of 100 new patients, aged 4-12 years, in a weight management clinic. Parents completed the Psychosocial Assessment Tool. Logistic regression analyses were conducted to calculate the odds of attrition from the clinic and a nonmeaningful change in body mass index (BMI) z-score (ie, <0.1 unit decrease in BMI z-score) over a 6-month period based on psychosocial risk category, adjusting for child demographics and baseline weight category.

**Results** The majority of patients were male (59%), black (36%) or white (43%), and had severe obesity (55%), and 59% of families were categorized as having moderate or high psychosocial risk. Over the 6-month period, 53% of families were lost to follow-up, and 67% did not have a clinically meaningful decrease in BMI z-score. Compared with children of families with low psychosocial risk, children of families with moderate or high psychosocial risk were 3.1 times (95% CI, 1.3-7.2 times) more likely to be lost to follow-up and 2.9 times (95% CI, 1.1-7.9 times) more likely to have a non-clinically meaningful change in BMI z-score.

**Conclusions** Children presenting with increased psychosocial risk have higher attrition and poorer weight outcomes, supporting the need for psychosocial screening as a standard component of pediatric weight management treatment. (*J Pediatr* 2018;■■■:■■■-■■■).

Although the overall prevalence of childhood obesity are beginning to stabilize in the US, the prevalences of obesity and severe obesity are continuing to increase in certain subgroups.<sup>1,2</sup> These subgroups include children of racial and ethnic minority backgrounds, especially those of low socioeconomic status, leading to significant health disparities.<sup>1-5</sup> Expert recommendations outline a stepwise approach to the management of obesity and severe obesity in children, including treatment in tertiary care weight management clinics (WMCs) for children who do not respond to treatment in primary care settings.<sup>6</sup> The majority of children who attend WMCs consistently demonstrate an improvement in weight status<sup>7,8</sup>; however, most WMCs report attrition of >50%,<sup>9</sup> limiting the number of patients who benefit from treatment.

Retrospective studies have suggested greater attrition in WMCs among children of racial minority groups,<sup>10</sup> in children with more severe obesity,<sup>9,10</sup> and in children with behavioral and academic problems.<sup>9,10</sup> In addition, certain family factors, such as household financial difficulties, single-parent household structures, presence of family conflict, and parental mental illness, have been linked to attrition in WMCs.<sup>10-14</sup> Finally, families themselves report logistical and financial difficulties as primary barriers to attendance in WMCs.<sup>9,10,15-17</sup> Although these studies have described individual psychosocial risk factors important to attendance in WMCs, no studies to date have prospectively examined the impact of cumulative psychosocial risk on attrition and weight outcomes. Therefore, the aim of this study was to prospectively assess the impact of cumulative psychosocial risk on attrition and weight outcomes among children in a WMC, with the hypothesis that children with increased psychosocial risk would demonstrate increased attrition and worse weight outcomes compared with children with lower psychosocial risk. A secondary exploratory aim was to identify the strongest psychosocial predictors of attrition and weight outcomes.

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BMI	Body mass index
EHR	Electronic health record
PAT	Psychosocial Assessment Tool
WMC	Weight management clinic

## Methods

For this prospective cohort study, children aged 4–12 years and a parent were recruited at their initial visit to a WMC between May 2014 and April 2015. Child-parent dyads were excluded if the child had a primary genetic syndrome (eg, Down syndrome, Prader–Willi syndrome) or endocrine disorder (eg, hypothyroidism, hypopituitarism) that would predispose to excessive weight gain, or if the child was taking a medication that might impact weight (eg, antipsychotic medications, diabetes medications, steroids). Only 2 dyads were excluded for these reasons. Dyads were also excluded if the child's parent was not the legal guardian or was not proficient in English or Spanish. Child-parent dyads that consented to participation in the study were followed for 6 months in the WMC. This study was approved by the Nemours Institutional Review Board.

