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# Research in Autism Spectrum Disorders

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## Parental perceptions and concerns of weight status in children with autism spectrum disorders in Kuwait

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### ABSTRACT

Autism spectrum disorders are developmental disabilities associated with deficits in communication skills. The distinct behavioral and physical characteristics of ASD can make these individuals more vulnerable to obesity. This study evaluated the prevalence of obesity in a group of ASD children and investigated their dietary habits, and mealtime behavior. Parental perception and awareness associated with overweight and obesity was evaluated. Data was collected from 65 student-respondent dyads in a cross-sectional survey of students enrolled at the Kuwait Center for Autism. Fifty-nine percent respondents reported regular measurement of their children's height and weight. Both healthy (daily breakfast, daily milk intake, frequent consumption of fish and seafood, and consuming fruits and vegetables) and unhealthy (consuming fast foods) dietary habits were reported by majority of respondents. Most respondents (78%) felt that their children ate a varied diet. Mood swings and hyperactivity were commonly reported mealtime behaviors in students. The findings suggest that obesity is common in children and youth with ASD in Kuwait. Monitoring and modification of dietary habits and mealtime behavior should be implemented toward tackling the problem of overweight and obesity in this population.

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## 1. Introduction

The term “autism spectrum disorders” (ASD) refers to the group of developmental disabilities that are characterized as or related to varying degrees of impairment in communication skills, and social and behavioral interactions. Although some authors have suggested an increasing worldwide prevalence of ASD, particularly in children (Worley, Matson, Sipes, & Kozłowski, 2011), this has not been substantiated as a systemic review of epidemiological data indicated no recent changes in worldwide prevalence rates (Baxter et al., 2015). Globally, ASD prevalence has been reported as 2.4 per 1000 with relatively little variation among geographical regions (Baxter et al., 2015). Although studies in the Arab world have been sparse, reports indicated prevalence rates of a similar magnitude (Al-Farsi et al., 2011; Eapen, 2011).

The World Health Organization has recently identified Kuwait as the nation with most obese people in the world (Karageorg, Alsmadi, & Behbehani, 2013). National survey data showed that the overall prevalence of overweight and obesity in adolescent Kuwaiti children aged 10–14 years was 30.7% and 14.6%, respectively (El-Bayoumy, Shady, & Lotfy, 2009). These alarming prevalence rates exceed all previously reported global rates, and have major public health implications. Overweight

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adolescents have a significantly higher risk of developing obesity and obesity-associated conditions during adulthood (Goran, Ball, & Cruz, 2003). There are also significant health risks during childhood associated with overweight and obesity, which include development of type 2 diabetes (Pinhas-Hamiel et al., 1996), and hyperlipidemia (Williams et al., 1992) that can lead to premature death in adulthood (Must, Phillips, & Naumova, 2012). In addition, obese adolescents are at an increased risk to suffer from joint and bone problems, psycho-social problems such as poor self-esteem and stigmatization, and sleep apnea (Daniels et al., 2005).

Among youth and children with ASD, the estimated prevalence of overweight and obesity range from 7 to 36% and 11 to 24%, respectively (Yamaki, Rimmer, Lowry, & Vogel, 2011; Chen, Kim, Houtrow, & Newacheck, 2010; Curtin, Anderson, Must, & Bandini, 2010; Gracious et al., 2010; Xiong et al., 2009). There are public health consequences for obesity in children with ASD as this has been associated with higher rates of obesity and its co-morbidities in adulthood (Memari & Ziaee, 2014; Bandini, Curtin, Hamad, Tybor, & Must, 2005). Several factors contribute to overweight and obesity in children with ASD. These include low physical activity due to gross motor skill disabilities (Ming, Brimacombe, & Wagner, 2007), use of neuroleptic medication associated with side effects of weight gain (Hellings, Zarccone, Crandall, Wallace, & Schroeder, 2001), atypical eating patterns, excessive eating and consumption of energy dense, nutrient poor foods (Hellings et al., 2001; Evans et al., 2012; Zimmer et al., 2012), gastrointestinal issues such as constipation (Fishman, Lenders, Fortunato, Noonan, & Nurko, 2004) and disturbed sleep patterns (Zuckerman, Hill, Guion, Voltolina, & Fombonne, 2014). There is also evidence of a genetic basis for autism that could lead to an increased heritable risk for obesity phenotypes in ASD. In that regard, a variety of shared molecular pathways between autism and obesity have been identified and hypothesized to play a causal role with obesity risk in ASD (Sharma, Arieff, Sagar, & Kaur, 2012). Such a relationship has also been indicated by recent suggestion of a genetic link between paternal obesity and the development of ASD based on evidence that paternal overweight and obesity are an independent risk factors for ASD in children (Surén et al., 2014).

Children of obese and overweight parents have an increased risk of obesity (Lake, Power, & Cole, 1997). Children of obese parents are fatter in childhood and show a stronger pattern of tracking from childhood to adulthood. As the prevalence of parental obesity increases in the general population the extent of child-to-adult tracking of BMI strengthens. Parental BMI is one of the important influencing factors in variation in children's BMI due to both genetic and environmental influences (Parikka et al., 2015). It is not clearly known, however, whether such an association also exists between parental BMI and the body weight of children with ASD. In general, research related to prevalence of obesity and overweight in children with ASD and their associated risk factors and eating patterns is limited. In particular, data pertaining to parental weight status and feeding practices are scarce, despite evidence that these greatly affect child eating patterns (Davison & Birch, 2001). Although ASD children share similar risk factors as typical children in the context of the obesogenic environment in Kuwait, the challenges of ASD are likely to make them particularly vulnerable to those risk factors. Fundamental information is needed regarding the weight status of the ASD pediatric population in Kuwait, particularly as related to socio-demographics, diet, and parenting practices.

### 1.1. Aims and objectives

The goal of the current study was to assess the weight status of children and youth attending Kuwait Center for Autism (KCA) and to identify the underlying factors associated with overweight and obesity in this population. Because of the central role parents and caregivers play in the well being and development of children and youth with ASD, the secondary objective of this study was to evaluate parental weight status, weight perception and concerns about their children's weight status. To our knowledge, this is the first study in Kuwait that targets weight status and eating patterns of children and youth with ASD.

## 2. Methods

### 2.1. Study design and population

This was a cross-sectional study carried out between March and May 2013, based on a convenience sample. Data were collected using a survey questionnaire tailored to parents (or guardians) of the students attending the Reach school at KCA. The population of Reach School has 150 students aged 5–27 years old. Only students clinically diagnosed with ASD by a pediatrician or a psychiatrist are eligible to enroll in the school. Questionnaires were sent out to parents or guardians; and only those willing to participate and completed the questionnaires were included in the current study ( $n=65$ ). The study was reviewed and approved by the ethical committee of the KCA, and a written informed consent of the parents/guardians was obtained. The survey questionnaire comprised of three main sections: (1) the personal demographic information of the parent or guardian, and their height and weight status; (2) the student's demographic information, medical history, and height and weight; (3) the parent or guardian's observations of student's weight status, body image, mood, and dietary habits.

### 2.2. Measurements and definitions

Body mass index (BMI) was calculated from the reported height and weight extracted from questionnaires, which was then crosschecked against measured height and weight by trained technicians. The BMI growth reference of the Center for Disease Control (CDC) was used to determine gender and age (to the nearest month) specific BMI Z-score for children. The date of visit and the date of birth were the prime source for the age calculation. Z-scores corresponding to the 85th (for

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