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The heights and weights of Irish children from the post-war era to the Celtic tiger

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ABSTRACT

Background: Childhood obesity is a significant global health issue. National level data on long-term secular trends are relatively sparse.

Methods: Data were obtained from three large-scale surveys of school-aged children in Ireland involving measurements of height and weight in 1948, the 1970s and 2002.

Results: Significant increases in height and weight were observed in both boys and girls and in all age groups across the decades. The increases in weight were disproportionate to the trends in height. While boys aged 14 years were 23 cm taller 2002 than in 1948, their average weight was 61 kg, compared with 37 kg in 1948, an increase of 24 kg. A substantial proportion of the increase in weight is seen between the 1970s and 2002.

Conclusions: The data provide stark and compelling evidence on the evolution of the obesity epidemic in Irish children in tandem with the increase in economic prosperity.

During the 1990s, the Republic of Ireland experienced high annual rates of economic growth (the "Celtic tiger"), which reversed decades of economic underperformance and transformed the country from one of the poorest to one of the most affluent countries in Europe. In 2002, Ireland's gross domestic product (GDP) per capita was €130.2 billion, the second highest in Europe.[1] In contrast, in the 1940s, the Irish economy was stagnant, the country did not benefit from the Marshall Plan or experience a post-war economic boom. In 1948, GDP per capita was €0.432 billion. In the ensuing decades, the Irish economy continued to underperform and, in the 1970s, GDP per capita was €2.07 billion, one of the lowest ranking in Europe.[2] The effects of economic development on childhood growth have been documented in many countries worldwide.[3–6] Since 1947, overweight and obesity among Danish girls aged 6–8 years have increased by factors of 8 and 20 respectively.[7] Increases were also seen in older children, with the rate of increase accelerating since 1975, accompanied by Denmark's increasing economic prosperity. We have examined trends in height, weight and body mass index (BMI) in representative samples of Irish children in 1946–48,[8] the 1970s[9] and 2002.[10 11] The findings are of interest, given the relatively unique historical pattern of economic development in Ireland in the twentieth century: prolonged stagnation followed by a rapid catch-up phase of high economic growth.

Heights and weights of children aged between 4 and 14 years in the Republic of Ireland were recorded in 1948 (n = 14 835), the 1970s (n = 3509) and 2002 (n = 17 518) as part of the Irish Nutrition Survey (1948), a cross-sectional study to develop growth charts for Irish children (the 1970s) and the North South Survey of Children's Oral Health (2002).

RESULTS

Data from 1948, the 1970s and 2002 show that children were taller and heavier in 2002 and that weight increased disproportionately to height (figs 1 and 2). On average, 14-year-old boys and girls were 23.1 cm and 15.6 cm taller, respectively, in 2002 than in 1948 (table 1).

More dramatic increases are seen in the weights of these children. The average weight of 14-year-old boys in 2002 was 65% greater than in 1948 (37.0 kg and 60.9 kg respectively), while that of girls also increased substantially(48%) from 39.5 kg in 1948 to 58.7 kg in 2002. Mean BMI for 14-year-old boys and girls showed similar increases from 17 kg/m^2 and 18 kg/m^2, respectively, in 1948 to 21 kg/m^2 and 22 kg/m^2 in 2002. Height increases appear to be more uniform across the decades than weight increases. In contrast, a substantial proportion of the increase in weight is seen between the 1970s and 2002. For example, among 14-year-old boys, average weight increased by 10 kg between 1948 and the 1970s, while there was on average a 14 kg increase between the 1970s and 2002. Similar trends can be seen in girls. These findings are also supported by international studies in which similar trends are seen since the mid-1970s.[7]

CONCLUSION

These data on trends in height and weight in Irish children during the latter half of the twentieth century highlight the profound impact of economic development and related societal changes on health. It is likely that Irish children in the mid- to late 1940s were undernourished given the lack of variety and choice of the habitual diet. However, given that Ireland was not subjected to food rationing during World War II or in the post-war era, the nutritional status of the Irish population at the time compared reasonably well with that of other European countries. While increases in the prevalence of overweight and obesity in childhood have been well documented worldwide since the 1980s,[12–14] data from mid-century are sparse. However, similar trends over the period 1947 to 2003 are documented for Denmark,[7] including an escalation of overweight and obesity levels since the 1970s. While we must be cautious in drawing inferences based on three time points, there was evidence in our data of a similar acceleration in the rate of increase in childhood obesity in recent

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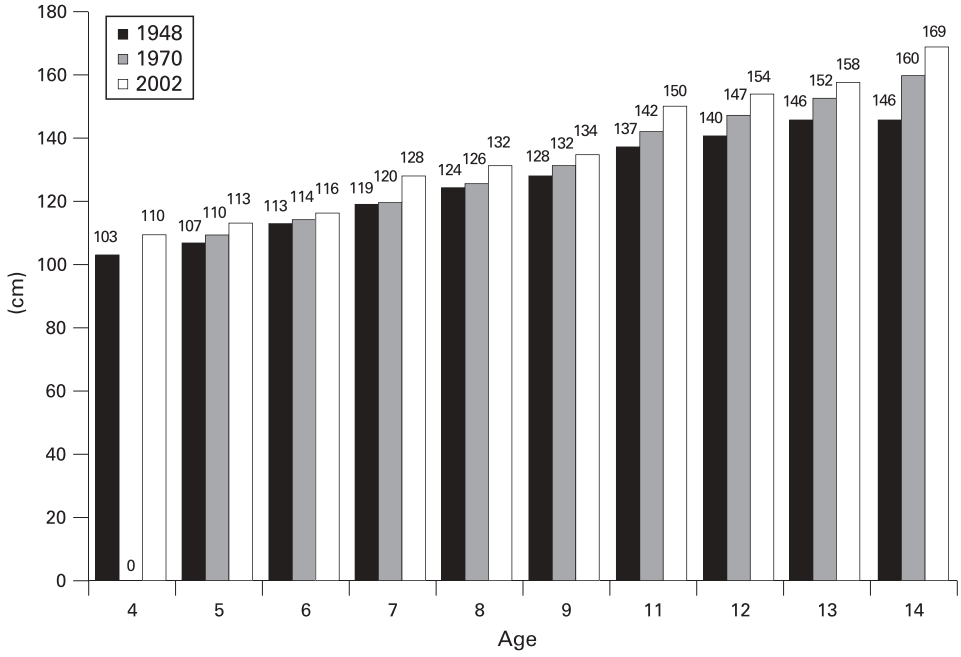


Figure 1 Mean height (cm) in Irish boys between 1948 and 2002.

