



# Child problem behaviours are associated with obesity in parents caring for children with developmental disabilities



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## ARTICLE INFO

### Article history:

Received 15 September 2014

Received in revised form 17 October 2014

Accepted 23 October 2014

Available online 6 November 2014

### Keywords:

Behaviour problems  
Body mass index  
Caregivers  
Depression  
Disabilities  
Obesity

## ABSTRACT

Epidemiological evidence suggests that obesity and depression are highly co-morbid. In a national cohort study, we examined whether parents caring for children with disabilities were more likely to be classified as obese compared to parents of children without disabilities and if obesity was associated with depressive symptoms or child behaviour characteristics. Using data from the Growing Up in Ireland National Longitudinal Study of Children (2006 to date), 627 parents of children with developmental disabilities were compared with 7941 parents of typically developing children on objectively measured levels of obesity (body mass index  $\geq 30$  kg/m<sup>2</sup>), depression, health behaviours, chronic health conditions, socio-demographic and child behavioural characteristics. Parents of children with disabilities were more likely to be classified as obese compared to control parents (24.5% vs. 19.6%,  $p = 0.005$ , Cramer's  $V < 0.1$ ). Depression was not associated with obesity. However, the odds of obesity increased with increasing child problem behaviour (OR 1.05, 95% CI 1.03–1.06). Over half (57%) of obese parents caring for children with disabilities reported trying to lose weight often or very often. This study has confirmed, in a population-based sample, the high risk of obesity in parents caring for children with disabilities after adjusting for the presence of depression and other health behaviours; increasing child problem behaviours were predictive of obesity. Importantly, given the negative health correlates of obesity, it is imperative that health professionals pay attention to weight issues in these parents and support their efforts in managing these issues.

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## 1. Introduction

The prevalence of overweight and obesity is on the rise globally (OECD, 2013). In developed countries such as the United States, the United Kingdom and Ireland, obesity is now a major public health concern (WHO, 2008). This concern is primarily attributed, not just to the high proportions of the populations affected, but to the health risks associated with obesity. Obesity is associated with chronic diseases such as Type II diabetes, cardiovascular disease, and certain forms of cancer, musculoskeletal and respiratory disorders, osteoarthritis and depression (WHO, 2008). Further, it places considerable

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economic burden on societies, with health costs increasing over time (Scarborough et al., 2011; Withrow & Alter, 2011). While obesity and health research in the general and disease risk population have been the focus of much research, there is a paucity of research on vulnerable groups such as caregivers who are at risk of poor health (Pinquart & Sorensen, 2003), in particular on parents caring for children with developmental disorders (DD: e.g. Autism, dyspraxia/attention hyperactivity disorder) (George, Shacter, & Johnson, 2011). This is despite the plethora of evidence showing that these caring parents are at greater risk of poor physical, physiological and psychological health than parents of children without disabilities (Cantwell, Muldoon, & Gallagher, 2014; Gallagher & Whiteley, 2013; Miodrag & Hodapp, 2010; Singer, 2006).

