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The Burden of Psychosocial Stressors and Urgent Mental Health Problems in a Pediatric Weight Management Program

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Abstract

Objective—To systematically screen for behavioral and mental health problems and psychosocial stressors (PS) in newly referred patients and adult caregivers (PACs) in a pediatric weight management program.

Methods—We used the Strengths and Difficulties Questionnaire (SDQ), the Center for Epidemiologic Studies Depression Scale (CES-D) for caregivers and patients ≥18 years, and assessed urgent mental health concerns and psychosocial stressors.

Results—A total of 243 PACs were screened; data were unavailable for 6. Compared with US normative data for the SDQ–Parent Proxy Version, the proportion of patients in our sample with borderline/abnormal total difficulties and conduct problems scores was greater for all age groups. Among adult caregivers with complete CES-D, 18.4% were at risk for depression. Eleven percent of patients screened positive for urgent mental health problems. Overall, 43% of patients and 57.4% of caregivers had PS.

Conclusions—Systematic screening identified untreated symptoms and significant PS. Addressing these complex problems likely requires collaborative approaches with community providers.

Keywords

pediatric obesity; screening; behavioral health; mental health; psychosocial stressors

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INTRODUCTION

Obese youth are at increased risk for emotional and behavioral health problems[1,2] and the presence of psychosocial stressors (PS) such as school difficulties[2], weight-based teasing[3], and bullying[4]. Multidisciplinary pediatric weight management programs that incorporate comprehensive behavioral interventions have been shown to be effective[5], and those programs with screening identify parents and children with mental health problems, as well as medical, financial, and relationship stressors in the family.[6–9] Emotional and behavioral health problems have been associated with pediatric weight management program attrition[8,10] and depressive symptoms with persistent obesity and future weight gain.[11] Several studies have also examined the effects of parental depression and have implicated maternal depression, in particular, with an increased risk of childhood overweight in offspring.[12–14] Therefore, screening for comorbid mental health problems or PS in both patients and their adult caregivers at the start of a pediatric weight management program could potentially identify families who might benefit from intensified behavioral and mental health support, which could lead to improved treatment outcomes.

The Optimal Weight for Life (OWL) Program at Boston Children's Hospital (BCH), a multidisciplinary stage 3 pediatric weight management program, undertook a clinical quality improvement (QI) project to systematically screen for behavioral and mental health problems and PS in all newly referred patients and adult caregivers (PACs). The aims of this study were to describe the results of this screening with respect to (a) the prevalence and types of PS, (b) the prevalence of abnormal screening for behavioral and mental health problems in treatment-seeking youth and the predictors of abnormal screening, (c) the prevalence of risk for depression in the adult caregivers, and (d) the occurrence of mental health concerns requiring emergent intervention. Additionally, to better understand the behavioral and mental health screening results within our cohort, we compared our data with available US normative data. Our study adds to the extant literature by further characterizing the PS and behavioral and mental health problems that challenge the obese pediatric population and their adult caregivers. The challenges facing our clinic population are likely not unique, and therefore, we believe our report will be valuable to clinicians in other multidisciplinary pediatric weight management programs.

METHODS

Study Design

This is a retrospective review of data collected during a clinical QI project. Subjects were all newly referred PACs to the OWL Program from May 1 – October 31, 2012. Newly referred PACs attended a program orientation that provided a program overview and included systematic screening for PS and behavioral and mental health problems. The BCH Institutional Review Board approved this study.

Screening Measure Completion and Review

During the OWL Program Orientation, PACs completed psychosocial stressor and behavioral and mental health screening questionnaires (Table 1) to identify any significant

comorbid psychological conditions or significant PS that might pose barriers to successful program participation. If more than one caregiver was present for the Orientation, we requested that the caregiver who was most likely to accompany the patient to future OWL Program appointments complete the applicable self-report and parent-proxy questionnaires. The relationship between the caregiver and patient was recorded.

