

**Written evidence submitted by Dr Francesca Solmi, Dr Gemma Lewis  
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## **Introduction**

Dr Solmi and Dr Lewis are Senior Research Fellows in the UCL Division of Psychiatry and Dr Patalay is an Associate Professor in the UCL Institute of Education (IOE) and UCL Faculty of Population Health Sciences. We are submitting key findings from a recent study we conducted using data from three consecutive UK birth cohort studies.

## **Key messages**

### **Who is particularly at risk of poor body image?**

- I.** Over the past 30 years, the proportion of young adolescents with body dissatisfaction, or who report engaging in behaviours aimed at weight loss has increased. For instance, whilst in 1986 7% of adolescents said they had exercised to lose weight, in 2015 this proportion was 60%.
- II.** Although body dissatisfaction and behaviours aimed at weight loss are more common in girls, boys have experienced larger increases in the prevalence of weight-related behaviours.

### **What is the relationship between poor body image and mental health conditions including eating disorders?**

- III.** Adolescents who are dissatisfied with their bodies had greater depressive symptoms at any point in time. However, over the years, the association between body dissatisfaction and depressive symptoms has increased in girls. This suggests that the mental health consequences of body dissatisfaction have increased in recent years, resulting in a larger mental health burden associated with body dissatisfaction.

## **Background**

Over the past 40 years the proportion of adolescents with an overweight or obese BMI has trebled.<sup>1,2</sup> These rising figures have led to public health policies aimed at reducing caloric intake (e.g. the ‘traffic light’ system on food packaging;<sup>3</sup> the Soft Drinks Industry Levy in 2018<sup>3</sup>) and increasing physical activity.<sup>4</sup> However, comparatively less attention has been paid to the extent to which body dissatisfaction and behaviours aimed at weight loss, and associated mental health difficulties have changed through the years. Body dissatisfaction and restrictive eating behaviours are more common among adolescents who have an overweight BMI<sup>5</sup>, and are influenced by socio-cultural pressures.<sup>6</sup> Given the concomitant increase in average childhood BMI and ‘anti-obesity’ campaigns it is possible that body dissatisfaction and restrictive behaviours might have become more common in adolescence across the BMI spectrum.

Existing evidence from some Western countries point to an increase in extreme behaviours aimed at weight loss (i.e. typically associated with high body dissatisfaction) in some countries (Norway, Cyprus, Sweden, and New Zealand)<sup>7-10</sup>, but not others (US, Finland).<sup>11,12</sup> A Finnish study, however, has found that girls have become more likely to believe they would feel worthless if they could not achieve their desired weight.<sup>11</sup> A recent systematic

review on young people's view on body image and weight in the UK found that that young people thought it was person's responsibility to maintain a healthy weight leading to high levels of blame placed on themselves for failing to lose weight.<sup>13</sup> These findings were also echoed by recent priority setting workshop conducted by Dr Gemma Lewis (UCL Division of Psychiatry) and the McPin Foundation with young people with lived experience of depression which identified body image as one of the main drivers of depression among adolescents.

UK data on these trends is currently lacking and our study aimed to fill this gap.

## **Evidence**

Our study investigated the following questions:

1. Has adolescents' perception of their weight changed over the past 30 years?
2. Has the prevalence of behaviours aimed at weight loss changed over the past 30 years?
3. Do adolescents who perceive themselves as overweight or underweight, independently of their BMI, and those who are trying to lose weight have greater depressive symptoms? Has the magnitude of these associations changed over the past 30 years?

For all questions, we also investigated whether these patterns varied in males and females.

We used harmonised data spanning 30 years derived from three UK birth cohorts (the British Cohort Study (BCS)1970, the Avon Longitudinal Study of Parents and Children (ALSPAC), and the Millennium Cohort Study (MCS)) which collected data in mid-adolescence (14 to 16 years of age) on weight perception, behaviours aimed at weight loss, and depressive symptoms in 1986(BCS), 2005 (ALSPAC), and 2015(MCS) using the same measures.

## **Results**

In our sample, we included 22,503 adolescents (1986 n=5,878; 2005 n=5,832; 2015 n=10,793; 53.6% female). As previously reported, we observed that the proportion of adolescents with overweight or obese BMI has progressively increased from 1986 (9.5% overweight, 2.0% obese), to 2005 (14.4% overweight, 3.6% obese), and 2015 (19.0% overweight, 7.3% obese).<sup>14</sup> Below we report key findings from our study.

### Question 1: Weight perception

Adolescents were asked what they thought about their weight. Possible answer were: "I think I am underweight", "I think I am about the right weight", "I think I am overweight". We combined these answers with objective measurements of adolescents' BMI, which accounted for their age and sex.

