Height and body-mass index trajectories of school-aged children and adolescents from 1985 to 2019 in 200 countries: Pooled analysis of 2,182 population-based studies with 65 million participants

NCD Risk Factor Collaboration (NCD-RisC)

**Summary**

**Background:** There are limited comparable global data on health and nutrition of school-aged children and adolescents. We aimed to estimate age trajectories and time trends in mean height and mean body-mass index (BMI), which measures weight gain beyond what is expected due to height gain, for school-aged children and adolescents.

**Methods:** We used data from 2,182 population-based studies, with measurements of height and weight in 65 million participants. We applied a Bayesian hierarchical model to estimate trends from 1985 to 2019 in mean height and mean BMI in one-year age groups from five to 19 years in 200 countries. The model allowed for non-linear changes over time in mean height and BMI, and for non-linear changes with age of children and adolescents, including periods of rapid growth during adolescence.

**Results:** In 2019, there was a ≥20 cm difference in mean height of 19-year-olds between the tallest populations (Netherlands, Montenegro, Estonia and Bosnia and Herzegovina for boys; Netherlands, Montenegro, Denmark and Iceland for girls) and shortest populations (Timor-Leste, Lao PDR, Solomon Islands and Papua New Guinea for boys; Guatemala, Bangladesh, Nepal and Timor-Leste for girls). In the same year, the difference between the highest mean BMI (Pacific island countries, Kuwait, Bahrain, Bahamas, Chile, the USA, New Zealand and, for girls, South Africa) and lowest mean BMI (boys and girls in India, Bangladesh, Timor Leste, Ethiopia and Chad, and girls in Japan and Romania) was ~9-10 kg/m2. In some countries, five-year-olds started with height or BMI that was healthier than the global median, and in some cases as healthy as the best performing countries, but became progressively less healthy relative to their comparators as they grew older, by not growing as tall (e.g., boys in Austria and Barbados; girls in Belgium and Puerto Rico) or gaining too much weight for their height (e.g., girls and boys in Kuwait, Bahrain, Fiji, Jamaica and Mexico, and girls in South Africa and New Zealand). In other countries, growing children overtook their comparators’ height (e.g., Latvia, Czech Republic, Morocco and Iran) or curbed their weight gain (e.g., Sweden, France and Croatia) in late childhood and adolescence. When changes in both height and BMI are considered, girls and boys in South Korea, girls in some central Asian countries (e.g., Armenia, Azerbaijan, Turkey) and boys in central and western Europe (e.g., Portugal, Denmark, Poland, Montenegro) experienced the healthiest changes in anthropometric status over the past 3.5 decades because, compared to other countries, they achieved a much larger gain in height than they did in BMI. The unhealthiest changes – i.e., gaining too little height alongside too much weight for their height compared to other countries – were experienced in many countries in sub-Saharan Africa, Pacific island nations, New Zealand and the USA; boys in Malaysia; and girls in Mexico.

**Interpretation:** School-aged children and adolescents’ height and BMI trajectories over age and time are highly variable across countries, which indicates heterogeneous nutritional quality and life-long health advantages and risks.

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**Research in Context**

*Evidence before this study*

We searched MEDLINE (via PubMed) for articles published from inception using the search terms (“body size”[mh:noexp] OR “body height”[mh:noexp] OR “body weight”[mh:noexp] OR “birth

weight”[mh:noexp] OR “overweight”[mh:noexp] OR “obesity”[mh] OR “thinness”[mh:noexp] OR “Waist-Hip Ratio”[mh:noexp] OR “Waist Circumference”[mh:noexp] OR “body mass index”[mh:noexp]) AND (“Humans”[mh]) AND (“Health Surveys”[mh] OR “Epidemiological Monitoring”[mh] OR “Prevalence”[mh]) NOT Comment[ptyp] NOT Case Reports[ptyp]. Articles were screened according to the inclusion and exclusion criteria described in Methods. No language restrictions were applied.

We found global or multi-country studies on trends over time in height for adults and for children younger than five years, but not for school-aged children and adolescents. One multi-country study used cross-sectional height data in 53 community-based samples and reported height differences from 10 to 17 years of age. We found three studies on trends in body-mass index (BMI) or overweight in children and adolescents but only one of these studies separately reported trends for 5-19 years. We found multiple studies in individual or small groups of countries on trends in height and/or BMI. In terms of considering combined changes in height and BMI, the Lancet series on Double Burden of Malnutrition used data on stunting in children under five years of age together with data on various measures of underweight and overweight at different ages, but did not have data on height in older children and adolescents, nor did it analyse trends.