Caring for a child with a DD is often stressful and can adversely affect parental health both physically and psychologically (Barker et al., 2011; Eisenhower, Baker, & Blacher, 2005; Gallagher & Hannigan, 2014; Gallagher, Phillips, Oliver & Carroll, 2008; Griffith, Totsika, Nash, Jones, & Hastings, 2012; Lovell, Moss, & Wetherell, 2012). Indeed, research has found that these particular parents are at greater risk of depression compared to other parents (Singer, 2006). Further, given that clinical and epidemiological evidence shows a significant relationship between distress and obesity (de Wit et al., 2010), it could be that the high rates of depression evident in these caring parents may also have implications for their weight. Although there is a lack of obesity research in caregivers in general, the distress associated with providing care to a spouse with Alzheimer's disease has been found to be associated with a greater metabolic disease risk (Kring et al., 2010; Vitaliano, Scanlan, Krenz, Schwartz, & Marcovina, 1996). In fact, it implies that caregivers abdominal obesity, which is part of the metabolic syndrome associated with cardiovascular disease, is worthy of further investigation. Further, one study looking at the residential status (living at home vs. living away from home) of the person with intellectual disabilities, found that mothers of co-residing adult children with disabilities had significantly higher BMI than fathers, whereas the opposite was true of those whose children resided away from home; fathers had a higher BMI (Seltzer, Floyd, Song, Greenberg, & Hong, 2011). While this was self-report BMI and confined to parents in mid-life, it seems that there is some preliminary evidence to suggest that these parents are at increased risk of being overweight. Moreover, it is worth noting that parents of children with DD have been found to have poorer endocrine functioning (Lovell et al., 2012) and higher resting blood pressure compared to control parents (Gallagher & Whiteley, 2012), which are negatively affected by obesity. Importantly, studies have also indicated that parental obesity is a significant predictor of obesity in children with intellectual disabilities highlighting the need for further research and intervention (McGillivray, McVilly, Skouteris, & Boganin, 2013).

In terms of other underlying pathways, the distress associated with caregiving may also adversely affect parental obesity indirectly through behavioural coping (e.g. through health behaviours such as smoking etc.). In fact, some have argued that engagement in unhealthy health behaviours such as smoking and alcohol use are associated with several long term mental health and physical health disorders including obesity (Bonevski, Regan, Paul, Baker, & Bisquera, 2014; Gornall, 2014; Mizuno et al., 2005; Suter, 2005). Although research on caregiver health behaviours is rather limited, one recent study has found that younger caregivers of patients with Alzheimer's disease smoke more than older carers (Salgado-Garcia et al., 2013), implying that younger caregivers may be more vulnerable and cope with the stresses of caring by smoking more. Further, in relation to alcohol abuse, distressed parents of children with ADHD were found to be at an increased risk of drinking more (Handley & Chassin, 2008; Kashdan, Adams, Kleiman, Pelham, & Lang, 2013). Similarly, parents of children with developmental disabilities were recently found to be at an increased risk of drug and alcohol abuse and smoking (Emerson & Brigham, 2013). Additionally, health behaviour patterns and obesity levels have both been posited to play a vital role in the pathway between caregiving stressors and poor health outcomes in caregivers (Fuller-Jonap & Haley, 1995; Gallant & Connell, 1997). Given the paucity of research in this area and the health risks associated with obesity, this study is not only timely but is also clearly warranted.

This study explores the associations between depression, smoking, alcohol use and obesity in a nationally representative sample of parents. Higher rates of depression have previously been reported for parents in this sample who are caring for children with DD (Gallagher & Hannigan, 2014). It is hypothesised first, that parents of children with DD will also have higher rates of obesity and poorer health behaviours compared to parents of typically developing children. Second, that depression and health behaviours will account for the higher rates of obesity in these caring parents. Third, given the links between obesity and chronic conditions (e.g. musculoskeletal and respiratory disorders) associations between caregiving, obesity and chronic conditions will also be investigated. Finally, given that child problem behaviours has been found to predict both mental and physical health in these caring parents (Eisenhower, Blacher, & Baker, 2013; Gallagher, Phillips, Drayson, & Carroll, 2009), this variable will also be included as an explanatory variable.

## 2. Methods

### 2.1. Participants, design and procedure

The sample consists of primary caregivers of 8568 nine-year-old school children participating in the Growing Up in Ireland Study, a nationally representative cohort study of children living in the Republic of Ireland. The sample of children was selected through a two-stage sampling method within the primary school system. In the first stage of sampling, 1105 primary schools from the national total of 3177 were selected using a probability proportionate to size (PPS) sampling method. In the second stage, a random sample of eligible children was selected within each school. At the school level, a response rate of 82.3% was achieved, while at the level of the household (i.e. eligible child selected within the school) a total of 57% of children and their families participated in the study. The children in this sample represent approximately 1 in 7 of

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