A behavioral specialist (psychologist or social worker) then interviewed PACs in a separate OWL Consult Visit during which the psychological screening questionnaires were reviewed. If a patient or adult caregiver was found to have an urgent mental health concern (e.g. severe clinical depression without treatment in place or active suicidal ideation with a plan for suicide), crisis intervention services (e.g., the BCH Child Protection Team and/or the BCH emergency department) were mobilized. If any domestic violence, abuse, or neglect was uncovered with imminent safety concerns, the BCH Child Protection Team was consulted for recommendations. Those PACs with less urgent mental health concerns (e.g., depressive symptoms, but no imminent safety concern) were referred to mental health services outside of the OWL Program for additional evaluation and management.

Behavioral and Mental Health and Psychosocial Stressor Screening Measures

Strengths and Difficulties Questionnaire (SDQ)—The Strengths and Difficulties Questionnaire (SDQ) was chosen as a general behavioral and mental health screening measure because it has been validated, has both self-report and parent-proxy versions, and assesses functioning across multiple behavioral and mental health domains[15,16] thereby providing a comprehensive picture. This measure has also been used for population screening in pediatric chronic diseases[17].

Caregivers of patients less than 18 years old completed the SDQ Parent-Proxy Version (SDQ-P)[15], and patients aged 11 years old or greater also completed the SDQ Self-Report Version (SDQ-S).[16] Both the SDQ-P and SDQ-S are brief, 25-item, behavioral screening questionnaires that assess positive and negative attributes across five 5-item scales: (a) emotional symptoms (anxiety and depression), (b) conduct problems, (c) hyperactivity-inattention, (d) peer problems, and (e) prosocial behavior.[15,16] A total difficulties score is calculated by summing the scores of the emotional symptoms, conduct problems, hyperactivity-inattention, and the peer problems scales.[15,16] Scales are scored from 0 to 10. Total difficulties score ranges from 0 to 40 with categories of normal (0 – 15), borderline (16 – 19), and abnormal (≥ 20) for the SDQ-S and normal (0 – 13), borderline (14 – 16), and abnormal (≥ 17) for the SDQ-P.[15,16] Scale scores can be prorated if at least 3 items are completed.[15,16] For all scales, except prosocial behavior, higher scores are associated with worsening symptoms.[15,16] Although all patients younger than 18 years were screened with the SDQ-P in the Orientation Program, we only report the results for patients 4 to 17 years old, which is the age range for which the instrument has been validated.[15]

Center for Epidemiologic Studies Depression Scale (CESD)—Since the SDQ has not been validated in adults,[15] and there are known links between depression and obesity,[11,18] we selected the Center for Epidemiologic Studies Depression Scale (CES-D) for screening patients 18 years or older and parents because it is brief (20 items)[19] and

provides a cut-off score that aids in identifying individuals at risk for clinical depression.[19] The total CES-D score is calculated as a sum of responses to all 20 items.[19] The range of possible scores is between 0 and 60 with higher scores indicating greater depressive symptoms. A score of ≥ 16 indicates risk for clinical depression.[19] Scores cannot be calculated for respondents with missing items.

Urgent Mental Health and Safety Concerns—To assess for urgent mental health problems, including suicidal ideation, homicidal ideation, and self-injurious behavior in patients 11 years and older and by parent-proxy in patients under 11 years old, we used and adapted questions from the Patient Health Questionnaire for Adolescents (PHQ-A)[20] and the Pediatric Symptom Checklist youth self-report version (PSC-Y).[21]

Psychosocial Stressors (PS)—To assess for the presence of PS in the patients and adult caregivers over the prior 6 months, we developed a questionnaire based on the List of Threatening Experiences (LTE).[22] The original LTE is a 12-item questionnaire with dichotomous (yes or no) questions that assesses negative life events.[22] The LTE has been used in population studies, is a valid and reliable measure of stress in mental health, and its responses are associated with mental health problems such as depression and anxiety.[22] In order to capture additional PS relevant to our patients, we added questions directly pertaining to the child or adolescent in the domains of academic or attendance problems at school, drug problems, legal problems, feeling unsafe due to emotional, verbal, or physical threats or assaults, and whether there were pre-existing mental health problems.

