

Prevalence and Health Correlates of Overweight and Obesity in Children with Autism Spectrum Disorder

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ABSTRACT: Children with autism spectrum disorder (ASD) may be at increased risk for overweight and obesity, but little information is known about correlates of overweight and obesity in this population. This study compared prevalence rates of parent-reported overweight and obesity and specific health behaviors (i.e., parent report of child sleep, family meal patterns, child screen time, and child physical activity) among children with ASD (N = more than 900 [weighted to represent 690,000; age 10–17]) compared with children without ASD using data from a nationally representative sample. Additionally, the relationship between specific health behaviors (i.e., child sleep, family meals, screen time, and physical activity) and weight status was examined in the ASD population. Data were from the National Survey of Children's Health 2011–2012. Results indicate that children with ASD were more likely to be obese but not more likely to be overweight than non-ASD youth. Children with ASD engaged in physical activity less than children without ASD, but no differences were found on sleep, most measures of screen time, and mealtimes. However, parent perceived poorer sleep was associated with increased weight status, and fewer family meals were associated with normal weight status among children with ASD.

(*J Dev Behav Pediatr* 36:489–496, 2015) **Index terms:** obesity, autism spectrum disorder, health correlates.

According to an emerging body of literature, youth with autism spectrum disorder (ASD) may be at increased risk for overweight (body mass index [BMI] \geq 85th percentile for age and gender) and obesity (BMI \geq 95th percentile for age and gender),¹ a national health epidemic with significant physical and psychosocial consequences affecting one third of the US children and adolescents.² However, prevalence estimates vary substantially with some evidence to suggest that rates of obesity in children with ASD are comparable with national estimates (17%),³ and other research that finds prevalence estimates up to 3 times as large (42%).⁴ Although methodological limitations such as small sample sizes and lack of comparison groups likely contribute to these discrepancies,¹ the inconsistencies in the literature to date suggest that further research is needed.

Two recent studies with modest sample sizes yielded consistent estimates of both obesity and overweight prevalence rates. Sharp et al⁵ found obesity rates of 14.9% and overweight rates of 23.1%; similarly, Zuckerman et al⁶ found obesity and overweight rates of 17% and 18.1%, respectively. Neither study included a comparison group, but these estimates do appear to exceed rates of combined overweight and obesity in typically developing children.

Studies with large samples that do include comparison groups have also yielded discrepant findings, perhaps because most studies have relied on parent-reported BMI data. In a nationally representative survey sample, Curtin et al⁷ found that youth with ASD had a risk of obesity that was 40% greater than those without ASD based on parent-reported BMI. Interestingly, the difference in rates of obesity between ASD and non-ASD youth only approached significance. In another national survey sample, Phillips et al⁸ found that 31.8% of youth with ASD were obese based on parent-reported BMI, significantly higher than typically developing children; however, differences in prevalence for overweight were not significant. Broder-Fingert et al conducted the first study of obesity in children with ASD that included a large sample size, comparison group, and direct measures of height and weight. For children diagnosed with autism and Asperger syndrome, respectively, rates of overweight (14.8% and 11.1%) and obesity (23.2% and 25.3%) were all significantly higher than rates found for typically developing peers.⁹

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HEALTH BEHAVIORS AND OVERWEIGHT/OBESITY IN CHILDREN WITH AUTISM SPECTRUM DISORDER

For typically developing children, modifiable health behaviors that relate to overweight/obesity status have been a common target for intervention researchers. However, the relationships between health behaviors and overweight/obesity have not been well established in children with autism spectrum disorder (ASD).

Physical Activity

Children with ASD seem to be at a heightened risk for low levels of physical activity.¹⁰ Impairments in social functioning may affect participation in group-based sports and other socially mediated physical activities for youth with ASD.¹¹ In addition, children with ASD are more likely to experience impairments in motor skills (e.g., balance, postural stability, and gait), which further decrease their likelihood of being physically active.¹² However, findings regarding physical activity in children between the ages of 5 and 12 years with ASD in comparison with typically developing children have been mixed.^{13,14} Beyond childhood, few investigations include physical activity levels of adolescents with ASD, which is unfortunate given that adolescence marks a critical time when physical activity levels significantly decline.¹⁵ The inconsistent findings of physical activity levels among children and the lack of data for adolescents with ASD suggest that additional research in this area is needed.