Participants received standard weight management treatment, consistent with expert guidelines.<sup>6,18</sup> At the initial visit, children underwent an assessment by a medical provider and received an individualized care plan. A typical plan included monthly clinic visits with an interdisciplinary team, which could include a medical provider, health educator, exercise physiologist, dietitian, or psychologist, depending on identified needs. Care provided during each visit included management of medical comorbidities, nutrition education, physical activity counseling, and discussion of behavioral strategies, such as goal-setting and self-monitoring, with elements of motivational interviewing used to encourage behavior change. Care was targeted at the adoption of healthy lifestyle behaviors by the entire family.

The Psychosocial Assessment Tool (PAT) was used to measure psychosocial risk. The PAT is a validated parent-report screener of family psychosocial risk that has strong internal consistency, test-retest reliability, and content validity.<sup>19</sup> The PAT is based on a socioecological approach and on the Pediatric Psychosocial Preventive Health Model,<sup>20,21</sup> which stratifies the need for resources based on psychosocial risk related to 7 domains: Structure and Resources, Social Support, Child Problems, Sibling Problems (in patients with siblings), Adult Problems, Stress Reaction, and Family Beliefs (Table I). Originally developed for pediatric oncology populations, the PAT has been successfully adapted for other patient populations<sup>21–28</sup> and was adapted for this study following the guidance of the PAT developer (Anne E. Kazak, PhD), in conjunction with

weight management clinicians. This adaptation included removing the Stress Reaction domain, which is relevant for families of children presenting with acute illness; modifying items in the Beliefs domain to be specific to healthy lifestyles and child weight; and including a Confidence domain to assess parental confidence adhering to weight management recommendations. Because this domain was new, it was not included in the total PAT score. The PAT is a copyrighted instrument and cannot be used without permission. Please contact us at <https://www.psychosocialassessmenttool.org> for information.

The PAT was completed at the initial visit and 3- and 6-month follow-up visits. The PAT was written at a fourth-grade reading level and took 10–15 minutes to complete. It was administered to parents in English (91%) or Spanish (9%), using a secure electronic questionnaire linked to the patient's electronic health record (EHR; 42%) or on paper (58%), depending on parent preference. A validated scoring system gives each domain a score of 0–1, with a total score in this study of 0–6 (with higher scores representing increased risk). PAT scores were categorized as low psychosocial risk if scores were <1, moderate psychosocial risk if scores were between 1 and 2, and high psychosocial risk if scores were >2. This categorization is based on the Pediatric Preventive Psychosocial Health Model, which outlines differing intensities of psychosocial clinical interventions needed based on psychosocial risk category.<sup>19,23</sup> PAT data collected from 10 401 participants across 90 sites indicates that 58% of families have low psychosocial risk, 31% have moderate psychosocial risk, and 9% have high psychosocial risk, with these findings consistent across settings and patient populations.<sup>20</sup>

A medical assistant trained in the measurement of children with obesity obtained the height and weight of each child at each visit to the WMC. Weight was measured to the nearest 0.1 kg with a calibrated digital platform scale. Height was measured to the nearest 0.1 cm with a wall stadiometer. Weight and height were entered into the EHR, and body mass index (BMI) percentile for age and BMI z-score were automatically calculated by the EHR according to current recommended formulations.<sup>24</sup> For children lost to follow-up, anthropometric measures from other visits in the healthcare network were extracted from the EHR if available.

The child's baseline weight was categorized as overweight (BMI 85th–94th percentile for age), obesity (95%–120% above the 95th percentile for age), or severe obesity (>120% above

**Table I. PAT\* domains**

Domain	Example items
Structure and Resources	Family composition; areas of financial difficulty
Social Support	Support for healthcare plan; financial support
Child Problems	Mood and behavioral concerns; developmental and social concerns, adverse events
Sibling Problems (optional)	Same as Child Problems but for child's siblings
Adult Problems	Mental health concerns and adverse events; relationship problems
Family Beliefs	Importance of managing weight to a child's health; parent's responsibility as a role model
Parent Confidence	Parent's confidence in ability to make lifestyle changes or to make WMC appointments

\*Available at [psychosocialassessmenttool@nemours.org](mailto:psychosocialassessmenttool@nemours.org).

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