Clinical Assessments

Patient characteristics were collected during the OWL Program Orientation during routine care and abstracted from the electronic medical record. Characteristics included age, sex, race, language, body mass index (BMI), BMI percentile, BMI z-score, and insurance status. Among the children and adolescents in our sample, overweight was defined as an age and sex-specific BMI between the 85 – 94.9th percentile; obesity was defined as BMI at or above the 95th percentile.[23] For the purposes of describing our cohort, obese subjects were further categorized into 3 groups of increasing severity: BMI 95th to 96.9th percentile, BMI 97th to 98.9th percentile, and BMI ≥ 99th percentile.[24] All subjects were included in the analyses regardless of weight status to reflect the distribution of the referred population.

Statistical Analyses

Descriptive statistics are presented as a proportion or mean with standard deviation (SD), as appropriate. For the SDQ-P and SDQ-S total difficulties and scale scores, the borderline and abnormal results were collapsed into a single category (borderline/abnormal) for bivariate and multivariable analyses. The relationships between patient characteristics and dichotomous (normal or borderline/abnormal) SDQ-P and SDQ-S total difficulties and scale scores were assessed with chi-square and Student's t tests. Patient characteristics associated with the SDQ-P and SDQ-S scores (at P≤0.20) in bivariate analyses were then included in a multiple logistic regression model.

The SDQ-P dichotomous scores were also compared to age-appropriate normative data for children in the US.[25] Normative data for the SDQ-S have not been defined. To perform these analyses, patient age was categorized according to the age categories in the normative sample (4 – 7, 8 – 10, 11 – 14, and 15 – 17 years old). The proportion of children in our clinical sample with borderline/abnormal scores on each scale was compared to the proportion of children with borderline/abnormal scores in the normative sample using the binomial test.

Statistical significance was defined as a P-value less than 0.05. All data analyses were performed with SAS version 9.3 (SAS Institute, Inc., Cary, NC).

RESULTS

Patient and Adult Caregiver Characteristics

From May 1, 2012 through October 31, 2012, 243 PACs were eligible for screening during the Orientation. Data were unavailable for 6 PACs. Descriptive characteristics for the remaining 237 patients are presented in Table 2. Mean age was 11.6±3.7 years and approximately two-thirds of patients were female (62%) and half (52.3%) were severely obese (BMI ≥ 99th percentile). Most of the caregivers were mothers (88.6%).

SDQ Parent-Proxy and Self-Report Scores

Of 232 patients eligible for screening by SDQ-P, there were 15 (6.4%) for whom scores could not be generated due to missing items. Similarly, due to missing items, scores for 16 (11.7%) of the 137 patients eligible for screening by SDQ-S could not be generated. Mean SDQ-P and SDQ-S scores for the sample are shown in Table 3. The mean SDQ-P total difficulties score was in the borderline range, and the mean SDQ-S total difficulties score was just above the upper limit of the normal range (Table 3). The mean SDQ-P emotional and conduct scale scores were just above the upper limits of the normal ranges. The mean peer problems scale scores were in the borderline range for the SDQ-S and in the abnormal range for the SDQ-P.

In the final multiple logistic regression models, categorical age was the only characteristic significantly associated with the SDQ-P total difficulties and the emotional symptoms scale scores (Table 4). The odds of having borderline/abnormal scores were higher for the older patients compared to those aged 4 – 7 years old. None of the other SDQ-P scale scores or the SDQ-S total difficulties or scale scores were associated with patient characteristics (ie, age, sex, race, language, BMI percentile category, or insurance [data not shown]).

Compared with normative data for US children for the SDQ-P, the proportion of patients in our sample with borderline/abnormal total difficulties and conduct problems scores was significantly greater for all age groups (Table 5). Additionally, 8- to 10-year-olds in our sample fared worse on peer problems, emotional symptoms, and hyperactivity-inattention symptoms as did select other age groups for each of these scales (Table 5). All patients in our sample aged 15 to 17 years had a borderline/ abnormal score on the peer problems scale (Table 5). Only prosocial behavioral scores did not differ from the US normative sample for any age group.

