

Parental concerns about childhood obesity and the strategies employed to prevent unhealthy weight gain in children

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Abstract

Objectives: To describe parental concerns about their child's weight, to determine the proportion of parents taking preventive action to avoid obesity in their children and the predictors of taking preventive action, and to describe the strategies adopted by parents.

Design: A cross-sectional survey was conducted. Children's heights and weights were measured, and parents completed a questionnaire that included measures of their own weight status, perceptions of their child's weight, concerns about their child's current weight and future weight as an adolescent and adult, and the strategies used to prevent obesity.

Setting: The study was conducted in Melbourne, Australia.

Subjects: A total of 291 families of children aged 5–6 years and 919 families of children aged 10–12 years participated.

Results: Eighty-nine per cent of parents of overweight 5–6-year-olds and 63% of parents of overweight 10–12-year-olds were unaware their child was overweight. Seventy-one per cent of parents of overweight 5–6-year-olds and 43% of parents of overweight 10–12-year-olds were not concerned about their child's current weight. Although 31% of parents of 5–6-year-olds and 43% of parents of 10–12-year-olds were taking action to prevent unhealthy weight gain in their children, less-educated parents were less likely to do so.

Conclusions: Public health programmes are required to raise parental recognition of childhood overweight and of related risk behaviours, and to provide parents with practical strategies to prevent unhealthy weight gain in their children.

Keywords
Parents
Perceptions
Concerns
Under-recognition
Prevention
Awareness

Childhood obesity is recognised internationally as a serious public health problem that requires urgent action¹. In developed countries childhood obesity is common and trend data suggest there has been a dramatic increase in prevalence over the past two decades^{2–4}. In Australia, for example, population data indicate that 20% of children are overweight and a further 5% are obese, and it appears that the prevalence has at least doubled over the past 25 years⁴. From a population health perspective, these figures are of concern because of the increased risk of diseases in childhood and adulthood that are associated with childhood obesity. For example, the increasing incidence of obesity among children has been blamed for cases of type 2 diabetes in adolescence⁵.

As a consequence of the rising incidence of obesity, and concern about the long-term implications for population health and the impact of the obesity epidemic on health-care systems^{6,7}, there has been an increased focus internationally on the prevention of obesity⁸. While childhood obesity has received a great deal of attention

from health authorities and within the mass media, less is known about parents' concerns and beliefs about this important issue⁹. However, parents are likely to play a key role either directly by providing support for physical activity and healthy eating, or by more indirect means such as modelling of activity or eating behaviours¹⁰. It is therefore important to have an understanding of parental concerns about childhood obesity and their views as to how to prevent it.

Studies have shown that a high proportion of parents are unaware of or unconcerned about their overweight child's weight status. In a US study, 80% of mothers of overweight pre-school children did not perceive their child to be overweight¹¹. In another US study, only one in 10 parents of overweight 4–8-year-olds recognised their child to be overweight¹². In research on parents in the UK, only one in four parents of 7-year-olds recognised overweight in their child¹³, while only 2% of parents of overweight 3–5-year-olds and 17% of parents of obese 3–5-year-olds saw their child as overweight¹⁴. Similarly,

a recent Australian study of primary-school children found that 40% of parents of obese children, and 80% of parents of overweight children, were unconcerned about their child's weight¹⁵. Only 12% of all parents in that study expressed concern about their child's weight, even though almost twice as many were classified as overweight or obese, and parental concerns did not vary according to parental body mass index (BMI), parental education or the child's gender. Conversely, data from the USA suggest that mothers with less education are more likely to misperceive their overweight child's weight status¹¹, and that mothers are more likely to comment on their daughter's weight than their son's weight¹⁶.

Despite the central role of parents in preventing childhood obesity, relatively little is known of parents' views and practices regarding the most appropriate strategies to prevent obesity. The aims of the present paper are to: describe parental concerns about their child's weight and whether these vary according to the child's sex and weight status; determine the proportion of parents taking preventive action to avoid obesity in their children and the predictors of taking preventive action; and describe the strategies adopted by parents to prevent unhealthy weight gain in their child.

Methods

As part of a larger study of family influences on children's physical activity, parents were administered a self-completion questionnaire between July and December 2001, and children had their heights and weights measured. Ethical approval to conduct the research was received from the Deakin University Ethics Committee and the Department of Education and Training Victoria.