Screen Time

Children with ASD surpass their typically developing peers in use of “screen time” (e.g., watching television, playing video games, and using computers).^{16–19} Nevertheless, studies that compare rates of screen time use rarely investigate the nature of the association between screen time use and obesity risk in children with ASD. Must et al¹⁷ found a significant correlation between BMI and weekend (but not weekday) TV time in a sample of 53 children ages 3 to 11 years with ASD. However, this association has not been replicated in larger samples, leaving no clear evidence that the associations between screen time and obesity in the general population are similar for children with ASD.

Mealtime Behaviors

Compared with typically developing peers, children ages 3 to 6 years with ASD show more problematic behaviors at mealtimes, including resisting sitting at the dinner table and mealtime tantrums.²⁰ Additionally, parents report that their children with ASD (ages 3–12 yr) require greater supervision and assistance at mealtimes compared with typically developing peers.²¹ In this same sample, approximately half of children with ASD required a different meal than their family members, and parents considered mealtimes with children with ASD to be more stressful than with typically developing siblings.²¹ However, research has yet to evaluate the

impact of ASD on the frequency of family meals eaten together, which is a known protective factor for healthy weight in the general population.²²

Sleep

Between 50% and 80% of parents of children with ASD indicate that their child experiences sleep problems,^{23–25} a rate that significantly surpasses problems reported for typically developing children.²⁵ Children ages 2 to 12 years with ASD most commonly face irregular wake patterns, insomnia, and behavioral difficulties at bedtime.^{23,26} Broder-Fingert et al found that sleep disorders increased risk for obesity in children ages 2 to 20 years with ASD, which is particularly concerning as childhood sleep problems often continue into adolescence in this population.^{9,24} Despite the high prevalence of sleep problems among children with ASD, descriptive sleep research has been hindered by restricted recruitment strategies, small sample sizes, and limited age ranges.²⁶

SUMMARY

Numerous independent studies using multiple methodologies have identified children with autism spectrum disorder (ASD) as being at high risk for obesity, although additional prevalence estimates are needed to definitively establish the extent of this apparently increased risk. Additionally, previous prevalence studies have not thoroughly investigated the risk factors for obesity in children with ASD. Health behaviors such as sleep, physical activity, and mealtime behaviors are well-established predictors of obesity in typically developing children,^{22,27,28} but these associations have not been investigated concurrently in ASD populations. Therefore, this study builds upon previous research by examining the prevalence of overweight and obesity among children with ASD in a nationally representative sample and by examining how specific health behaviors (i.e., child sleep, family meals, screen time, and physical activity) relate to weight status in this population. Additionally, weight status and health behaviors among children with ASD are compared with health behaviors of typically developing children.

METHODS

Data Source and Study Sample

Data were obtained from the National Survey of Children's Health (NSCH) 2011–2012. For this study, a data use agreement was in place with the Data Resource Center and the Child and Adolescent Health Measurement Initiative (DRC; CAHMI). A version of the NSCH database with demographic information, height and weight information, and all health behaviors was delivered to the primary author from the DRC. The authors were not involved in any data collection but rather analyzed the NSCH database from the DRC and CAHMI. To conduct the current analyses, the project was

reviewed by the primary author's institutional review board and approved for exemption.

The NSCH is a national telephone-based survey that was conducted between February 2011 and June 2012, funded by the US Department of Health and Human Services, Health Resources and Services Administration, and Maternal and Child Health Bureau. The 2011–2012 survey resulted in 95,677 interviews, with approximately 1850 interviews collected in each of the 50 states. The majority (68.6%) of the respondents were mothers (biological, step, foster, or adoptive), while 24.2% were fathers (biological, step, foster, or adoptive), and 7.2% were other relatives or guardians.

In the NSCH, approximately 45,000 responses were collected to represent the population of youth aged 10 to 17, including more than 900 responses for children with an autism spectrum disorder (ASD). The exact number of responses varied by question examined, but the responses were weighted to represent approximately 3.3 million children, including 690,000 children with an ASD. Please see Table 1 for demographics information. All children in this age range were used for the current

analyses. The sample of children with ASD was predominantly male (84.0%) and white (62.4%) followed by Hispanic (21.3%) and black (10.2%). The remaining 6.1% were categorized as multiracial or other. The mean age for children with ASD was 13.1 years (SD = 0.175).