CESD Scores

Due to missing items, CES-D scores for only 174 (73%) adult caregivers could be generated. For the sample, the mean (SD) CES-D score for the adult caregivers was 9.3 (9.0) with 32 (18.4%) at risk for clinical depression. For the 9 patients aged 18 years and older (mean [SD] age 18.8 years [0.9]), the mean (SD) CES-D score was 15.2 (17.2) with 3 (33.3%) at risk for clinical depression. No adult caregiver or patient age 18 years or older reported current treatment for depression.

Urgent Mental Health Problems and Safety Concerns

Based on questionnaire responses and information collected during the OWL Consult Visit, 26 (11%) patients reported one or more urgent mental health problem: 18 (7.6%) endorsed suicidal ideation, 12 (5.1%) homicidal ideation, and 10 (4.2%) self-injurious behavior. One patient with untreated depression and self-injurious behavior required crisis management for active suicidal ideation. Severe depression identified in a second patient required referral for outside, more intensive services. Another patient was currently in treatment for a complex psychiatric history inclusive of depression, self-injurious behavior, and suicidal ideation. No urgent mental health problems were identified in the adult caregivers. One family required crisis intervention due to domestic violence in the home.

Psychosocial Stressors (PS)

One or more PS were identified among 43.0% of patients and 57.4% of caregivers. The most commonly cited PS for the patient were (a) previously advised to seek out mental health services (27.9%), (b) academic or attendance problems at school (21.9%), and (c) feeling unsafe due to emotional, verbal, physical threats, or assaults (6%). The most commonly cited PS for the caregivers were (a) self, spouse/partner, or other adults in household unemployed or seeking work (26.6%); (b) previously advised to seek out mental health services (19.8%); and (c) a significant change in family structure such as a separation or divorce, birth, or death of a loved one (16.5%).

DISCUSSION

Our study clearly demonstrates that PS and symptoms of behavioral and mental health problems burden newly referred treatment-seeking PACs. Although we did not observe an association with severity of obesity, the high prevalence of symptoms of behavioral and mental health problems in our study could be related to the large proportion of severely obese youth within our sample (>50%). For example, severely obese youth seeking bariatric surgery have reportedly higher rates of depression and lower quality of life.[26] Compared to US norms, youth in our sample had a greater proportion of borderline/abnormal total difficulties and conduct problems scores across all age categories. Age was also found to be the only patient characteristic associated with the parent-proxy reported total difficulties score. This finding is consistent with broader reports that the general prevalence of behavioral and mental health problems increases with age.[28]

The relationship between attention deficit hyperactivity disorder and overweight and obesity has been well described.[28] Accordingly, in our study, we found that patients aged 8 to 10 and

11 to 14 years had a greater proportion of borderline/abnormal hyperactivity-inattention symptoms scores compared with US norms. These symptoms have treatment implications as a recent study showed that weight loss success was negatively predicted by inattention and hyperactivity/impulsivity as measured using the SDQ-P.[29] Given the known associations between school difficulties[2], weight-based teasing[3], and bullying[4], it was not surprising that nearly one quarter (21.9%) of patients in our sample endorsed difficulties at school and 6% felt unsafe due to emotional, verbal, or physical threats and/or assaults. Similarly, patients in our sample had a greater proportion of borderline/abnormal SDQ-P peer problems scores, which includes specific questions about bullying and social isolation, compared with the normative US data. Since school maladjustment is associated with attrition from pediatric weight management programs[8], addressing school and peer problems could potentially improve treatment outcomes.

In alignment with other studies showing a relationship between emotional symptoms and obesity,[1,2,11,18] in our study, we also found that patients 8 to 17 years old had worse emotional symptoms scores compared with normative data, with the odds of having borderline/abnormal scores being higher for older age groups. About one quarter of patients in our sample had previously been advised to seek out mental health services, although only 1 patient reported receiving treatment for depression. This discrepancy between current and recommended treatment may be reflective of a broader problem of access to mental health care for children and families.