*Added value of this study*

This study presents the first comparable estimates of height in school-aged children and adolescents for all countries in the world, and does so alongside estimates of BMI, which together are pathways from nutrition and environment during childhood and adolescence to lifelong health. We also analysed age trajectories of mean height and BMI to investigate ages when growth in different countries are more versus less healthy, and to identify the need for intervention.

*Implications of all the available evidence*

Age trajectories and time trends in mean height and BMI of school-aged children and adolescents are highly variable across countries, and indicate heterogeneous nutritional quality and life-long health advantages and risks. When both height and BMI are considered, girls and boys in South Korea, girls in some central Asian countries (e.g., Armenia, Azerbaijan, Turkey) and boys in central and western Europe (e.g., Portugal, Denmark, Poland, Montenegro) experienced the healthiest changes in anthropometric status over the past 3.5 decades because, compared to other countries, they achieved a much larger gain in height than in BMI, which measures weight gain beyond what is expected due to height gain. The unhealthiest changes – i.e., gaining too little height alongside too much weight compared to other countries – were experienced in many countries in sub-Saharan Africa, Pacific island nations, New Zealand and the USA; for boys in Malaysia; and for girls in Mexico. Global and national nutrition and health programmes should extend to school years in order to consolidate gains in under-five children and enable healthy growth through the entire developmental period.

**Introduction**

Growth and development through childhood and adolescents are affected by social, nutritional and environmental factors at home, school and community. During school ages, these factors amplify or mitigate adversity in infancy and early childhood, and can help consolidate gains from early childhood and correct some nutritional inadequacies and imbalances.1-3 Therefore, investing in school-aged children and adolescents’ nutrition is crucial for a healthy transition to adulthood.

Height and body-mass index (BMI) are anthropometric measures of the quality of nutrition and healthiness of the living environment during childhood and adolescence, and are highly predictive of health and developmental outcomes throughout life4-7. Having low height and excessively low weight for one’s height, represented by low BMI, increase the risk of morbidity and mortality, impairs cognitive development, and reduces educational performance and work productivity in later life.8 High BMI is associated with higher risk of disability and premature death in adulthood, and with poor mental health and educational outcomes.6,7

Much of global health and nutrition research and policy has focused on the period from pre-conception to five years of age.9,10 For school-aged children and adolescents, global information is available only on BMI,11 and no study has reported global trends in height for these ages. We present consistent and comparable global estimates of height and BMI for school-aged children from 1985 to 2019, and assess how countries perform in terms of growing taller without excessive weight gain. We also evaluate height and BMI trajectories by age to understand when change is more or less healthy, to identify the need for intervention.

**Methods**

**Primary outcomes**

Our primary outcomes were population mean height and mean BMI from five to 19 years of age. BMI normalises the weight gain that is simply due to becoming taller, and hence measures being underweight or overweight for a person’s height. In presenting results, we refer to gains in height as a healthy trend because the relationship between height and health is continuous. We refer to BMI gain as unhealthy except in countries where mean BMI was more than 1SD lower than the median of the WHO reference (i.e., <18.7 kg/m2 for girls and <19.6 kg/m2 for boys at 19 years of age). We also compare mean height and BMI with the median of WHO growth reference12 (Appendix Figures 1 and 2) at each age from 5 to 19 years. We used the WHO reference because it provides growth curves for both height and BMI and is used for monitoring in most countries. Analysis began at five years of age because children enter school at or around this time, and their nutrition, physical activity and health are influenced by the interplay of their home, school and community environment.

**Data sources**

We used a database on cardiometabolic risk factors collated by the Non-Communicable Disease Risk Factor Collaboration (NCD-RisC). The database and its criteria for data inclusions and exclusion are described in the Appendix.