Measures

As part of the NSCH, all data are parent report. Although the entire survey contains several hundred questions, data from the following NSCH questions were used in the current data analysis:

1. ASD: Please tell me if a doctor or other health care provider ever told you that (child) had autism, Asperger's disorder, pervasive development disorder, or other autism spectrum disorder, even if he/she does not have the condition now. If yes, does (child) currently have the condition?
2. Weight (used for BMD): How much does (child) weigh now?
3. Height (used for BMD): How tall is (child) now?
4. Sleep: During the past week, on how many nights did (child) get enough sleep for a child (his/her) age? ("none"; "1–3 nights"; "4–6 nights"; "every night").
5. Vigorous Physical Activity: During the past week, on how many days did (child) exercise, play a sport, or participate in physical activity for at least 20 minutes that made (him/her) sweat and breathe hard? ("0 d"; "1–3 d"; "4–6 d"; "everyday").
6. Family Meals: During the past week, on how many days did all family members who live in the household eat a meal together? ("none"; "1–3 d"; "4–6 d"; "everyday").
7. Time spent watching TV, videos, or playing games: On an average weekday, how much time does (child) spend in front of a TV watching TV programs, videos, or playing video games? ("none"; "1 hr or less"; "more than 1 hr but less than 4 hr"; "4 hr or more").
8. Time spent with computers, cell phones, handheld video games, and other electronic devices: On an average weekday, how much time does (child) spend with computers, cell phones, handheld video games, and other electronic devices, doing things other than schoolwork? ("does not use electronic devices"; "uses devices 1 hr a day or less"; "uses devices more than 1 hr but less than 4 per day"; "uses devices more than 4 hr per average weekday").
9. Screen in bedroom: Does (child) have a TV, computer, or access to electronic devices in (his/her) bedroom? ("yes" or "no").

Procedures

For the NSCH, participants were recruited using a cross-sectional list-assisted random digit dial (RDD)

Table 1. Demographics

	All Children (10–17 yr), %	
	ASD	Non-ASD
Gender		
Female	16.0	49.6
Male	84.0	50.3
Race/ethnicity		
Hispanic	21.3	21.3
White, not Hispanic	62.4	55.0
Black, not Hispanic	10.2	14.4
Multiracial/other, not Hispanic	6.1	9.3
Age, yr		
10	14.5	12.4
11	18.0	12.0
12	12.8	12.8
13	11.5	12.0
14	12.8	12.3
15	11.0	12.5
16	10.8	13.3
17	8.6	12.7
Poverty level		
Poverty level of this household based on DHHS guidelines		
0%–199% FPL	32.3	41.1
200%–299% FPL	26.3	16.1
300%–399% FPL	11.5	12.6
400% FPL or greater	29.8	30.1

Columns may not add up to 100 due to rounding and nonresponse. DHHS, US Department of Health and Human Services; FPL, federal poverty level.

sample of landline telephone numbers, supplemented with an independent RDD sample of cell phone numbers, from all 50 states, the District of Columbia, and the US Virgin Islands. Households with at least 1 child between 0 and 17 years met study inclusion criteria. Data collection was completed through phone interviews in English, Spanish, Mandarin, Cantonese, Vietnamese, and Korean. Families unable to complete the survey in one of these languages were excluded. Interviewers gathered ages of all children in the home, and 1 child was randomly selected to be the subject of the interview. The adult in the household with the most knowledge of the child's health and health care was asked to complete the interview. Participants were incentivized with a prepaid incentive of \$1 with a promised incentive of up to an additional \$10 to \$11 for landline households and up to \$15 for cell phone households for interview completion. The NSCH interview completion rate was 54.1% for the landline sample and 41.2% for the cell phone sample (Average interview length: 33–34 min).

Data Analyses

For this study, children ages 10 to 17 were selected for the analyses because BMI data were only available for this age range and it is a primary outcome variable. Analyses were conducted comparing children with an ASD diagnosis to those whose parents did not endorse an ASD diagnosis (comparison group) on rates of weight status and health behaviors. The children from the NSCH sample were (by design) nationally representative of the population of youth in the country. Thus, the non-ASD comparison group closely matches the demographics of children aged 10 to 17 in the United States. The sample of youth with ASD is smaller but is also fairly representative of youth aged 10 to 17 in the United States who have ASD (in that there are more boys represented). Given the nationally representative nature of the data and the fact that a primary outcome was BMI percentile (which controls for age and gender), we did not control for demographic variables. Additional analyses were conducted among the children ages 10 to 17 years with an ASD diagnosis to health behaviors between normal weight, overweight, and obese weight status in children with ASD. Because the survey used a complex sampling technique to collect data representative of the population of interest, many traditional statistics programs were inappropriate due to their inability to incorporate the complex sample design and weights. Weighted data were used for all analyses, using weights determined by the Centers for Disease Control and Prevention to ensure that the results are representative of the population of children in the United States at the time of the survey. To preserve this characteristic of the data, all analyses were conducted using AM Statistical Software (Beta Version 0.06.04; The American Institutes for Research and Jon Cohen, 2011). The AM Statistical Software was chosen because it is the only freely available software program that appropriately handles complex samples. The AM Statistical Software