Sample

Families of children aged 5–6 years and 10–12 years were recruited from 19 state elementary schools in Melbourne, Australia. Schools were selected using stratified random sampling proportionate to school size. Schools that declined participation (five schools) were replaced with the next school on the randomly generated list. Recruitment continued until minimum sample sizes were achieved. In total, 1093 children aged 5–6 years and 2096 children aged 10–12 years from 19 schools were given information about the study and consent forms to take home to their parents inviting their family to participate in the study. Consistent with existing ethical guidelines, active consent was sought and only those families who returned consent forms (parental consent and consent on behalf of a minor) were eligible to participate in the study. In total, 1210 families were recruited into the study: 291 families of children aged 5–6 years (27% response rate) and 919 families of children aged 10–12 years (44% response rate). Under existing

ethical guidelines it is not possible to gather any information regarding non-participants.

Measures

Child's weight status

Each child's height and weight were measured by the same person in private at the child's school, without shoes, using digital scales (weight) and a portable stadiometer (height), and the child's BMI (kg m^{-2}) was calculated. Overweight and obesity were defined using internationally accepted age- and sex-specific cut-points that approximate adult values¹⁷.

Sociodemographic information

The parent provided details of their sex, marital status and highest level of education as well as that of their partner, and their child's date of birth and sex. Maternal and paternal education were each collapsed into three categories: 'low' (some high school or less); 'medium' (high school, technical certificate or apprenticeship); and 'high' (university/tertiary qualification). Parents were also asked how many children aged less than 18 years live in their household, and whether English was usually spoken in the household.

Parents' weight status

Parents reported their own height and weight, and that of their spouse/partner. Maternal and paternal BMI was calculated based on these reported heights and weights. Maternal and paternal BMI were used to classify parents as overweight ($\text{BMI} \geq 25 \text{ kg m}^{-2}$) or not overweight ($\text{BMI} < 25 \text{ kg m}^{-2}$).

Parent's perception of child's weight

Parents were asked to classify their child's weight at the time of the study. They recorded their response to this question on a 5-point Likert scale: 'markedly underweight'; 'underweight'; 'average'; 'overweight'; 'markedly overweight'. Due to small numbers responding in the extreme categories, 'markedly underweight' and 'underweight' were combined for the purpose of analyses, as were the categories of 'overweight' and 'markedly overweight'.

Concerns about child's weight

Parents were asked how concerned they were about their child's weight at the time of the study, how concerned they were that their child would be overweight as an adolescent and how concerned they were that their child would be overweight as an adult. They recorded their responses for each of these three questions as: 'not at all concerned'; 'a little concerned'; 'quite concerned'; 'very concerned'. Due to small numbers, the category of 'very concerned' was collapsed with the category 'quite concerned'.

Strategies to prevent obesity

Parents were asked whether they used any particular strategies to help prevent their child gaining too much weight. Those parents who indicated that they did use strategies to prevent their child gaining excess weight were asked to describe the strategies they used. Parents' responses to this open-ended question were inspected and coded to represent major themes arising.

Statistical analyses

All analyses were performed using SPSS version 11.5 (SPSS Inc., Chicago, IL, USA). Descriptive statistics (frequencies) were used to describe sample characteristics for boys and girls in each age group. Pearson's chi-square tests of significance were used to compare parental perceptions of their child's current weight, concerns regarding their child's current and future weight, and use of any strategies to help prevent their child gaining too much weight between 5–6- and 10–12-year-old children, and between overweight and non-overweight children within each age group. Forced entry multiple logistic regression analyses were performed to examine the factors that were associated with parents taking action to prevent excess weight gain in their child, adjusted for the child's sex and age group. The variables entered into the regression analyses included maternal and paternal education, maternal and paternal weight status, child's weight status, and parental concern about the child's current weight and future weight as an adolescent and as an adult (parental perception of child's current weight was not included because it was highly correlated with parental concern about the child's current weight). Descriptive statistics were used to examine the strategies employed by parents of children in each age group. Due to small numbers, analyses by child's sex and weight status were not performed.

Results**Sample characteristics**

A profile of the participants is presented in Table 1. A similar proportion of boys' and girls' families took part in the study, with 84% of questionnaires completed by female carers and 16% completed by male carers. Most families reported usually speaking English in their household and most parents or guardians were married. Maternal education was evenly distributed among children aged 10–12 years. Approximately 40% of mothers of younger children were tertiary-educated. Just over one in three fathers of the children in the study were tertiary-educated. More than 35% of mothers and approximately 60% of fathers were classified as overweight or obese. The proportion of children who were classified as overweight or obese is consistent with available population data for Australian children⁴.