For this analysis, we used data from the NCD-RisC database from 1985 to 2019 for analysis of BMI and from 1971 to 2019 for analysis of height. Five-year olds in data from 1971 were born in 1966, and hence were 19 years old in 1985, as were six-year olds in data from 1972, … and 19-year olds in data from 1985. The inclusion of data from different years provided multiple observations of each birth cohort during its life-course, which in turn helped to estimate the relevant parameters in the height model which used birth year as its time scale as described below. A list of the data sources we used in this analysis and their characteristics is provided in Appendix Table 2. These included 2,182 population-based measurement surveys and studies, with anthropometric measurements on 50 million participants aged 5-19 years and 15 million participants aged 20-30 years.

There was at least one data source for 193 of the 200 countries for which estimates were made, covering 98.7% of the world’s population in 2019 (Appendix Figure 3); and at least two data sources for 176 countries (98.0% of the world’s population). Of these 2,182 sources, 1,289 (59.1%) sampled from national populations, 360 (16.5%) covered one or more sub-national regions, and the remaining 533 (24.4%) were from one or a small number of communities. Regionally, data availability ranged from ~3 data sources per country in Oceania to ~46 sources per country in the high-income Asia Pacific region.

**Statistical methods**

We used a Bayesian hierarchical model to estimate mean height and mean BMI by country, year, sex and age. The model is described in detail in statistical13 and related substantive papers,11,14 and is summarised in the Appendix. The model allowed for non-linear changes in mean height and BMI with age, including periods of rapid growth during puberty, and that these growth spurts occur earlier in girls than in boys. The computer code for the model is available at www.ncdrisc.org.

**Role of the funding source**

The funders of the study had no role in study design, data collection, analysis, interpretation, or writing of the paper. Country and Regional Data Group members, ARM, BZ and MS had full access to the data in the study. The corresponding author had final responsibility for the decision to submit for publication.

**Results**

*Trends in height*

In 2019, the tallest 19-year-olds lived in northwestern and central European countries: Netherlands (183.8 cm; 95% credible interval 181.5-186.2), followed by Montenegro, Estonia, and Bosnia and Herzegovina for boys; and Netherlands (170.4 cm; 168.3-172.4), followed by Montenegro, Denmark and Iceland for girls (Figure 1a). The shortest were in south and southeast Asia, Andean Latin America and east Africa: Timor-Leste (160.13 cm; 158.0-162.2) followed by Lao PDR, Solomon Islands and Papua New Guinea for boys, and Guatemala (150.9 cm; 149.4-152.4) followed by Bangladesh, Nepal and Timor-Leste for girls. The ≥20 cm difference between countries with the tallest and shortest height represents ~8 years of growth gap for girls and ~6 years for boys. For example, 19-year-old girls in four countries (Guatemala, Bangladesh, Nepal and Timor Leste) had the same height as 11-year-old Dutch girls, and those in another 53 countries – such as Burundi, India, Indonesia, Lao PDR, Pakistan, Peru, the Philippines and Yemen – had the same height as 12-year-old Dutch girls (Figure 2). Similarly, 19-year-old boys in 11 countries throughout Asia, Andean Latin America and sub-Saharan Africa had the same height as Dutch boys aged 13 years.

Although northwestern European children and adolescents were the tallest in the world in 2019, much of this advantage was achieved prior to the late 20th century, and many of these countries experienced below median height change from 1985 to 2019 (Figure 1b and Appendix Figure 4). In contrast, central European countries such as Montenegro and Poland achieved a significant part of their height advantage since 1985, especially for boys. The largest gains in height over the last 3.5 decades however were those in some emerging economies including China (largest gain for boys and third largest for girls), South Korea (third largest for boys and second largest for girls), through parts of southeast Asia, Middle East and north Africa, and Latin America and the Caribbean. Nonetheless how much mean height changed from 1985 to 2019 varies substantially even within this group of countries. For example, gain in height at 19-years of age in China was larger than in India by 3.5 cm (1.8-5.1) for boys and 2.3 cm (0.9-3.7) for girls. In contrast to emerging economies, the height of children and adolescents, especially boys, has on average stagnated or become shorter since 1985 in many countries in sub-Saharan Africa.

