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: We have obtained data from three large scale surveys of school aged children in Ireland involving measurements of height and weight in 1948, 1970's 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 was disproportionate to the trends in height. While boys aged 14 years were 23 cm taller 2002 than 1948, their average weight was 61 Kg, as compared 37 kg in 1948, an increase of 24 Kg. A substantial proportion of the increase in weight is seen between 1970's 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.

Introduction

During the 1990's the Republic of Ireland experienced high annual rates of economic growth (the *"Celtic Tiger")*, which reversed decades of economic under-performance and transformed the country from one of the poorest to one of the most affluent countries in Europe. In 2002, Ireland's GDP per capita was €130.2, billion, second highest in the Europe [1]. By contrast, in the 1940's 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 under-perform and in the 1970's 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 world wide [3-6]. Since 1947 overweight and obesity amongst Danish girls aged 6-8years have increased by a factor of 8 and 20 respectively [7]. Increases were seen in older children also, with the rate of increase accelerating since 1975, with Denmark's increasing economic prosperity. We have examined trends in height, weight and body mass index in representative samples of Irish children in 1946-48 [8], 1970's [9] and 2002 [10, 11]. The findings are of interest, given the relatively unique historical pattern of economic development in Ireland in the 20th 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), 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 (1970's) and the North South Survey of Children's Oral Health (2002).

Results:

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

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

	Height (cm)						Weight (kg)					
	Boys			Girls			Boys			Girls		
Age	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

More dramatic increases are seen in the weights of these children. The average weight of 14 year old boys in 2002 is 65% greater than in 1948, (37.0 kg and 60.9 kg respectively), while that of girls also increased substantially(48%) from 39.5kg in 1948 to 58.7kg in 2002. Mean BMI for 14 year old boys and girls show 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. By contrast, a substantial proportion of the increase in weight is seen between 1970s and 2002. For example amongst 14 year old boys, average weight increased by 10kg between 1948 and 1970s, while there was on average a 14kg increase between 1970s and 2002. Similar trends can be seen in girls. These findings are also supported by international studies where similar trends since the mid 1970s are seen [7].

Conclusion:

These data on trends in height and weight in Irish children during the latter half of the 20^{th} 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 forties were

undernourished given the lack of variety and choice of the habitual diet. However, given that Ireland was not subjected to food rationing during the War or Post war era, the nutritional status of the Irish population at the time compared reasonably well with other European countries. While increases in the prevalence of overweight and obesity in childhood are well documented worldwide since the 1980's [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 1970's. While we must be cautious in drawing inference 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 decades. It is likely that the weight gain between the 1940's and the 1970's was beneficial, however the major concern from a public health view point is the rapid increase in weight disproportionate to height since the 1970's.

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 multisectoral 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, socioeconomic obesity gradients will be accentuated and the underlying high prevalence of overweight and obesity will not be reversed.

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

Figure 2: Mean weight (Kg) in Irish boys between 1948 and 2002

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 20th century are sparse.

What this study adds:

This study provides unique data from the Republic of Ireland, spanning a period over 50 years and provides evidence of an accelerating trend in the prevalence of obesity form the 1970's, during the "Celtic Tiger" era of economic growth.

Policy Implications

These findings add to the evidence that we face a global obesity crisis (global fattening) akin to global warming. Specifically, it highlights 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 in fossil fuels in food production and food transport and develop public policies to promote walking and cycling.

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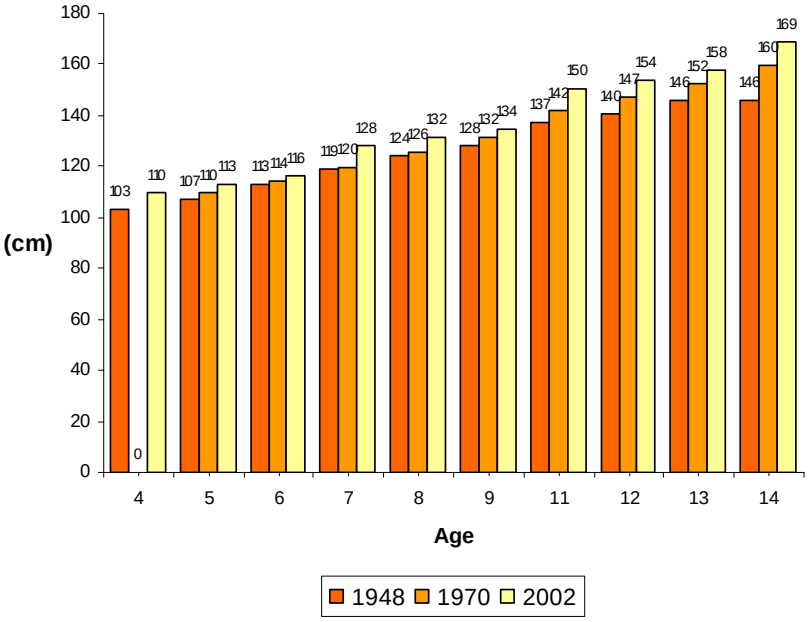
180
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(cm)
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Age
1948
1970
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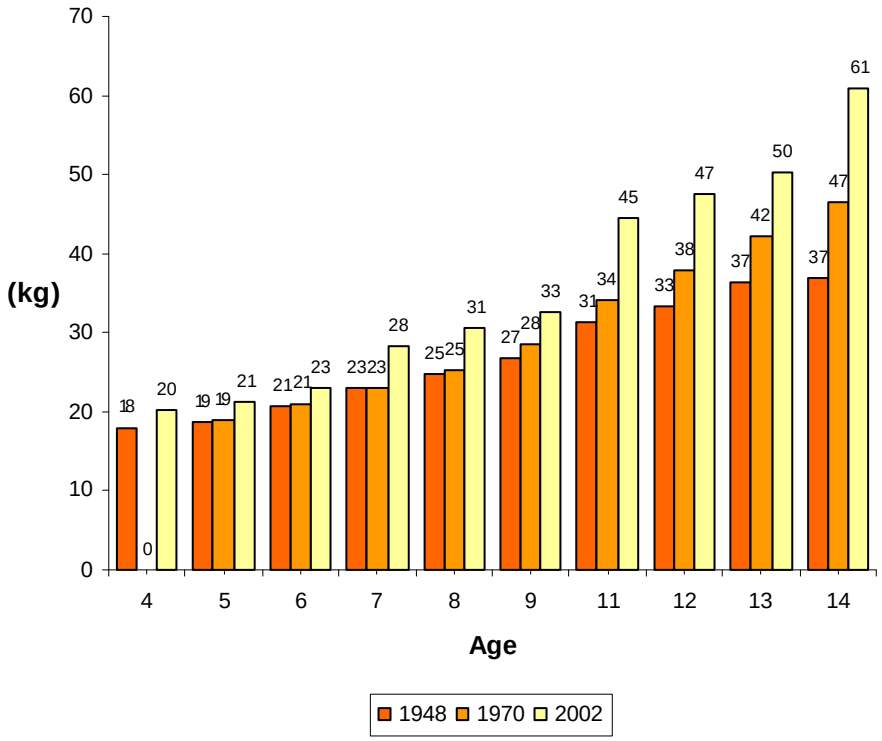
70
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30
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(kg)
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47
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42
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14
Age
1948
1970
2002