- The proportion of underweight girls who in 2015 believed to be normal weight (60.8%) has increased compared to both 1986 (51.7%) and 2005 (42.3%).
- The proportion of boys in the normal weight BMI range who believed to be overweight increased since 1986 (7.3%) both in 2005 (11.5%) and 2015 (11.5%).

## Question 2: weight loss behaviours

Adolescents were asked in 1986 and 2015, whether they had ever dieted or exercised to lose weight (yes or no), and in 2005 and 2015 what they were currently trying to do about their weight (possible answers: 'nothing', 'stay the same', 'lose weight', 'gain weight').

- The proportion of boys reporting lifetime dieting doubled between 1986 (17.5%) and 2015 (34.6%). The proportion of girls remained similar in 1986 (59.2%) and 2015 (55.1%)
- The proportion of adolescents who reported lifetime exercise for weight loss increased in both boys and girls from 1986 (boys: 4.9%, girls: 8.8%) to 2015 (boys: 54.9%, girls: 66.1%).
- The proportion of boys who said that they were currently trying to lose weight increased from 2005 (19.4%) to 2015 (28.3%), and so did that of girls (2005: 40.3%, 2015: 52.8%).
- The proportion of boys who said that they were currently trying to gain weight increased from 2005 (7.3%) to 2015 (12.7%), and so did that of girls (2005: 2.9%, 2015: 4.1%).

All these differences were still present when, in regression models, we accounted for changes in BMI over the years.

## Question 3: Association between weight perception and weight changing behaviours and depressive symptoms:

Depressive symptoms were measured with the Malaise Questionnaire (1986) and the Short Moods and Feelings Questionnaire (2005, 2015). We harmonised these measures by standardising them around their mean value.

- Adolescents who believed to be overweight or underweight, and those who were trying to lose weight had higher depressive symptoms than those who believed to be 'about the right weight' and were not trying to lose weight.
- Girls who said they had dieted or exercised for weight loss had greater depressive symptoms in 2015 than they did in 1986, and so did those who said they were currently trying to lose weight in 2015 compared to 2005.
- Girls who believed to be overweight (irrespective of their actual weight) had greater depressive symptoms in 2015 than they had in both 1986 and 2005.
- Among girls only, in both 2005 and 2015, but not 1986, those who believed to be overweight had greater depressive symptoms than those who believed to be underweight.
- In both 2015 and 2005, girls who believed to be overweight (irrespective of their weight) had greater depressive symptoms than boys who thought that they were overweight, whereas this difference was not observed in 1986.

## **Conclusions**

Our study finds a steep increase in body dissatisfaction and behaviours aimed at weight loss/gain (which are motivated by body dissatisfaction) over the past 30 years.

It is possible that ‘anti-obesity’ public health policies, coupled with broad environmental changes occurred in the past decades, might have had the unintended consequence of promoting body dissatisfaction and unhealthy weight-loss behaviours among young people.

We observed the largest increase in exercise for weight loss. This is of interest as evidence suggest that actual levels of strenuous physical activities in adolescents have remained relatively stable over the years.<sup>15,16</sup> It is thus possible that the growing narrative around physical activity as a way to prevent or reduce obesity might have led adolescents to think of exercise predominantly as a means to lose weight.

Girls in particular seem to be most affected by body image and associated weight-loss behaviours, as they show increasing depressive symptoms in the presence of these cognitions and behaviours. We were not able in this study to test the direction of this association. However, previous evidence from the UK found that in girls body dissatisfaction is associated with later onset of depressive symptoms<sup>17</sup>, suggesting that body dissatisfaction might be one potential driver of the recently reported increasing levels of depressive symptoms in this group.<sup>14</sup>

The large increases in body dissatisfaction and weight loss/gain attempts in boys suggests that societal changes occurred in the past 30 years might be important drivers of these behaviours.

## **Recommendations**

- Public health campaigns and ads should avoid relying on weight stigma and using body dissatisfaction as a motivator for weight change.
- Public health policies around obesity can reduce focusing excessively on BMI and body size as a primary indicator of health.
- Weight loss/weight control should not be used as a reason to promote exercise among young people. Exercise should be seen as an opportunity to be healthy, have fun, socialise, and develop new skills.
- Adding ‘exercise-equivalent’ labels on food packaging<sup>18</sup> might result in detrimental effects to young people’s mental health.
- Considering the mental health impacts of weight and body size related public health messaging is important. Not considering these might have a disproportionate effect on girls’ mental health.

## **Key paper**

Findings reported in this submission can be found in: *Francesca Solmi, Helen Sharp, Susanne H. Gage, Jane Maddock, Glyn Lewis, Praveetha Patalay* “Changes in the prevalence and correlates of weight-control behaviors and weight perception in adolescence from 1986 to 2015. Findings from three UK birth cohorts.” (under review)

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