*Trends in BMI*

Pacific island countries in Oceania had the highest worldwide BMI in 2019, surpassing 28 kg/m2 for 19-year-olds in many of these nations (Figure 3). Late-adolescence BMI was also high in Middle Eastern and north African countries like Kuwait and Bahrain; Caribbean islands like Bahama; Chile, the USA, and New Zealand; and for girls in South Africa. BMI of 19-year-olds was lowest (~21 kg/m2 or lower) in countries in south Asia (e.g., India and Bangladesh), southeast Asia (e.g., Timor-Leste), east and central Africa (e.g., Ethiopia and Chad), and, for girls, in Japan and some central European countries (e.g., Romania and Bosnia and Herzegovina). The highest and lowest worldwide BMIs were ~9-10 kg/m2 apart, equivalent to ~25 kg of weight.

Change in late-adolescence BMI from 1985 to 2019 ranged from small changes (<0.5 kg/m2) in Japan, some European countries (e.g., Italy, Russia, Denmark) and, for girls, some central Asian (e.g., Armenia) and sub-Saharan African countries, to increases over 3 kg/m2 in some countries in Oceania, Malaysia and China for boys; and in Mexico for girls.

*Combined change in height and BMI from 1985 to 2019*

From 1985 to 2019, 19-year-old girls in some countries in central Asia (e.g., Armenia and Azerbaijan), and 19-year-old boys in some European countries (e.g., Portugal, Denmark, Poland, Montenegro) experienced moderate-to-large gains in height alongside relatively small increases in BMI (Figure 4). Meanwhile in some countries (e.g., boys and girls in South Korea; girls in Turkey, Viet Nam and Saudi Arabia) children grew much taller, while their BMI increased about the global median. Both of these trends were healthier than those of much of Oceania and sub-Saharan Africa, New Zealand, USA, Malaysia (boys) and Mexico (girls), where there was no or little height gain alongside much larger weight gain relative to other countries.

*Height and BMI age trajectories*

Boys born in 2000 (i.e., who were 19-year-olds in 2019) gained between 53.4 and 71.3 cm of height from their 5th to 19th birthday (Appendix Figure 4); for girls born in the same year, height gain from their 5th to 19th birthday ranged from 43.8 and 55.5 cm. The mean height and BMI of children born in 2000 in each country is compared to the median of the respective WHO growth reference12 at each age from 5 to 19 years in Figure 5a. The comparison shows that in many countries, mean height throughout late childhood and adolescence was lower than the median of the WHO growth reference (Figure 5a and Appendix Figure 5). In Timor Leste, Lao PDR, Nepal, Yemen, Guatemala and Rwanda mean height was 1-3 SD below the median at different ages, equivalent to being 5.5-17 cm shorter. The exception to this pattern was much of Europe and a few countries in Polynesia and the Caribbean (e.g., Dominica and girls in French Polynesia) where mean height throughout late childhood and adolescence was taller than the median of the WHO reference by ~3 cm or more. Elsewhere, either height advantage (i.e., having mean heights that were higher than the WHO reference median) at five years was diminished or reversed as children grew older, or height disadvantage (i.e., having mean height that was shorter than the WHO reference median) increased. This progressive falling behind as children grew older was especially noticeable in middle-income countries in Latin America and the Caribbean (e.g., Chile and Uruguay), Middle East and north Africa (e.g., United Arab Emirates), and sub-Saharan Africa (e.g., Mauritius and South Africa,) where children had optimal height at five years, but by the time they grew to 19 years of age, their height was up to 2-3 cm shorter than the median of the WHO reference. Very few countries (e.g., Russia and boys in Iran) slightly closed the gap to the WHO reference population during late childhood and adolescence compared to five years of age.

For BMI, the “deficit” relative to the WHO reference at age five years, which was seen mainly in sub-Saharan Africa and south and southeast Asia, generally became smaller or disappeared as children grew to adolescence and reached 19 years (Figure 5a). For girls in South Africa, and girls and boys in Canada, China and some countries in Oceania, Middle East and north Africa, and Latin America and the Caribbean, mean BMI was about the same as the median of WHO reference for five-year olds, but exceeded the WHO reference median as the children became older.

Comparing height and BMI in each country with the median of all countries (Figure 5b) shows that children and adolescents in some countries had a consistent height advantage or disadvantage relative to others at every age. This was especially the case for countries that occupy the top (e.g., the Netherlands, Denmark, Montenegro, Estonia and Iceland) and bottom (e.g., Timor-Leste, Lao PDR, Nepal, Yemen and Guatemala) global ranks at age 19 years. For other countries, children’s height caught up with or fell behind their comparators during school ages. For example, children in some European countries (e.g., girls in Belgium and boys in Austria), and Latin America and the Caribbean (e.g., girls in Puerto Rico and boys in Barbados) had about the same height as Dutch children at five years of age, but progressively fell behind, such that by the time they had reached 19 years they were >5 centimetres shorter than Dutch adolescents. In contrast, as children approached 19 years in Latvia, Czech Republic, Morocco and Iran, they progressively improved their height relative to others as they grew older.