Parents' perceptions and concerns regarding their child's weight

Parents' perceptions and concerns regarding their child's weight are presented in Table 2. Since parental perceptions and concerns did not differ according to the child's sex for either age group, the data are presented for boys and girls combined. As shown in Table 2, compared with parents of 5–6-year-old children, parents of 10–12-year-olds were more likely to describe their child as being overweight/very overweight, and they were also more likely to be quite/very concerned that their child was overweight now and that they would be an overweight adolescent and an overweight adult.

Even though 23% of the 5–6-year-old children in the study were classified as overweight or obese based on objectively measured height and weight, relatively few of their parents (only 3%) perceived them to be overweight. As Table 2 shows, parents were more likely to see their 5–6-year-old child as being underweight (14%) than overweight (3%). Among the parents of the 10–12-year-old children, 14% perceived them to be overweight or markedly overweight (29% were overweight or obese based on objectively measured height and weight).

While relatively few parents perceived their child to be overweight at the time of the study, a significant proportion (17% of parents of 5–6-year-olds and 32% of parents of 10–12-year-olds) expressed at least a little

Table 1 Profile of the respondents (results presented as percentages)

| Characteristic | Age group | | | |
|--|---------------|-------|-----------------|-------|
| | 5–6-year-olds | | 10–12-year-olds | |
| | Boys | Girls | Boys | Girls |
| Family usually speaks English at home (<i>n</i>) | (150) | (142) | (421) | (492) |
| Marital status (<i>n</i>) | (150) | (141) | (418) | (488) |
| Married | 80 | 75 | 75 | 76 |
| <i>De facto</i> /living together | 5 | 9 | 5 | 6 |
| Separated/divorced | 10 | 11 | 17 | 15 |
| Widowed | <1 | 0 | <1 | <1 |
| Never married | 4 | 6 | 3 | 3 |
| Maternal education (<i>n</i>) | (146) | (139) | (408) | (474) |
| Low | 24 | 23 | 29 | 31 |
| Medium | 34 | 37 | 39 | 35 |
| High | 43 | 40 | 32 | 34 |
| Paternal education (<i>n</i>) | (130) | (123) | (343) | (406) |
| Low | 25 | 25 | 22 | 27 |
| Medium | 39 | 40 | 45 | 40 |
| High | 36 | 35 | 33 | 33 |
| Maternal weight status (<i>n</i>) | (139) | (138) | (388) | (449) |
| Overweight | 26 | 33 | 26 | 23 |
| Obese | 11 | 8 | 14 | 12 |
| Paternal weight status (<i>n</i>) | (123) | (116) | (327) | (386) |
| Overweight | 42 | 49 | 49 | 47 |
| Obese | 19 | 11 | 12 | 10 |
| Child's weight status (<i>n</i>) | (145) | (134) | (394) | (468) |
| Overweight | 16 | 21 | 22 | 22 |
| Obese | 3 | 5 | 9 | 5 |

Table 2 Parental perceptions and concerns regarding their child's current and future weight according to child's age (results presented as percentages)

| | Age group | | <i>P</i> -value* |
|--|---------------|-----------------|------------------|
| | 5–6 year-olds | 10–12 year-olds | |
| Perception of child's weight now (<i>n</i>) | (288) | (896) | |
| Underweight | 14 | 11 | |
| Average weight | 83 | 75 | |
| Overweight | 3 | 14 | 0.000 |
| Concern about child's weight now (<i>n</i>) | (289) | (908) | |
| Not at all concerned | 84 | 68 | |
| A little concerned | 15 | 23 | |
| Quite or very concerned | 2 | 9 | 0.000 |
| Concerned child will be overweight as an adolescent (<i>n</i>) | (289) | (908) | |
| Not at all concerned | 75 | 64 | |
| A little concerned | 19 | 23 | |
| Quite or very concerned | 6 | 13 | 0.000 |
| Concerned child will be overweight as an adult (<i>n</i>) | (289) | (907) | |
| Not at all concerned | 69 | 61 | |
| A little concerned | 25 | 24 | |
| Quite or very concerned | 7 | 15 | 0.002 |

* *P*-value relates to chi-square test of significance.

concern regarding their child's current weight (Table 2). When asked to report their concerns about their child's future weight as an adolescent and as an adult, the proportion of concerned parents increased slightly in both age groups (compared with the proportion concerned about the child's current weight). However, for each life stage (i.e. childhood, adolescence and adulthood), only a small proportion of parents were 'quite concerned' or 'very concerned' their child was or would become overweight.