does not provide odds ratios but instead provides adjusted Wald tests as the method for determining significance.

To address the relationship between ASD and weight status, prevalence rates of weight categories and hypothesis testing between children with ASD and children without ASD were presented first. Specifically, rates of normal weight, overweight, and obesity were presented for children with ASD and children without ASD; hypothesis testing between these 2 groups was conducted by bivariate logistic regression, and the Wald test was used to determine statistical significance. To address the relationship of ASD to health behaviors, prevalence rates of health behaviors (physical activity, sleep, screen time, and family meals) among children with and without ASD were presented next. These rates are followed by the Wald test results from bivariate logistic regressions between children with ASD and children without ASD. Rates of weight category, health behaviors, and test statistics were presented in Table 1. The final set of analyses was limited to the sample of children with ASD. For these analyses, weight category (normal, overweight, or obese) was set as the independent variable and the specific health behaviors were set as dependent variables. Bivariate logistic regressions were conducted for these analyses, with membership in the specific weight group being the independent variable. Results including the Wald test statistics are presented in Table 2. Because the Wald tests indicated a significant relationship between weight group and the dependent variable but did not specify which relationship was significant, post hoc analyses using each categorical weight group as the independent variable were also conducted (Table 3).

RESULTS

Prevalence of Overweight/Obesity

Seventeen percent of children with a current autism spectrum disorder (ASD) diagnosis were considered overweight compared with 15.6% of children not currently diagnosed with ASD; this difference was not significant (Wald = 0.48, $p = .49$). However, children with ASD were significantly more likely to be obese than children without ASD (Wald = 8.00, $p < .01$). For children with ASD, 23.9% were considered obese compared with 15.5% of children without ASD. Additionally, children with ASD (53.3%) were less likely to be of normal weight (between the fifth and 85th percentile) than children without ASD (63.1%; Wald = 7.86, $p < .01$).

Physical Activity

Children with ASD were more likely than typically developing children to have zero days a week during which they engaged in at least 20 minutes of vigorous activity (Wald = 10.85, $p = .001$). Vigorous activity was defined as having exercised, played a sport, or participated in physical activity to the level of sweating and breathing hard. Children with ASD were also less likely than typically developing peers to get 4 to 6 days of

Table 2. Prevalence of Weight Status and Correlates of Overweight/Obesity Among Children with and Without Autism Spectrum Disorder

	All Children (10–17 yr), %		Wald Test
	ASD	Non-ASD	
Weight status			
Under weight	5.8	5.8	0.021
Normal weight	53.3	63.1	–2.737*
Overweight	17.0	15.6	0.671
Obese	23.9	15.5	2.522**
Physical activity, d/wk			
0	18.8	10.2	2.527**
1–3	30.0	26.8	0.985
4–6	31.3	39.8	–2.960*
7	19.9	23.2	–0.932
Sleep, d/wk			
0	3.5	3.1	0.236
1–3	10.0	7.4	1.298
4–6	27.2	34.9	–1.858
7	59.3	54.7	1.110
Screen time			
TV/video/video games, hr/d			
<1	41.4	40.5	0.194
1–4	42.2	44.6	–0.512
≥4	16.4	14.9	0.833
Computer/cell phone/electronics, hr/d			
Never	19.8	8.7	2.749*
<1	42.7	46.8	–1.759
1–4	25.5	28.9	–1.045
≥4	12.0	15.6	–1.658
Electronics in bedroom			
Yes	57.7	61.7	–1.061
No	42.3	38.2	1.064
Family meals, d/wk			
0	5.1	4.3	0.621
1–3	25.0	22.7	0.635
4–6	32.4	37.1	–1.574
7	37.2	35.6	0.459

Columns may not add up to 100 due to rounding and nonresponse. * $p < .01$. ** $p < .05$.

vigorous activity in a given week (Wald = 8.08, $p = .005$). However, children with and without ASD did not differ on the likelihood of engaging in vigorous activity 1 to 3 days a week (Wald = 0.99, $p = .32$) or everyday (Wald = 0.75, $p = .39$). Among children with ASD, those reported to be overweight or obese did not differ from normal weight peers with ASD on days of engaging in vigorous activity.