When age-specific mean BMI is compared to the global median (Figure 5b), whether a country had low mean BMI (e.g., countries in south and southeast Asia) or high (e.g., USA, Chile and countries in Oceania) relative to others, persisted more than was the case for height. Nonetheless, some differences in BMI trajectories occurred across countries. For example, girls and boys in some European countries (e.g., Sweden, France and Croatia) progressively moved towards healthier BMIs relative to other countries, and the difference between their BMI and global median changed from positive to negative. In contrast, girls and boys in Kuwait, Bahrain, Fiji, Jamaica and Mexico, and girls in South Africa and New Zealand, had a progressively higher BMI relative to other countries as they became older.

**Discussion**

We identified highly variable age trajectories and trends over time in school-aged children and adolescents’ height and BMI across countries, which demonstrates that childhood and adolescence are critical periods in terms of these determinants of lifelong health are shaped.

Our results are consistent with findings from studies of adolescents in individual countries and global studies of adult height, which both demonstrate significant variation in how much height has changed throughout the world.14 One study,15 using cross-sectional height in 53 community-based samples, found significant cross-population variation in height differences from 10 to 17 years of age which is consistent with our findings on age trajectories. Our results are also consistent with prior global analyses11 in terms of regions and countries with the highest and lowest BMI, but prior studies had not considered age trajectories.

Our study has strengths in scope, data and methods: We present novel estimates of height in school-aged children and adolescents for all countries in the world, and to do so alongside estimates of BMI. We used an unprecedented scale of population-based data from 193 countries covering ~99% of the world population, while maintaining a high standard of data representativeness and quality. Data were analysed according to a consistent protocol, and the characteristics and quality of data from each country were rigorously verified through repeated checks by NCD-RisC members. We used a statistical model that took into account non-linear changes in height and BMI throughout childhood and adolescence, and used all available data while giving more weight to national data than to subnational and community sources.

Like all global analyses, our study has some limitations. Despite our extensive efforts to identify and access worldwide population-based data, some countries, especially those in the Caribbean, Polynesia and Micronesia, Melanesia and sub-Saharan Africa, had fewer data sources. The scarcity of data is reflected in larger uncertainty of our estimates for these countries and regions. Of the studies used, 44% had data for children aged 5-9 years, compared to 87% with data for 10-19-year-olds, which increases uncertainty of findings for the younger age groups. BMI is an imperfect measure of the extent and distribution of fat in the body but has the major advantage of having consistent and comparable data in a large number of population-based surveys especially compared to measures such body fat measured by dual-energy X-ray absorptiometry (DEXA) which is complex and costly and cannot be used in surveys. A systematic review reported that BMI and DEXA-measured body fat were highly correlated.16 We compared height and BMI in each country to the median of the WHO growth reference.12 Although the reference is the current international comparison tool,17 unlike that of under-five children, it is not based on a multi-country sample of predominantly healthy and well-nourished children.12 Consequently, it may be affected by slower growth as the sample children grew older.18 Future studies should also evaluate the socioeconomic and geographical patterns of height and BMI in these ages, as has been done for under-five children and adults.19,20