Through systematic screening, we identified 18 (7.6%) patients with suicidal ideation, one of whom required emergent evaluation because of imminent safety concerns. While it is unclear whether BMI, independent of other risk factors, is associated with suicidal ideation, both actual and perceived adolescent overweight and obesity are associated with suicidal ideation.[30] Furthermore, weight-based teasing, which is associated with lower self-esteem, lower body image, and higher depressive symptoms, may be a causative factor.[3] We also identified 12 patients with homicidal ideation, but none expressed imminent threat of harm, and therefore did not require crisis intervention. To our knowledge, there are no studies showing a relationship between BMI and homicidal ideation.

The link between parent psychopathology and child mental health disorders is well articulated[31], which might suggest that the high prevalence of behavioral and mental health problems among the youth in our sample is attributable, in part, to the presence of parental mental illness. Several studies have implicated maternal depression with an increased risk of childhood overweight in offspring.[13] Accordingly, we performed additional post hoc analyses of the 145 CES-D scores available for mothers; 28 (19.3%) were at risk for clinical depression. However, based on data from the PS screening, 17 of these 28 mothers with abnormal scores did not report having been previously advised to seek out mental health services. Addressing maternal depression might therefore serve as another path to positively influence outcomes.

Although data were collected as part of a clinical quality improvement project in a single center, the strengths of our study include the large sample size and the systematic collection of data using standardized screening instruments with both caregiver and patient reports to

assess multiple behavioral, mental health, and psychosocial domains. However, there are limitations that should be considered when interpreting the results. As these data were drawn from a QI project, we did not have a comparison group of age, sex, socioeconomic status, and ethnicity matched non-obese/overweight controls from the population of patients served by the same hospital. However, we were able to compare the results on the SDQ-P to US normative data. Due to missing items, primarily for the CESD, scores for all eligible patients and caregivers could not be generated. However, characteristics of patients with and without scores were not significantly different. For practical purposes, we were unable to include formal diagnostic psychological interviews in the Orientation, and therefore, we are unable to report on the frequency of specific behavioral and mental health diagnoses.

In summary, screening for behavioral and mental health problems and PS in the setting of a clinical QI project was feasible and uncovered a broad range of symptoms and stressors. Our findings highlight the significant burden of these issues within a treatment-seeking population and both excess symptoms relative to age-matched US norms and increasing symptoms with age. Since the demand for pediatric obesity treatment in tertiary care centers exceeds current capacity,[33] it is imperative that primary care physicians are also familiar with the high likelihood of comorbid behavioral and mental problems such that symptoms can be recognized and treatment initiated outside of a weight management program. Furthermore, the resources to provide adequate support for identified problems (e.g. caregiver unemployment and school difficulties) may be beyond the scope of what is routinely available in multidisciplinary pediatric weight management program. Meeting the needs of this population will likely require novel partnerships and approaches. Potential systems-based models include integrating behavioral and mental health into patient-centered medical homes embedded within medical neighborhoods, with collaboration and shared accountability between specialists, primary care clinicians, community mental health providers, school systems, public health, and social support services.[33] Future studies and QI initiatives should examine the impact of early identification and co-management of behavioral and mental health problems on obesity treatment outcomes in conjunction with targeted, collaborative support across the care continuum.

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Table 1

Screening Measures

	Patient Age			Parent/Caregiver
Questionnaire	**4 – 10 years**	**11 – 17 years**	**18 years or older**	
SDQ-S*		X		
SDQ-P†	X	X		
Urgent Mental Health Problems Self-Report‡		X	X	
Urgent Mental Health Problems Parent-Report§	X	X	X	
CES-D‖			X	X
Psychosocial Stressors-Self-Report			X	
Psychosocial Stressors-Parent (Self and Proxy)	X	X		

An “X” indicates that the questionnaire was administered to patients in the age group indicated.

