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## ORIGINAL ARTICLE

# Obesity in adolescents with intellectual disability: Prevalence and associated characteristics

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## KEYWORDS

Intellectual disability;  
Obesity;  
Adolescent;  
Down syndrome;  
Risk factors

## Summary

**Objective:** Studies from a number of countries have indicated an increased risk of obesity in adolescents with intellectual disability. Whether risk factors for adults with intellectual disability apply to adolescents however is uncertain. This study examines obesity in a community sample of adolescents with intellectual disability in Australia, and investigates risk factors associated with obesity and overweight.

**Methods:** A cross-sectional survey and medical record review on 261 adolescents with intellectual disability attending special education facilities in South-East Queensland, Australia between January 2006 and September 2010 was conducted. Information on age, gender, weight, height, syndrome specific diagnoses, problematic behaviours, mobility, taking psychotropic or epileptic medication, and perceived household financial difficulties was collected. Body mass index (BMI) was calculated and participants categorised as normal/underweight, overweight or obese according to the International Obesity Taskforce definitions.

**Results:** Overall 22.5% (95% CI: 17.8–28.0%) of adolescents were obese, and 23.8% (95% CI: 19.0–29.4%) were overweight, a marked increase compared to Australian norms. Adolescents with Down syndrome were more likely to be obese than other participants (odds ratio = 3.21; 95% CI: 1.41–7.30). No association was found with other risk factors examined.

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*Conclusions:* Prevalence of obesity and overweight were increased compared to general Australian adolescents. The only significant risk factor was the presence of Down syndrome. These findings reinforce the need for a health policy and practice response to obesity that is inclusive of individuals with intellectual disability.

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## Introduction

Obesity has been identified as one of the major public health concerns of the 21st century [1]. One of the most important long-term consequences of childhood and adolescent obesity is its persistence into adulthood [2,3]; 70% of obese adolescents remain obese in adulthood with physiological, psychological and social consequences [4]. While substantial information is available on adolescent obesity in the general population, less is known about obesity in adolescents with intellectual disability (ID).

Reviews by Melville et al. [5] and Rimmer and Yamaki [6] indicate that prevalence of obesity amongst adults with ID is higher than general population prevalence. Risk factors associated with obesity in adults with ID include being female, presenting with less severe level of ID (mild–moderate), using psychotropic medication, being physically inactive and living in less restrictive environments. The risk for obesity remains high even in those who are ambulatory.

Fewer studies have focused on children and adolescents with ID. Recent reviews by Maiano [7] and Grondhuis and Aman [8] have highlighted that the majority of studies involving adolescents reported an increased prevalence of overweight and obesity. Studies varied in their size, study design and definitions. Findings suggested similar risk factors to adult studies, though the majority of studies focused on prevalence. A 2013 study concluded that literature since the 2011 review had also focused primarily on prevalence, and the risk factors of age and gender [9]. A subsequent five studies [10–14] confirm an increased prevalence of overweight and obesity among adolescents with ID, while the large study from Korea [10] reports obesity increasing with age and female gender. A systematic review of parental factors associated with obesity in children with disability [15] suggested socioeconomic status, parental body mass

index (BMI), level of physical activity and parental perceptions as associated, though firm conclusions could not be drawn because of the limitations of this literature. Grondhuis and Aman [8] have called for action in addressing this important issue of obesity in children and adolescents with ID.

People with ID are at greater risk of developing secondary health problems compared to their counterparts without ID. Reasons for this include higher levels of general health problems, specific syndrome-related conditions that contribute to poor health status and a general lack of health screening and promotion targeted to this population [16]. Advocacy and communication skills as well as training of medical practitioners in care of individuals with ID may influence this. The prevalence of obesity is one of a number of commonly used measures of health inequality [17]. In addition, it is likely that the increased prevalence of obesity contributes to other health inequalities people with ID experience, i.e. raised mortality rates and high levels of unmet health needs [18].

The aim of this study was to determine the prevalence of obesity and overweight in a community sample of adolescents with ID and, based on findings in the adult and child/adolescent literature on this topic, to examine specific associations with gender, age, mobility, presence of behaviour problems, use of psychotropic medication, presence of Down syndrome and family financial difficulties.

## Methods

### Study population

We investigated a sample of adolescents with ID living in South-East Queensland, Australia between January 2006 and September 2010. The data reported are derived from a randomised controlled trial (Ask study) investigating the effectiveness of

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