Table 3 provides a breakdown of parental perceptions and concerns according to their child's actual weight status. As might be expected, compared with parents of children who were not overweight, higher proportions of

parents of overweight children perceived their child to be overweight and expressed concern regarding their child's current and future weight. Compared with parents of younger children, a greater proportion of parents of overweight 10–12-year-olds perceived their child to be overweight (37% vs. 11%), although it is noteworthy that over 60% of overweight or obese 10–12-year-old children were considered to be of average weight by their parents.

The majority of parents of overweight 5–6-year-old children (71%) were not at all concerned about their child's current weight (Table 3). Conversely, more than half (57%) of parents of 10–12-year-old children were concerned about their overweight child. Finally, it is worth noting that a number of parents of children who were not

Table 3 Parental perceptions and concerns regarding their child's current and future weight according to child's current weight status (results presented as percentages)

| | 5–6-year-olds | | | 10–12-year-olds | | |
|--|----------------|------------|------------------|-----------------|------------|------------------|
| | Weight status | | <i>P</i> -value* | Weight status | | <i>P</i> -value* |
| | Not overweight | Overweight | | Not overweight | Overweight | |
| Perception of child's weight now (<i>n</i>) | (212) | (62) | | (598) | (244) | |
| Underweight | 19 | 0 | | 14 | 4 | |
| Average weight | 81 | 89 | | 82 | 59 | |
| Overweight | 1 | 11 | 0.000 | 5 | 37 | 0.000 |
| Concern about child's weight now (<i>n</i>) | (212) | (62) | | (606) | (246) | |
| Not at all concerned | 87 | 71 | | 80 | 43 | |
| A little concerned | 11 | 27 | | 16 | 37 | |
| Quite or very concerned | 2 | 2 | 0.001 | 5 | 20 | 0.000 |
| Concerned child will be overweight as an adolescent (<i>n</i>) | (212) | (62) | | (606) | (246) | |
| Not at all concerned | 82 | 55 | | 76 | 37 | |
| A little concerned | 14 | 36 | | 17 | 35 | |
| Quite or very concerned | 5 | 10 | 0.000 | 7 | 27 | 0.000 |
| Concerned child will be overweight as an adult (<i>n</i>) | (212) | (62) | | (605) | (246) | |
| Not at all concerned | 74 | 50 | | 72 | 36 | |
| A little concerned | 20 | 42 | | 19 | 37 | |
| Quite or very concerned | 6 | 8 | 0.001 | 9 | 26 | 0.000 |

* *P*-value relates to chi-square test of significance.

overweight were at least a little concerned about their current weight, although the data suggest they were more likely to be concerned about their child being underweight rather than overweight.

Parent's strategies to prevent obesity

Compared with parents of younger children, a greater proportion of parents of 10–12-year-old children reported using strategies to help prevent their child gaining too much weight (31% vs. 43%; $P < 0.000$). Among 5–6-year-old children, a greater proportion of parents of girls reported employing weight gain prevention strategies than did parents of boys (39% vs. 24%; $P < 0.005$). No sex differences were observed for the older children. With the exception of parents of 5–6-year-old boys, the use of strategies to prevent weight gain was more common among parents who had an overweight child. Among the 5–6-year-old girls, 53% of parents with an overweight child reported using weight-control strategies, compared with 34% of parents of a non-overweight child ($P = 0.045$). Among older children, the corresponding figures were 57% and 33%, respectively, for boys ($P = 0.000$) and 60% and 39%, respectively, for girls ($P = 0.000$).

Multiple logistic regression analysis was performed to examine the predictors of parental use of strategies to prevent their child gaining excess weight. Compared with mothers who had not completed high school, those who had were 80% more likely (odds ratio (OR) = 1.8, 95% confidence interval (CI) = 1.2–2.7) and those with tertiary qualifications were twice as likely (OR = 2.0, 95% CI = 1.3–3.1) to employ weight-control strategies for their child. Parents were also more likely to report taking preventive action if their child was overweight (OR = 1.8, 95% CI = 1.3–2.6), and if they were concerned about their child's weight as an adolescent (OR = 2.2, 95% CI = 1.2–3.8) and as an adult (OR = 2.1, 95% CI = 1.3–3.6). In these analyses, the age of the child, maternal and paternal weight status, paternal education and parental concerns about the child's current weight were not associated with the likelihood of taking preventive action.