Sleep

Children with ASD did not differ from typically developing peers in their sleep using the number of nights of adequate sleep as the independent variables. Among children with ASD, those who were reported to be overweight did not differ from those reported to be normal weight on the likelihood of getting adequate sleep. However, children who were obese differed from children of normal weight on likelihood of getting adequate sleep 1 to 3 nights per week (Wald = 3.21, $p < .01$). No other differences were seen in number of nights of sleep per week across BMI groups.

Screen Time

Children with ASD only differed from children without ASD on the likelihood of never using electronic devices. No differences were seen in hours of television viewing or other categories of screen time, electronic device usage, or the likelihood of having a television in their rooms.

For children with ASD, no differences on television viewing were found between children who were reported to be normal weight, overweight, and obese. Differences were observed in electronics usage. Children who were reported to be overweight were less likely to never use electronic devices (Wald = –2.32, $p = .02$), and more likely to use electronic devices 4 hours or more per day (Wald = 2.30, $p = .02$) than their normal weight peers. However, these differences were not found for children who were reported to be obese. Children who were reported to be overweight or obese did not differ from those of normal weight on having a television in their room (Wald = 0.26, $p = .80$; Wald = 0.67, $p = .50$, respectively).

Family Meals

Children with ASD did not differ from children without ASD on the likelihood of eating a meal with all family members in terms of nights per week. Few differences on family meal eating were found between children with ASD who were normal weight, overweight, or obese. Children with ASD did not differ on the likelihood of eating a meal with all family members 0 nights per week, 4 to 6 nights per week, or every night of the week regardless of whether they were normal weight, overweight, or obese. Children with ASD who were obese were less likely than those of normal weight to eat meals with their entire family 1 to 3 days per week (Wald = 14.92, $p < .01$) although children with ASD who were overweight were not (Wald = 0.87, $p = .35$).

DISCUSSION

Consistent with other recent estimates, approximately 40% of children with autism spectrum disorder (ASD) were either overweight or obese in this nationally representative sample of children.^{5,6,8,9} Notably, children with ASD in this sample were significantly more

Table 3. Prevalence of Correlates of Overweight/Obesity Among Children with Autism Spectrum Disorder, Separated by Weight Status

	Children with ASD (10–17 yr), %			Wald Test
	Normal Weight	Overweight	Obese	
Physical activity, d/wk				
0	20.3	12.0	21.1	<0.001
1–3	26.5	38.0	33.2	1.221
4–6	28.7	34.7	29.8	0.196
7	24.5	15.3	15.8	0.377
Sleep, d/wk				
0	3.8	3.4	1.2	4.818*
1–3	6.6	8.7	20.0	9.494**
4–6	27.3	27.5	27.0	<0.001
7	62.3	60.5	51.9	2.210
Screen time				
TV/video/video games, hr/d				
<1	39.7	53.7	35.1	0.214
1–4	45.5	30.9	44.5	0.027
≥4	14.7	15.4	20.4	0.676
Computer/cell phone/electronics, hr/d				
Never	24.9	6.6	21.0	0.353
>1	43.5	43.8	36.9	1.504
1–4	23.9	26.9	29.0	1.779
≥4	7.7	22.7	13.1	1.134
Electronics in bedroom				
Yes	55.5	57.7	61.0	0.103
No	44.4	42.3	39.0	0.097
Family meals, d/wk				
0	2.9	5.4	9.6	1.480
1–3	30.5	32.3	9.1	5.137**
4–6	31.7	31.0	34.8	0.142
7	34.9	31.3	46.0	1.095

Columns may not add up to 100 due to rounding and nonresponse. * $p < .05$. ** $p < .01$.

likely to be obese than their typically developing peers, which has not previously been well established in other large survey-based studies. Curtin et al⁷ used data from the 2003–2004 National Survey of Children's Health (NSCH) and did not find this significant difference, suggesting that our findings in the comparable 2011–2012 survey represent a worrisome increase in obesity prevalence for children with ASD that is over and above the increasing prevalence for typical children. These rates further underscore the need for better understanding of what health behaviors contribute to obesity in children with ASD. To that end, children with ASD were more likely to engage in no vigorous physical activity than their typically developing peers and less likely to engage in vigorous activity 4 to 6 days per week, but the weekly rates of vigorous physical activity were not universally lower for children with ASD. Interestingly, among

children with ASD, there was no difference in physical activity across weight statuses. These findings suggest that additional study is needed to better understand the relationship between vigorous physical activity and weight status in children with ASD.

