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Prevalence of Overweight and Obese Children and Adolescents with Autism Spectrum Disorder in Edmonton, AB

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INTRODUCTION

In Canada, it is estimated that nearly 1 in 3 children are overweight or obese (Roberts et al., 2012). With a myriad of contributing factors and potential serious long-term health consequences, obesity in children is an urgent and complex public health issue (Avis et al., 2014).

Children with cognitive and/or physical disabilities have a higher prevalence of being overweight or obese than typically developing peers (Rimmer et al., 2007). Autism Spectrum Disorder (ASD) affects 1 in 68 children (Centre for Disease Control, 2014) and recent reports suggest that approximately 35 to 38% of American children with ASD are overweight or obese - higher than the general population (Sharp et al., 2014, Zuckerman et al., 2014).

To date, no studies have looked at weight status among children and adolescents with ASD in a Canadian population.

METHODS

Participant data was collected between October 2011 and December 2013 as part of a longitudinal study funded by the Autism Treatment Network. At time of enrollment, the child's Lead Autism Specialist (such as a developmental pediatrician, community pediatrician or nurse practitioner) completed the baseline information form, including a physical exam, neurological exam, dysmorphology exam, screen for co-morbid diagnoses and problems (ie. sleep, constipation), recorded medications, and a clinical global impression of ASD severity.

Participants were enrolled in the study if they were under 18 years old and had a confirmed ASD diagnosis (as defined by the DSM-IV-TR) within the past 12 months by a multidisciplinary team. Participants were excluded if they had incomplete information for either height, weight, age or date of assessment. Participants continue to be followed annually for their physical health by their Lead Autism Specialist or parent report. Unfortunately, longitudinal data could not be reported on at this time.

For each participant, Body Mass Index (BMI) was calculated based on their sex, age, height and weight (Centre for Disease Control, 2000). Based on the accepted standards and terminology by Barlow et al. (2007), BMI percentiles were labeled as underweight (<5th percentile), normal weight (5th to 85th percentile), overweight (≥ 85th percentile) or obese (≥ 95th percentile).

RESULTS

A total of 135 children (males = 112) met criteria for inclusion into the present study. The median age of participants was 5 years, 9 months (range: 2 years, 2 months to 17 years, 4 months; standard deviation: 3 years, 5 months).
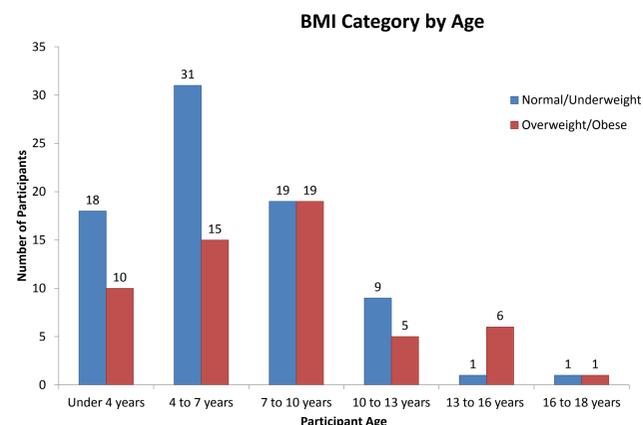
BMI Category by Age

BODY MASS INDEX (BMI) CATEGORY BY AGE

For children under 4 years old, 10 out of 28 were overweight or obese (36%); between 4 to 7 years old, 15 out of 46 were overweight or obese (33%); between 7 to 10 years old; 19 out of 39 were overweight or obese (50%); between 10 to 13 years old, 5 out of 12 were overweight or obese (42%); between 13 to 16 years, 6 out of 7 were overweight or obese (86%); and between 16 to 18 years, 1 out of 2 children were overweight and obese (50%).

Sample size was not large enough to calculate differences by age.

BODY MASS INDEX (BMI) CATEGORY BY SEX

In total, 3% of children had BMI under the 5th percentile (underweight), 56% of children had BMI within the 5th to 85th percentile (normal weight), 41% of children were over or equal to the 85th percentile (overweight or obese) and 21% of children were over or equal to the 95th percentile (obese)

For boys, 4% were underweight, 54% were normal weight, 42% were overweight or obese and 21% were obese.

For girls, 0% were underweight, 61% were normal weight, 39% were overweight or obese and 22% were obese.

Sample size was not large enough to calculate differences by sex.

BMI Category by Sex
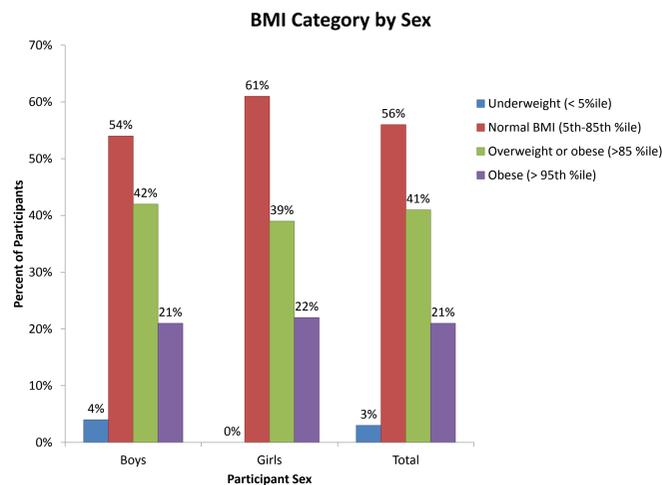
COMPARISON OF CHILDREN WITH ASD IN EDMONTON TO TYPICALLY DEVELOPING CANADIAN CHILDREN

Using a one-sample binomial test, children and adolescents with ASD were found to be significantly different in the prevalence of overweight and obese rates compared to typically developing Canadian children and adolescents (p=0.023).

Using the same one-sample binomial test, children and adolescents with ASD from Edmonton, AB were compared to American children and adolescents with ASD. No significant differences were found (p>0.05) for either of the reported prevalence rates (38% and 35%) by Sharp et al. (2014) and Zuckerman et al. (2014), respectively.

CONCLUSIONS

There is a higher prevalence of overweight and obese children with ASD in Edmonton, AB compared to typically developing Canadian children. Few children were reported underweight, although picky or selective eating remains a consistent clinical concern within this population. These rates are reported within the first 12 months of receiving an ASD diagnosis from a multidisciplinary clinical team.

Similar prevalence rates of obese and overweight children with ASD were found when compared to other localized clinical populations of children with ASD, such as in the United States.

There is a need to monitor the BMI of children with ASD longitudinally, provide consistent screening and assessment of their physical health within the community settings, as well as tertiary care. Additionally, there is a need to develop tailored family-centered interventions to promote health lifestyles for children with ASD.

LIMITATIONS

Normative Canadian data was used for comparison as the ATN does not collect data from typically developing children. Additionally, it would have been beneficial to have collected data at multiple time points to understand the trends over time for BMI and physical health. To strengthen the research, future projects should include a community control, potentially other developmental disabilities and multiple time points of data collection.

ACKNOWLEDGEMENTS

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