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Obesity trends of 8–18 year old Special Olympians: 2005–2010

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ABSTRACT

Obesity is a worldwide health problem. Individuals with intellectual disabilities (ID) experience health disparities, including higher rates of obesity than their peers with typical development; however, there has been no tracking of the obesity rates of children and youth with ID over time. The objective of this study was to compare the BMI of children and youth (8–<19 years of age) with and without ID in the USA, measured overtime; and determine differences between the two groups. This study is a secondary analysis of BMI derived from the Special Olympics International (SOI) Healthy Athletes database. Data were available for 2541 (1527 male) American SOI participants. Using BMI cut-offs from the CDC growth curves the BMI data were stratified into two age bands: 8–11 years ($n = 429$) and 12–<19 years ($n = 2112$), and comparisons were made between SOI participants' BMI data and published NHANES data from the years 2005–2006, 2007–2008, and 2009–2010. SOI participants (12–<19 years) had significantly higher levels of obesity than the national average in 2007–2008 and 2009–2010; there were no differences in the children (8–11 years). Males in the 8–11 years age group were more likely to be obese than females in the same age group (OR = 1.62, $p = .035$). These results highlight that an obesity disparity exists in the USA for children and youth with ID, particularly as they get older and there is a need for further physical activity and healthy eating interventions and overall health promotion activities targeted at this population.

1. Introduction

Healthy People 2010 had two overarching goals, one of which was to eliminate health disparities across the nation between many subpopulations (United States Department of Health and Human Services, 2000). Unfortunately this goal was not met and still remains an overarching goal for Healthy People 2020 (NCHS, 2012). One population that consistently experiences high levels of health disparities (Krahn, Hammond, & Turner, 2006), including high rates of overweight and obesity, is individuals with intellectual disabilities (ID) (De, Small, & Baur, 2008; Lloyd, Temple, & Foley, 2012; Maïano, 2011; Mikulovic et al., 2011; Stewart et al., 2009). Individuals with ID are a heterogeneous group who experience cognitive difficulties and deficits in conceptual, social and practical domains; and these difficulties appear before adulthood (APA, 2013). The etiology of ID can be the result of a genetic condition, an acquired condition, or the etiology is sometimes unknown (APA, 2000); individuals with ID also often have more than one health condition.

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Obesity is a growing public health concern around the world (World Health Organization, 2010). Obesity is also an important health indicator for individuals with ID (van Schrojenstein Lantman-de Valk, Linehan, Kerr, & Noonan-Walsh, 2007). High rates of obesity have been documented among adults with ID (Sohler, Lubetkin, Levy, Soghomonian, & Rimmerman, 2009; Stedman & Leland, 2010; Temple, Foley, & Lloyd, 2013); adults with ID also have higher rates of underweight (Bhaumik, Watson, Thorp, Tyrer, & McGrother, 2008; Emerson, 2005). In children, the limited literature that has consistently demonstrated that children and youth with ID have higher rates of overweight and obesity than children with typical development (Allerton, Welch, & Emerson, 2011; De et al., 2008; Emerson & Robertson, 2010; Lloyd et al., 2012; Mikulovic et al., 2011; Takeuchi, 1994); however, the trends over time have not been examined in this population. In the United States of America (USA) obesity rates in children and youth with typical development have risen at alarming rates over the past 20 years as documented by Ogden and colleagues through the NHANES data (Ogden & Carroll, 2010; Ogden, Carroll, Curtin, Lamb, & Flegal, 2010; Ogden et al., 2006; Ogden, Carroll, Kit, & Flegal, 2012; United States Department of Health and Human Services, 2010). More research is needed to fully understand whether the same pattern of temporal increases in obesity is happening for children with ID.

Children and youth with ID are often under-reported, inaccurately identified, or purposely excluded from large-scale national health surveys (CDC/NCBDDD, 2009). Even so, the Centers for Disease Control and Prevention and the National Center on Birth Defects and Developmental Disabilities have both indicated that understanding the relative health status of individuals with ID, including children, is a high priority (CDC/NCBDDD, 2009). Most of the research on obesity rates in individuals with ID has also been conducted on adults, not children (Emerson, 2005; Sohler et al., 2009; Stedman & Leland, 2010; Temple et al., 2013). What little is known about the overweight and obesity status of children and youth with ID in the USA suggests that they are more likely to be overweight or obese (Foley, Lloyd, & Temple, 2013; Lloyd et al., 2012; Rimmer, Rowland, & Yamaki, 2007; Rimmer, Yamaki, Lowry, Wang, & Vogel, 2010), particularly among girls (Bandini, Curtin, Hamad, Tybor, & Must, 2005; Lloyd et al., 2012; Maïano, 2011). Lloyd et al. (2012) found that the prevalence of obesity in a sample of 2725 North American 8–18 year olds with ID was approximately 50%. However, a direct comparison to the general population in the USA, over time, has not been conducted.

In 2010 the National Institute of Child Health and Human Development hosted a multi-disciplinary meeting focusing on obesity in children with developmental and/or physical disabilities. Two priorities identified during this meeting were tracking the disparity in the prevalence of obesity between those with and without disability over-time, and examining age of onset of obesity (NICHD, 2010). It is not known whether the temporal trends over time differ for children with ID from children with typical development where the data is clear that obesity rates have risen (Ogden et al., 2010). In adults, Foley et al. (2013) compared the BMI of US adult Special Olympians to published NHANES data between 2005 and 2010. They found that the rates of obesity in adults with ID participating in Special Olympics in the USA were relatively stable over time, albeit very high. They also found that there was a significantly higher prevalence of obesity (BMI ≥ 30) in women with ID during each NHANES cycle.

Consistent with these priorities, and the gaps in the literature, this study compared the BMI of children and youth with and without ID in the USA; and for children and youth with ID, we examined temporal trends in the prevalence of obesity and the influence of age and gender on obesity (Foley et al., 2013).

2. Materials and methods

2.1. Special Olympics health promotion programs

This study was a secondary data analysis of the Healthy Athletes database. Research ethics approval was granted by the three primary institutions of the authors. Special Olympics International (SOI) has conducted free health screenings at local, national and international events for more than 10 years with funding and support from the Centers for Disease Control and Prevention (SOI, 2007). This data is entered into the SOI Healthy Athletes database after the screenings. The Healthy Athletes database was made available to the researchers upon request to SOI. The following variables were extracted from the Healthy Athletes database for this study: sex, date of birth, date of event (age calculated), height, weight, waist circumference and geographic region (USA). For analysis, children were defined as 8–11 year olds (due to Special Olympics age requirements) and youth were defined as 12–<19 year olds.

2.2. Data collection procedures

All measurements of height, weight, and waist circumference were conducted by trained Special Olympics volunteer clinicians (e.g. nurses, doctors, dieticians) using specific protocols designed to ensure consistency in the SOI Healthy Athlete screenings (SOI, 2007). A digital scale measuring to 0.1 kg was used to measure body weight; a portable stadiometer was used for height measuring to 0.1 cm; and a soft measuring tape to measure around to abdomen at the level of the iliac crest was used to measure waist circumference to 0.1 cm (SOI, 2007). All athletes and/or their legal guardians signed consent before participation in all Special Olympics events; including consent for the Healthy Athlete data to be used for research purposes.