The Growing Up in Scotland study

The Growing Up in Scotland study (GUS) is an important longitudinal research project aimed at tracking the lives of several cohorts of Scottish children through the early years and beyond. The study is funded by the Scottish Government and carried out by ScotCen Social Research. GUS provides crucial evidence for the long-term monitoring and evaluation of policies for children, with a specific focus on the early years. While the principal aim of the study is to provide information to support policy-making, it is also intended to be a broader resource that can be drawn on by academics, voluntary sector organisations and other interested parties. GUS collects a wide range of information about children and their families; the main areas covered include childcare, education, parenting, health and social inclusion.

Background to the report

This document is one of a series that summarises key findings from the sixth sweep of the survey, which was collected in 2010/11 when the birth cohort children were almost 6 years old. It presents key findings from the Growing Up in Scotland study report Overweight, obesity and activity.

Childhood obesity and low physical activity both have serious implications for children’s health. The report seeks to answer two main questions:

- What potentially modifiable factors are associated with children’s overweight and obesity?
- What potentially modifiable factors are associated with children’s low activity levels?

The report also examines the extent to which mothers were aware of their child being overweight or obese, and what factors were linked to better recognition.

Possible influences on children’s overweight or obesity and activity levels

Two main sets of possible influences on children’s overweight/obesity and activity levels were considered: (1) parental factors, and (2) family and neighbourhood factors that might limit a family’s ability to pursue a healthy lifestyle.

Parental factors included mother’s overweight and her modelling of active and sedentary behaviour; child health-related practices likely to be under the parent’s control such as children’s snacking on unhealthy foods or playing outdoors; and general patterns of parenting.

Family and neighbourhood factors included socio-economic factors and maternal health, as well as factors that might have closer links with a healthy lifestyle, such as a mother’s attitudes towards a healthy lifestyle and the provision of green spaces.
Prevalence of overweight, obesity and activity

Overweight or obesity was classified for almost 3,000 children at age 6, using BMI cut-offs derived from national population growth charts. Of these GUS children:

- 22% were overweight (including obese)
- 9% were obese

Physical activity and sedentary behaviour were measured using mothers’ reports of their child’s behaviour. Physical activity covered walking, organised sport and exercise and active play, at school and elsewhere. Screen time (watching TV, and using computers or games consoles at home) was used as an indicator of sedentary behaviour.

- 15% of children exercised for less than the recommended level of 60 minutes daily
- 31% of children had three or more hours screen time on a typical weekday

Obesity and activity measures both showed a high degree of continuity with similar measures at earlier ages.

Factors associated with children’s overweight and/or obesity

Statistical models of physical activity and sedentary behaviour allowed for a number of influences to be adjusted for simultaneously. All models also included a standard set of factors: the child’s gender, ethnicity, birthweight and family size.

In these models the following parental factors were associated with a greater likelihood of the child being overweight and/or obese:

- **Mother’s overweight or obesity.** Mothers who were overweight or obese were more than twice as likely as mothers of healthy weight to have obese children. This might reflect a number of factors including genetic predisposition to gain weight, continuation of environmental influences contributing to maternal BMI, and/or shared mother-child health practices.

- **Frequent snacking on sweets or crisps at toddler age.** Snacking on crisps and sweets more than once a week was very common for GUS children when they were toddlers. The measure was useful as an indicator of children at lower risk: the one-fifth who had snacks and crisps once a week or less frequently were less likely to be overweight or obese than the rest of the sample, who had these snacks more frequently.

Factors associated with children’s low activity levels

Statistical models of physical activity and sedentary behaviour allowed for a number of influences to be adjusted for simultaneously. All models also included a standard set of factors: season of the year, child’s gender, ethnicity and family size.

Factors associated with low physical activity were:

- mother’s lower physical activity
- a less warm mother-child relationship
- mother thought children require less than 60 mins/day physical activity
- no nearby swimming pool

Additional family and neighbourhood risk factors for healthy weight management were:

- **Poor maternal physical health.** This could be linked to longstanding overweight in mothers.
- **Low “child-friendliness” of the neighbourhood,** based on mother’s assessments of the overall social and physical environment. This requires further research in order to understand possible mechanisms.

Many health-related practices suggested elsewhere as important for childhood overweight and obesity were not found in this study. These include shorter duration or absence of breastfeeding, early introduction of solids, soft drink consumption, fruit and vegetable consumption, use of convenience or fast food for the child’s main meal and short sleep duration. Neither low physical activity nor high sedentary behaviour was associated with overweight or obesity.
Factors associated with high screen time were:
- mother’s high screen time
- TV in the child’s bedroom
- fewer mother and child shared activities
- fewer parental rules to guide behaviour
- greater social deprivation
- poor quality local green spaces

More work is required to see whether objective measures of green space quality align with mothers’ views, but it seems plausible that without attractive local green spaces, families may spend more time indoors using screen entertainment.

**Mothers’ recognition and concerns for a child’s overweight**

Most mothers with an overweight or obese child described their child’s weight as “normal”, with only 14% recognising their child as overweight. Mothers’ recognition of overweight was improved if:
- their child was obese rather than overweight
- their child was a girl
- mothers were overweight or obese themselves

Mothers’ recognition of overweight was associated with greater concern for the child’s weight. However, greater maternal recognition and concern at age 4 were not associated with child weight loss by age 6.

**Strengths and limitations of the study**

This study examined a wide range of potential risk factors for overweight and/or obesity and low activity in a large sample of Scottish 6 year olds.

Most, but not all, potential risk factors were measured in previous sweeps. However, it is important to note that the associations found do not necessarily show causal relationships. Associations may be due to other confounding factors that have not been studied, including influences that pre-date the birth of the child and inherited effects.

Although children’s and mothers’ BMIs were based on researchers’ measurements of weight and height, most measures, including those for activity, relied on mothers’ reports. The study also did not include detailed dietary information for children and parents, mother’s BMI measured at earlier time points, and partner’s BMI, all factors that have been shown to be linked to child BMI.

**Policy implications**

Many risk factors for young children’s overweight and low activity identified here are potentially modifiable, or allow risk groups to be identified. The continuity of child overweight and activity from earlier ages suggests that early intervention may be most valuable.

The strong association between mother and child overweight, together with the importance of other parental factors, suggest that interventions to reduce child overweight and obesity may be most successful if they treat the family as a unit, rather than focusing exclusively on the child’s weight. Improving mothers’ recognition and concern for a child’s overweight is likely to be only a first step in tackling the problem, since greater awareness may not translate into better weight management without addressing other aspects of parental behaviour. In terms of parenting, improving dietary practices and overall parental supervision appear to offer a promising approach.

For physical activity, there are also signs that interventions should be at the family rather than child level, to encourage parents and children to share a similar active lifestyle with a close parent-child relationship and structured behaviour management. Increasing mothers’ awareness of desirable levels of physical activity for their children may also have a positive effect on parental encouragement and support for their child.

Better access to places where children can be physically active, including attractive green spaces, may increase activity levels and reduce sedentary behaviour.
Further information on the Growing Up in Scotland study can be found at: www.growingupinscotland.org.uk

If you require further copies of this research findings please contact:

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This document, along with the full research report and other social research publications commissioned and published on behalf of the Scottish Government, can be viewed on the Internet at:

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