

Tenfold increase in childhood and adolescent obesity in four decades, new study finds

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The number of obese children and adolescents (aged 5 to 19 years) worldwide has risen tenfold in the past four decades, according to a new study led by Imperial College London and the World Health

Organization (WHO). If current trends continue, more children and adolescents will be obese than moderately or severely underweight by 2022.

The study is published in *The Lancet* ahead of World Obesity Day (11 October). It analysed weight and height measurements from nearly 130 million people aged over five (31.5 million people aged 5 to 19, and 97.4 million aged 20 and older), the largest number of participants ever involved in an epidemiological study. More than 1000 researchers contributed to the study, which looked at body mass index (BMI) and how [obesity](#) has changed worldwide from 1975 to 2016.

During this period, obesity rates in the world's children and adolescents increased from less than 1% (equivalent to five million [girls](#) and six million boys) in 1975 to nearly 6% in girls (50 million) and nearly 8% in boys (74 million) in 2016. Combined, the number of obese 5 to 19 year olds rose more than tenfold globally, from 11 million in 1975 to 124 million in 2016. An additional 213 million were overweight in 2016 but fell below the threshold for obesity.

Lead author Professor Majid Ezzati, of Imperial's School of Public Health, said: "Over the past four decades, obesity rates in children and adolescents have soared globally, and continue to do so in low- and middle-income countries. More recently, they have plateaued in higher income countries, although obesity levels remain unacceptably high."

Professor Ezzati adds: "These worrying trends reflect the impact of food marketing and policies across the globe, with healthy nutritious foods too expensive for poor families and communities. The trend predicts a generation of children and adolescents growing up obese and also malnourished. We need ways to make healthy, nutritious food more available at home and school, especially in poor families and communities, and regulations and taxes to protect children from

unhealthy foods."

More obese than underweight 5 to 19 year olds by 2022

The authors say that if post-2000 trends continue, global levels of child and [adolescent obesity](#) will surpass those for moderately and severely [underweight](#) for the same age group by 2022.

Nevertheless, the large number of moderately or severely underweight children and adolescents in 2016 (75 million girls and 117 boys) still represents a major public health challenge, especially in the poorest parts of the world. This reflects the threat posed by malnutrition in all its forms, with there being underweight and overweight young people living in the same communities.

Children and adolescents have rapidly transitioned from mostly underweight to mostly overweight in many middle-income countries, including in East Asia, Latin America and the Caribbean. The authors say this could reflect an increase in the consumption of energy-dense foods, especially highly processed carbohydrates, which lead to weight gain and poor lifelong health outcomes.

Dr Fiona Bull, programme coordinator for surveillance and population-based prevention of noncommunicable diseases (NCDs) at WHO, said: "These data highlight, remind and reinforce that overweight and obesity is a global health crisis today, and threatens to worsen in coming years unless we start taking drastic action."

Global data for obesity and underweight

In 2016, there were 50 million obese girls and 74 million obese boys in

the world, while the global number of moderately or severely underweight girls and boys was 75 million and 117 million respectively.

The number of obese adults increased from 100 million in 1975 (69 million women, 31 million men) to 671 million in 2016 (390 million women, 281 million men). Another 1.3 billion adults were overweight, but fell below the threshold for obesity.

Regional/Country data for obesity, BMI and underweight

Obesity:

The rise in childhood and adolescent obesity in low- and middle-income countries, especially in Asia, has accelerated since 1975. Conversely, the rise in high income countries has slowed and plateaued.

The largest increase in the number of obese children and adolescents was seen in East Asia, the high-income English-speaking region (USA, Canada, Australia, New Zealand, Ireland and the UK), and the Middle East and North Africa.

In 2016, obesity rates were highest overall in Polynesia and Micronesia, at 25.4% in girls and 22.4% in boys, followed by the high-income English-speaking region. Nauru had the highest prevalence of obesity for girls (33.4%), and Cook Islands had the highest for boys (33.3%).

In Europe, girls in Malta and boys in Greece had the highest obesity rates, at 11.3% and 16.7% of the population respectively. Girls and boys in Moldova had the lowest obesity rates, at 3.2% and 5% of the population respectively.

Girls in the UK had the 73rd highest obesity rate in the world (6th in Europe), and boys in the UK had the 84th highest obesity in the world (18th in Europe).

Girls in the USA had the 15th highest obesity rate in the world, and boys had the 12th highest obesity in the world.

Among high-income countries, the USA had the highest [obesity rates](#) for girls and boys.

BMI:

The largest rise in BMI of children and adolescents since 1975 was in Polynesia and Micronesia for both sexes, and in central Latin America for girls. The smallest rise in the BMI of children and adolescents during the four decades covered by the study was seen in Eastern Europe.

The country with the biggest rise in BMI for girls was Samoa, which rose by 5.6 kg/m², and for boys was the Cook Islands, which rose by 4.4 kg/m².

Underweight:

India had the highest prevalence of moderately and severely underweight under-19s throughout these four decades (24.4% of girls and 39.3% of boys were moderately or severely underweight in 1975, and 22.7% and 30.7% in 2016). 97 million of the world's moderately or severely underweight children and adolescents lived in India in 2016.

Solutions exist to reduce child and adolescent obesity

In conjunction with the release on the new obesity estimates, WHO is

publishing a summary of the Ending Childhood Obesity (ECHO) Implementation Plan. The plan gives countries clear guidance on effective actions to curb childhood and [adolescent](#) obesity. WHO has also released guidelines calling on frontline healthcare workers to actively identify and manage children who are overweight or obese.

Dr Bull added: "WHO encourages countries to implement efforts to address the environments that today are increasing our children's chance of obesity. Countries should aim particularly to reduce consumption of cheap, ultra-processed, calorie dense, nutrient poor foods. They should also reduce the time children spend on screen-based and sedentary leisure activities by promoting greater participation in physical activity through active recreation and sports."

Dr Sophie Hawkesworth, from the Population Health team at Wellcome Trust, which co-funded the study, said: "Global population studies on this scale are hugely important in understanding and addressing modern health challenges. This study harnessed the power of big data to highlight worrying trends of both continuing high numbers of underweight [children](#) and teenagers and a concurrent stark rise in [childhood obesity](#). Together with global health partners and the international research community, Wellcome is working to help identify new research opportunities that could help better understand all aspects of malnutrition and the long-term health consequences."

More information: *The Lancet* (2017). [DOI: 10.1016/S0140-6736\(17\)32129-3](#) , [www.thelancet.com/journals/lan ... fulltext?elsca1=tlpr](#)

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