The strategies most commonly employed by parents included: promoting a balanced diet/healthy eating (49% of parents of 5–6-year-olds and 37% of parents of 10–12-year-olds); promoting exercise (33% and 35%, respectively); reducing 'junk' food (32% and 28%, respectively); limiting the amount of fat and sugar in the diet (17% and 19%, respectively); promoting more fruit (19% and 10%, respectively); and providing education about healthy lifestyle (15% and 13%, respectively). Other strategies that were less commonly used (by less than 10% of parents attempting to prevent weight gain in their child) included restricting food intake, providing low-fat meals, encouraging healthy snacks, encouraging their child to drink water, limiting soft drinks and monitoring food intake.

Discussion

The present study sought to describe parental perceptions of their child's weight, how common concerns about childhood obesity and risk of obesity were among parents, and how many parents were actively attempting to prevent unhealthy weight gain in their children. The response to the study was low, particularly for the younger children, and it is probable that parents who participated were those more interested in the issue and who came from higher socio-economic backgrounds. Although not population-representative, the findings are based on a large, sociodemographically diverse sample of families and the prevalence of overweight and obesity among children in this sample was similar to national estimates⁴. The findings of the present study are important. They show that the majority of parents considered their child to be of average weight and most, including over one-third of the parents of currently overweight or obese children, were unconcerned about their child's current weight or future risk of overweight. Despite this and regardless of the child's or parent's current weight status, a substantial proportion of parents reported they employed various strategies to help prevent their child from gaining too much weight.

Few parents rated their child as being overweight or markedly overweight, even though almost one in four children were classified as overweight or obese based on objective measures, suggesting that the majority of parents do not recognise overweight in their own child. This was particularly the case for parents of younger children, where almost 90% viewed their overweight child as being an average weight. Even among parents of older children, two in three did not perceive their overweight child to have a weight problem. These findings support previous research which found that many parents are unaware their child is overweight^{11–14}. This is perhaps not surprising given that many adults are unable to recognise overweight in themselves¹⁸. The reasons for the lack of recognition of childhood overweight remain unclear. Qualitative research suggests that mothers evaluate overweight not in terms of height and weight, but in terms of whether or not their child is being teased about their weight or developing limitations in physical activity¹⁹. In that study, children were not seen to be overweight if they were active and had a good appetite. Other qualitative research suggests that low-income mothers often equate being plump with being healthy²⁰. It may also be possible, particularly with childhood obesity becoming increasingly normative, that some excess weight simply goes unnoticed by many parents.

It is noteworthy that use of preventive strategies to avoid excess weight gain was not related to concern about the current weight of the child. Instead, preventive action was more likely if parents were concerned their child would be overweight as an adolescent or as an adult. These findings suggest that many parents may not see overweight during

childhood as particularly harmful, or may see overweight as something that children will 'grow out of'. It may also be that parents see the risks associated with overweight and obesity as being more serious in adolescence and adulthood.

While it is encouraging that parents appeared to be using healthy eating strategies in an effort to prevent weight gain in their child, parents may not be aware of what constitutes a 'healthy' or 'balanced' diet. Many adults are unable to accurately estimate the amount of fat in their own diets²¹ and their understanding of 'fattening' foods is often inconsistent with current dietary guidelines²². Few parents in the present study reported promoting increased consumption of fruits or vegetables as a potential weight-control strategy, and few parents reported they tried to limit or reduce their child's intake of high-energy drinks and limit television viewing, even though these are potentially effective weight-control methods^{23,24}. Similarly, while the data gathered in the present study suggest that parents promote exercise in their children, they may not be aware of the recommended amount of physical activity for children²⁵ or even what constitutes physical activity. Children, for example, may benefit from active transport (walking and cycling), as well as participation in organised and non-organised sports and physical activity. It is important that parents promote a diverse range of physical activities to their child, particularly those likely to be sustainable throughout childhood and adolescence and into adulthood.

In summary, this is one of a few studies to examine parental concerns about their child's weight status and one of the first to examine the weight-control strategies used to prevent unhealthy weight gain in children. It highlights that many parents are unaware and/or unconcerned about overweight in their own child. Although a significant proportion of parents are taking action to prevent unhealthy weight gain in their children, it is noteworthy that less-educated parents are less likely to do so and that parents who are concerned about their child's current weight are no more likely than other parents to be taking action. The findings suggest that public health programmes are required to raise parental recognition of childhood overweight and of related risk behaviours, and to provide parents with practical strategies to prevent unhealthy weight gain in their children. Given that these data are now almost 5 years old and there has recently been a great deal of media attention regarding obesity, it will be important that further work is conducted to monitor community recognition of and concern about childhood obesity.

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