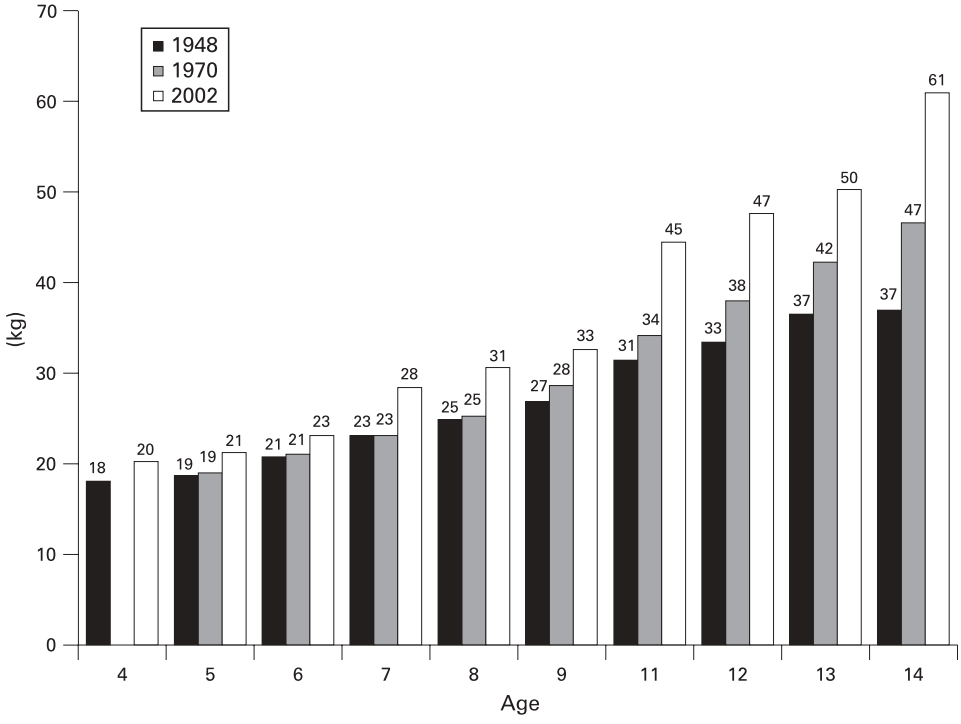


Figure 2 Mean weight (kg) in Irish boys between 1948 and 2002.

decades. It is likely that the weight gain between the 1940s and the 1970s was beneficial; however, the major concern from a public health viewpoint is the rapid increase in weight disproportionate to height since the 1970s.

The relative intransigence of established obesity in adulthood provides a compelling argument for population-level primary prevention strategies. It is likely that the cost of the obesity epidemic, currently estimated at up to 8% of overall health budgets, will increase substantially. Over the coming decades, health systems worldwide face bankruptcy in the absence of a cohesive and multisectorial societal approach to the problem of overweight and obesity.

One can only speculate as to the effect that the current downturn in the Irish economy will have on the prevalence of obesity in Ireland. However, it is likely that, coupled with the increasing problem of food poverty and food insecurity, socio-economic obesity gradients will be accentuated and the underlying high prevalence of overweight and obesity will not be reversed.

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Table 1 Mean height (cm) and weight (kg) for boys and girls in Ireland between 1948 and 2002

Age (years)	Height (cm)						Weight (kg)					
	Boys			Girls			Boys			Girls		
	1948	1970	2002	1948	1970	2002	1948	1970	2002	1948	1970	2002
4	103		110	102		109	18		20	17		20
5	107	110	113	107	109	112	19	19	21	18	19	21
6	113	114	116	112	113	116	21	21	23	19	21	22
7	119	120	128	117	118	127	23	23	28	21	22	29
8	124	126	132	121	124	131	25	25	31	23	25	31
9	128	132	134	127	130	134	27	28	33	26	28	33
11	137	142	150	136	141	151	31	34	45	30	34	47
12	140	147	154	140	149	154	33	38	47	33	38	49
13	146	152	158	145	154	157	37	42	50	37	43	52
14	146	160	169	147	159	163	37	47	61	40	49	59

What is already known on this subject

Clear secular trends of increasing height and weight in children linked to economic growth have been documented in many developed countries in recent decades. However, data from the middle of the twentieth century are sparse.

What this study adds

This study provides unique data from the Republic of Ireland, spanning a period of over 50 years and provides evidence of an accelerating trend in the prevalence of obesity form the 1970s, during the "Celtic tiger" era of economic growth. These findings add to the evidence that we face a global obesity crisis (global fattening) akin to global warming. Specifically, they highlight the need to align work addressing the global obesity epidemic with the broader climate change agenda.[15] We are converting fossil fuels into relatively cheap calorie-dense food which is driving the obesity epidemic. We need to address our reliance on fossil fuels in food production and food transport and develop public policies to promote walking and cycling.

Competing interests: None.

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