*Strengths and Difficulties Questionnaire Self-Report Version

†Strengths and Difficulties Questionnaire Parent-Proxy Version

‡Assessment of suicidal ideation, homicidal ideation and self-injurious behaviors, Self-Report

§Assessment of suicidal ideation, homicidal ideation and self-injurious behaviors, Parent-Proxy Report

‖Center for Epidemiologic Studies Depression Scale

Separate assessment for disordered eating reported elsewhere.[35]

Table 2

Patient characteristics (N = 237)

Variable	N (%) or Mean (SD)
Age (years)	11.6 (3.7)
Sex (female)	147 (62)
Race	
White	97 (40.9)
Black	64 (27)
Other	34 (14.4)
Unknown	42 (17.7)
Language	
English	219 (92.4)
Spanish	12 (5.1)
Other	6 (2.5)
BMI [*] percentile	
≤ 84.9%	2 (0.8)
85 – 94.5%	10 (4.2)
95 – 96.9%	24 (10.1)
97 – 98.9%	77 (32.5)
≥ 99%	124 (52.3)
Insurance	
Private [†]	123 (51.9)
Public [‡]	114 (48.1)
Caregiver (mother) [§]	186 (88.6)

[*] Body Mass Index

[†] Coverage by a health plan provided through an employer or union or purchased by an individual from a private health insurance company

[‡] Plans funded by governments at the federal, state, or local level e.g. Medicaid

[§] n = 210 due to missing items

Table 3

Mean SDQ-P* and SDQ-S† Scores

Scale	SDQ-P (n=217) Mean (SD)	SDQ-S (n=121) Mean (SD)
Total Difficulties		
SDQ-P Normal (0 – 13)	15.4 (4.8)	
SDQ-S Normal (0 – 15)		15.2 (4.2)‡
Emotional Symptoms		
SDQ-P Normal (0 – 3)	3.2 (2.5)	
SDQ-S Normal (0 – 5)		3.0 (2.4)
Conduct Problems		
SDQ-P Normal (0 – 2)	2.9 (1.4)	
SDQ-S Normal (0 – 3)		2.6 (1.2)‡
Hyperactivity-Inattention Symptoms		
SDQ-P Normal (0 – 5)	4.3 (1.8)	
SDQ-S Normal (0 – 5)		4.9 (1.4)
Peer Problems		
SDQ-P Normal (0 – 2)	5.0 (1.5)	
SDQ-S Normal (0 – 3)		4.9 (1.3)
Prosocial Behavior		
SDQ-P Normal (≥ 6)	8.4 (2.0)	
SDQ-S Normal (≥ 6)		8.5 (1.6)

*Strengths and Difficulties Questionnaire Parent-Proxy Version

†Strengths and Difficulties Questionnaire Self-Report Version

‡n = 120 due to missing items that prevented prorating.

Table 4

Patient characteristics associated with the SDQ-P*

SDQ-P* Scale	Characteristic	Adjusted† Odds Ratio for Borderline/Abnormal Score	(95% CI)
Total Difficulties	**Age (years)**		
	4 – 7	Reference	
	8 – 10	4.6	1.8 – 11.8
	11 – 14	4.4	1.8 – 10.7
	15 – 17	6.8	2.3 – 20.2
Emotional Symptoms	**Age (years)**		
	4 – 7	Reference	
	8 – 10	7.5	2.1 – 27.1
	11 – 14	6.7	1.9 – 23.8
	15 – 17	11.6	2.9 – 45.7

*Strengths and Difficulties Questionnaire Parent-Proxy Version

†Adjusted for sex, language, race, BMI percentile, and insurance.

Table 5

SDQ-P: Proportion of Normal and Borderline/Abnormal Scores Compared to US Normative Data

