

**Tenfold increase in childhood and adolescent obesity in four decades: new study by Imperial  
College London and WHO**

***World will have more obese children and adolescents than underweight by 2022***

10 October 2017 | LONDON: The number of obese children and adolescents (aged five to 19 years) worldwide has risen tenfold in the past four decades. If current trends continue, more children and adolescents will be obese than moderately or severely underweight by 2022, according to a new study led by Imperial College London and the World Health Organization (WHO).

The study was 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 years (31.5 million people aged five to 19, and 97.4 million aged 20 and older), making it the largest ever number of participants involved in an epidemiological study. More than 1000 contributors participated in the study, which looked at body mass index (BMI) and how obesity has changed worldwide from 1975 to 2016.

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 five 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.

**Food marketing, policies, pricing behind obesity rise**

Lead author Professor Majid Ezzati, of Imperial's School of Public Health, says: "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 at greater risk of diseases, like diabetes. 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 but underweight persists in poor regions**

The authors say that if post-2000 trends continue, global levels of child and adolescent obesity will surpass those for moderately and severely underweight youth from the same age group by 2022. In 2016, the global number of moderately or severely underweight girls and boys was 75 million and 117 million respectively.

Nevertheless, the large number of moderately or severely underweight children and adolescents in 2016 (75 million girls and 117 million 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, says: “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.”

### **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 adds: “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.”

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## **Editors notes:**

The paper presents the first ever comprehensive data on underweight through to obesity for children and adolescents aged five to 19 years and provides startling findings on the increasing numbers and rates of young people being affected by obesity.

The study calculated and compared body mass index (BMI) among children, adolescents and adults from 1975 to 2016, and made projections based on current trends in obesity rates.

BMI is a measure of a person's weight and body fat mass for their height, and indicates whether their weight is healthy.

Calculating BMI is the simplest way to assess a person's weight status, and the most common tool used to determine under-, healthy- and overweight and obesity.

Action to curb obesity is a key element of the 2030 Agenda for Sustainable Development. Sustainable Development Goal (SDG) target 2.2 commits the world to ending all forms of malnutrition by 2030, including overweight and obesity. SDG target 3.4 commits the world to reducing premature deaths from NCDs by one-third by 2030, including through prevention of obesity.

The findings also showed that:

### **Global data for obesity and underweight**

In 2016, there were 50 million girls and 74 million boys with obesity 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 rates in low and middle income countries, especially in Asia, has recently accelerated. On the other hand, the rise in childhood and adolescent obesity in high income countries has slowed and plateaued.

In 2016, the obesity rate was highest in Polynesia and Micronesia in boys and girls, at 25.4% in girls and 22.4% in boys, followed by the high-income English-speaking region, which includes the USA, Canada, Australia, New Zealand, Ireland and the United Kingdom.

The areas of the world with the largest increase in the number of obese children and adolescents were East Asia, the high-income English-speaking region, and the Middle East and North Africa.

Nauru was the country with 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, comprising 11.3% and 16.7% of the population respectively. Girls and boys in Moldova had the lowest obesity rates, comprising 3.2% and 5% of the population respectively.

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

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

Among high-income countries, the United States of America had the highest obesity rates for girls and boys.

**BMI:**

The largest rise in BMI of children and adolescents during the four decades was in Polynesia and Micronesia for both boys and girls, 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  $5.6 \text{ kg/m}^2$ , and for boys was the Cook Islands, which rose by  $4.4 \text{ kg/m}^2$ .

**Underweight:**

India had the highest prevalence of moderate and severe underweight 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.

## ACCESSING EMBARGOED MATERIALS:

1. Embargoed copies of the paper and appendix can be downloaded here:

<https://icseclzt.cc.ic.ac.uk/pickup.php?claimID=mJCD2iC6G5jx4tmh&claimPasscode=Ve7Xnw4rUiJaZGHX&emailAddr=caroline.brogan%40imperial.ac.uk>

Claim ID: mJCD2iC6G5jx4tmh

Claim Passcode: Ve7Xnw4rUiJaZGHX

The article will be published here when the embargo lifts:

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32129-3/fulltext?elsca1=tlpr](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32129-3/fulltext?elsca1=tlpr)

2. Embargoed interactive maps and ranking plots, and country by country data can be downloaded here:

Child/adolescent:

Pre-embargo visualisation: <http://www.ncdrisc.org/data-visualisations-adiposity-childado-media-link.html>

Post-embargo visualisation: <http://www.ncdrisc.org/data-visualisations-adiposity-ado.html>

Pre-embargo data download: <http://www.ncdrisc.org/data-downloads-adiposity-childado-media-link.html>

Post-embargo data download: <http://www.ncdrisc.org/data-downloads-adiposity-ado.html>

Adult:

Pre-embargo visualisation: <http://www.ncdrisc.org/data-visualisations-adiposity-adult-updated-media-link.html>

Post-embargo visualisation: <http://www.ncdrisc.org/data-visualisations-adiposity.html>

Pre-embargo data download: <http://www.ncdrisc.org/data-downloads-adiposity-adult-updated-media-link.html>

Post-embargo data download: <http://www.ncdrisc.org/data-downloads-adiposity.html>

3. "Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128·9 million children, adolescents, and adults" by NCD Risk Factor Collaboration (NCD-RisC), published 10 October 2017 in The Lancet. DOI: [http://dx.doi.org/10.1016/S0140-6736\(17\)32129-3](http://dx.doi.org/10.1016/S0140-6736(17)32129-3)

4. This study was funded by Wellcome Trust and the AstraZeneca Young Health Programme. The funders had no role in study design, data collection, analysis, interpretation, or writing of the report.

5. About Imperial College London

Imperial College London is one of the world's leading universities. The College's 16,000 students and 8,000 staff are expanding the frontiers of knowledge in science, medicine, engineering and business, and translating their discoveries into benefits for society.

Founded in 1907, Imperial builds on a distinguished past - having pioneered penicillin, holography and fibre optics - to shape the future. Imperial researchers work across disciplines to improve health and wellbeing, understand the natural world, engineer novel solutions and lead the data revolution. This blend of academic excellence and its real-world application feeds into Imperial's exceptional learning environment, where students participate in research to push the limits of their degrees.

Imperial collaborates widely to achieve greater impact. It works with the NHS to improve healthcare in west London, is a leading partner in research and education within the European Union, and is the UK's number one research collaborator with China.

Imperial has nine London campuses, including its White City Campus: a research and innovation centre that is in its initial stages of development in west London. At White City, researchers, businesses and higher education partners will co-locate to create value from ideas on a global scale.  
[www.imperial.ac.uk](http://www.imperial.ac.uk)

#### 6. About World Health Organization

The World Health Organization ([www.who.int](http://www.who.int)) is the directing and coordinating authority on international health within the United Nations' system. The Organization's goal is to build a better, healthier future for people all over the world. WHO began when its Constitution came into force on 7 April 1948.