



Association between the Family Nutrition and Physical Activity Screening Tool and obesity severity in youth referred to weight management

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KEYWORDS

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Sleep

Summary

Background: The Family Nutrition and Physical Activity Screening Tool (FNPA) evaluates family behavioural and environmental factors associated with pediatric obesity, but it is unknown if FNPA scores differ among youth across obesity severities. Our aim was to determine the association between the FNPA and obesity severity in youth referred to weight management.

Methods: Upon initiating treatment, height, weight, and the FNPA were collected according to standard procedures. Cut-points for overweight/obesity, severe obesity (SO) class 2, and SO class 3 were calculated. FNPA scores were compared across weight status groups using analysis of covariance, and odds of SO across FNPA quartiles were evaluated with multiple logistic regression.

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Results: Participants included 564 5–18 year old who initiated treatment and completed the FNPA. After adjustment, FNPA scores differed by weight status with higher/healthier scores in youth with overweight/obesity (56.6 ± 8.5) when compared to those with SO class 2 (55.0 ± 7.1 ; $p = 0.015$) or SO class 3 (53.6 ± 9.0 ; $p < 0.001$). Compared to those in the highest FNPA quartile, youth in the 2nd quartile had 1.8 (95% CI: 1.1, 2.9) times higher odds of SO, and those in the lowest FNPA quartile had 2.1 (95% CI: 1.3, 3.4) times higher odds of SO. Youth with SO had unhealthier subscale scores among 6 of 10 constructs, including nutritional, physical activity, sedentary, and sleep behaviours.

Conclusions: Results suggest a consistent inverse relationship between the FNPA and adiposity among youth presenting for weight management. The FNPA is a useful metric for programs and clinicians targeting family behaviours and the home environment to combat obesity.

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Introduction

Childhood obesity is a major public health concern given the number of youth it affects and its adverse consequences. Currently, 18% of U.S. youth are obese and another 17% are overweight [1–3]. Among this high prevalence of overweight and obesity, a troublesome pattern has been observed in the increasing rates of severe pediatric obesity (body mass index percentile >99th age- and sex-specific percentile). Recent data have shown severe obesity to be the fastest increasing category of obesity among youth, with prevalence rates in the US reported to be between 4% and 6% [1–5]. This growing upward shift is of great concern due to severe obesity being associated with serious short-term and long-term health consequences [6]. Compared to youth with overweight or obesity, youth with severe obesity have more adverse levels of blood pressure, triglycerides, oxidative stress, high-density lipoprotein cholesterol, inflammation, and higher prevalence of prediabetes and impaired glucose tolerance [6]. In addition, the Bogalusa Heart Study has shown that excess adiposity and associated cardiometabolic risk factors track from childhood to adulthood [7]. Because of the serious short- and long-term consequences of severe obesity, it is vital that this population receive treatment as early as possible.

Over two-thirds of children's hospitals in the U.S. now provide services through a pediatric obesity clinic or weight-management program [8,9]. Patient assessment is a critical component within the chronic care model [10]. The behavioural

assessment often includes gathering information on the components of energy balance—diet, sedentary behaviour and physical activity. Beyond assessment of the *amount* of physical activity (e.g. minutes of moderate-to-vigorous physical activity), sedentary behaviour (e.g. screen time), and caloric intake, it is also necessary to consider the *context* of these behaviours. Hence, understanding how the home and family environments influence these behaviours is essential [11,12].

A variety of surveys have been developed for potential use in the clinical screening of obesity and energy balance components, including the Patient-Centred Assessment and Counselling for Exercise [13], Family Nutrition and Physical Activity Screening Tool (FNPA) [14], Healthy Home Survey [15], and the Comprehensive Home Environment Survey [16]. The FNPA combines information from a variety of behaviours (e.g. family meals, TV in bedroom, parental modelling of physical activity) related to child obesity to evaluate family environments, and has potential for use by pediatric health professionals for assessing a child's family and home environment related to obesity. Studies evaluating the validity of the FNPA screening tool have shown it to be significantly associated with baseline prevalence of overweight [14], one-year change in BMI [17], cardiovascular disease risk factors [18], and acanthosis nigricans [19]. However, the utility of the FNPA screening tool in pediatric obesity treatment programs has not been investigated, nor has it been compared among youth across levels of obesity severity. Therefore, the purpose of this study

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