Age Category	SDQ-P Scale Category	Clinical Sample		US Population Norm	P value
		N	%	%	
Age 4 – 7 years	**Total Difficulties**	32			
	Normal (0 – 13)		71.9	87.7	0.03
	Borderline & Abnormal (≥14)		28.1	12.3	
	Emotional Symptoms	32			
	Normal (0 – 3)		90.6	89	0.5
	Borderline & Abnormal (≥ 4)		9.4	11	
	Conduct Problems	32			
	Normal (0 – 2)		59.4	79	0.02
	Borderline & Abnormal (≥ 3)		40.6	21	
	Hyperactivity-Inattention Symptoms	32			
	Normal (0 – 5)		75.0	82.9	0.3
	Borderline & Abnormal (≥ 6)		25.0	17.1	
	Peer Problems	32			
	Normal (0 – 2)		6.3	82.5	<0.001
	Borderline & Abnormal (≥ 3)		93.8	17.5	
	Prosocial Behavior	32			
	Normal (≥ 6)		96.9	94.3	0.5
	Borderline & Abnormal (0 –5)		3.1	5.7	
Age 8 – 10 years	**Total Difficulties**	62			
	Normal (0 – 13)		35.5	87.1	<0.001
	Borderline & Abnormal (≥ 14)		64.5	12.9	
	Emotional Symptoms	62			

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Age Category	SDQ-P Scale Category	Clinical Sample		US Population Norm	P value
		N	%	%	
	Normal (0 – 3)		56.5	86.7	<0.001
	Borderline & Abnormal (≥ 4)		43.6	13.3	
	Conduct Problems	62			<0.001
	Normal (0 – 2)		45.2	81.4	
	Borderline & Abnormal (≥ 3)		54.8	18.6	
	Hyperactivity-Inattention Symptoms	62			<0.001
	Normal (0 – 5)		64.5	84.4	
	Borderline & Abnormal (≥ 6)		35.5	15.6	
	Peer Problems	62			<0.001
	Normal (0 – 2)		3.2	78.9	
	Borderline & Abnormal (≥ 3)		96.8	21.1	
	Prosocial Behavior	62			0.3
	Normal (≥ 6)		90.3	94.3	
	Borderline & Abnormal (0 –5)		9.7	5.7	
Age 11 – 14 years	**Total Difficulties**	90			<0.001
	Normal (0 – 13)		36.7	85.7	
	Borderline & Abnormal (≥ 14)		63.3	14.3	
	Emotional Symptoms	90			<0.001
	Normal (0 – 3)		58.9	83.9	
	Borderline & Abnormal (≥ 4)		41.1	16.1	
	Conduct Problems	90			<0.001
	Normal (0 – 2)		35.2	81	
	Borderline & Abnormal (≥ 3)		64.8	19	
	Hyperactivity-Inattention Symptoms	90			

Age Category	SDQ-P Scale Category	Clinical Sample		US Population Norm	P value
		N	%	%	
	Normal (0 – 5)		73.3	86	<0.01
	Borderline & Abnormal (≥ 6)		26.7	14	
	Peer Problems	90			<0.001
	Normal (0 – 2)		2.2	85.7	
	Borderline & Abnormal (≥ 3)		97.8	14.3	
	Prosocial Behavior	90			0.8
	Normal (≥ 6)		91.1	92.3	
	Borderline & Abnormal (0 – 5)		8.9	7.7	
Age 15 – 17 years	**Total Difficulties**	33			<0.001
	Normal (0 – 13)		27.3	89.1	
	Borderline 7 Abnormal (≥ 14)		72.7	10.9	
	Emotional Symptoms	33			<0.001
	Normal (0 – 3)		45.5	85.8	
	Borderline & Abnormal (≥ 4)		54.6	14.2	
	Conduct Problems	33			<0.001
	Normal (0 – 2)		38.2	83.2	
	Borderline & Abnormal (≥ 3)		61.8	16.8	
	Hyperactivity-Inattention Symptomsc	33	81.8	88.2	0.4
	Normal (0 – 5)		18.2	11.8	
	Borderline & Abnormal (≥ 6)				
	Peer Problems	33			NA*
	Normal (0 – 2)		0	80.2	
	Borderline & Abnormal (≥ 3)		100	19.8	
	Prosocial Behavior	33			

Age Category	SDQ-P Scale Category	Clinical Sample		US Population Norm		P value
		N	%		%	
	Normal (≥ 6)		90.9		93.9	0.7
	Borderline & Abnormal (0 –5)		9.1		6.1	

SDQ-P= Strengths and Difficulties Questionnaire Parent-Proxy Version

* Could not be calculated due to zero cell count.

NA, not applicable. Totals may sum to more than 100% due to rounding.