Children with ASD in this sample did not differ from typically developing children regarding number of nights per week with parent-reported perception of adequate sleep, which seemingly contradicts the evidence for increased sleep problems in this population.²⁵ This finding may reflect the nonspecific category of adequate sleep used in this study, which may not have been sensitive enough to capture the bedtime and sleep problems often characteristic of children with ASD. Additionally, it may reflect the fact that parents often underestimate how much sleep children need. However, among children with ASD in this sample, those who were obese were

significantly more likely to receive only 1 to 3 nights per week of adequate sleep. Additional investigation is critical to determine the nature of this relationship and whether interventions for children with ASD and sleep problems yield secondary effects on obesity. Similarly, interventions addressing obesity in children with ASD may well have positive effects on sleep problems, given known associations between obesity and problems like sleep apnea.²⁹

We did not find differences in television habits between children with ASD and typically developing children, which is in contrast with previous studies.^{16,19} This may reflect the combined category (TV, video, and video games) used in the NSCH study. Among children with ASD, those who were overweight or obese had no differences in screen time use as compared with children of normal weight, failing to replicate the partial finding from Must et al.¹⁷ Electronics were equally likely to be in the bedrooms of children with and without ASD, and there were no differences associated with weight status for children with ASD. The only significant difference found regarding screen time use suggests that children with ASD are significantly more likely to never use computers, cell phones, and other electronics; this may reflect the more narrow preferences characteristic of ASD, as well as the language and cognitive demands associated with these screen time activities.

Finally, there were minimal differences in the number of evenings that families ate meals together. There were no differences between children with ASD and typically developing children in frequency of family meals. Children with ASD and obesity were less likely to eat meals with their families 1 to 3 nights per week compared with children with ASD and normal weight status. Although mealtime behavior problems have been frequently noted in the literature,^{20,21} the examination of frequency of family meals is a novel contribution. It is possible that these are 2 very different constructs, and even when eating together, significant behavior problems may lead to stress and shorter mealtimes.

A number of factors qualify the interpretation of these results. Although the nationally representative nature of this sample is a notable strength, there are clear limitations to data derived solely from parent report rather than through multiple sources and direct measurement strategies as well as data obtained through an existing data set. Specifically, there are known limitations associated with parent-reported heights and weights in that they often end up underestimating child BMI in older children and adolescents.³⁰ Severity of ASD was not available within this data set, which may be an important covariate in many of the analyses that were conducted. The categorical nature of the NSCH survey makes data analysis (consisting solely of logistic regression) somewhat cumbersome, and the categories themselves limit the interpretability of our findings. Also, the 2011–2012 NSCH sample only included BMI data for children aged

10 to 17 years, so these findings should be interpreted cautiously for children outside this age range. The questions themselves (e.g., sleep being defined as do parents perceive their child as getting sufficient sleep) limit generalizations that can be made from the analyses. Finally, use of psychotropic medication was not available in the NSCH survey. Psychotropic medication is associated with weight gain among adolescents with ASD¹⁷ and may interact with the associations between health behaviors (e.g., sleep, eating, physical activity, and screen time) and obesity.

CONCLUSIONS

Children with autism spectrum disorder (ASD) are significantly more likely to be obese than their typically developing peers; however, we do not have a clear understanding of the contributing factors. Screen time, frequency of family meals, and sleep patterns as assessed in this survey were not reliably different between children with and without ASD and did not differentiate between weight statuses among children with ASD. Children with ASD were more likely to be sedentary (i.e., have reported zero days of vigorous physical activity per week) and less likely to have 4 to 6 days per week of vigorous activity than their typically developing peers, suggesting overall less physical activity. Although the physical, social, motivational, and logistical barriers for increasing physical activity in children with developmental disabilities are substantial,¹ these results suggest that physical activity among children with ASD should be prioritized as a potential intervention strategy. More research on factors contributing to obesity in children with ASD is needed, and empirical investigations informed by this research must test the impact of targeted health behavior interventions in this population.

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