A number of factors that interact throughout childhood and adolescence, and possibly across generations, may be responsible for the heterogeneous worldwide age trajectories and trends of height and BMI.21 First there is an important genetic component to height,22,23 and to a lesser extent to BMI,24 within populations. However, genetics explain a relatively small part of the variation across countries or the changes over time, especially for BMI.25-28 That genetics have a small role in height and BMI at the population level relative to nutrition and environment is also supported by the finding that migrants typically converge to the height of their new country within a few generations.29-31 Second, some of the observed differences in height and BMI may be intergenerational or due to exposures and experiences during pregnancy, mediated through birth length and weight.21 Third, age of puberty onset, which is influenced by diet, physical activity, and weight gain during childhood, may affect height gain during adolescent growth spurt and in late adolescence.32 While some studies have found a negative association between age of pubertal onset and final height,33 others have found that age of pubertal onset does not affect final height, as an earlier puberty onset may be compensated by a more intense and/or wider peak height velocity.34 There are no comparable global data on age at menarche and timing of pubertal growth, but national data indicate significant changes in in some countries. Finally, all of these pathways are influenced by food and nutrition,28,35,36 including energy balance, and adequacy and quality of nutrients especially proteins, fats and micronutrients.18,21,37 There is also an important effect from the occurrence and treatment of infections which itself is influenced by water and sanitation, and whether episodes of infections are effectively treated in a timely manner. Similarly, physical activity at home and school influences BMI. Fully establishing the drivers of the observed height and BMI trajectories and trends requires data on these determinants and their distributions in different countries.

Our findings on the heterogeneous age trajectories and time trends in late childhood and adolescence raise the need to re-think and revise two common features of global health and nutrition programmes. First, there is a need to overcome the disconnect in research and practice between reducing undernutrition, in particular short stature, and preventing and managing overweight and obesity.11,19,21 Second, the finding that children in some countries grow healthily to five years but fail to continue to do so in school years reveals an imbalance between investment in improving nutrition and growth before five years of age and doing so in school-aged children and adolescents.38 Therefore, our findings should motivate policies and interventions at home, school, community, and through the health system, to support healthy growth through the entire period from birth to adolescence via enhanced nutritional quality,39 healthier living environment, and provision of high-quality preventive and curative care. These include agricultural and food system policies that increase the availability and reduce the cost of nutritious foods that help children grow taller without gaining excessive weight for their height; (conditional) cash transfers and food vouchers towards nutritious foods for low-income families; free healthy school meal programmes; fiscal and regulatory policies that restrict the consumption of unhealthy foods especially processed carbohydrates; provision of affordable healthy housing, clean water and sanitation; and provision of facilities for play and sports in the community and at school. Taking these actions would enable children to grow taller without gaining excessive weight, with lifelong benefits for their health and wellbeing.

**NCD Risk Factor Collaboration (NCD-RisC)**

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ARM, ZB, RB and ME designed the study. Members of the Country and Regional Data Group collected and reanalysed data, and checked pooled data for accuracy of information about their study and other studies in their country. ARM, BZ, and MS led the data collection. ARM led the statistical analysis with input from BZ, JB, JEB, CJP and ME, and prepared results. Members of the Pooled Analysis and Writing Group contributed to study design, collated data, and checked all data sources in consultation with the Country and Regional Data Group. ARM and ME wrote the first draft of the report with input from other members of the Pooled Analysis and Writing Group. Members of the Country and Regional Data Group commented on the draft report. ME oversaw research. The authors alone are responsible for the views expressed in this Article and they do not necessarily represent the views, decisions, or policies of the institutions with which they are affiliated.

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**Figure 1. Height and height change by country.** (A) mean height of 19-year-olds in 2019; (B) change in mean height of 19-year-olds from 1985 to 2019.

**Figure 2. Growth gap for 19-year-olds in 2019 by country.** The figure shows the age at which a Dutch girl or boy, who had the highest height in the world, achieved the height of 19-year-olds in different countries. The difference between 19 and the Dutch equivalent age is the growth gap in each country.

**Figure 3. BMI and BMI change by country.** (A) mean BMI of 19-year-olds in 2019; (B) change in mean BMI of 19-year-olds from 1985 to 2019.

**Figure 4. Combined change from 1985 to 2019 in mean height and mean BMI of 19-year-olds.** Each arrow shows one country. For each country, the arrow begins at mean height and BMI values in 1985 and ends in mean height and BMI values in 2019. Each arrow colour refers to countries in one region, as shown at the bottom of the figure. We have used three panels so that the arrows for all regions are visible.

**Figure 5. Age trajectory of height and BMI for 2019 19-year-olds.** The figure shows how the mean height and BMI of 19-year-olds in 2019 (i.e., those born in 2000) at each age from 5 years to 19 years, compared to (A) median of the WHO growth reference12 and (B) the world median. Each cell represents the difference between one country’s height or BMI to the median value for a given age of (A) WHO growth reference and (B) all countries. Countries are ordered by the the level of height or BMI at age 19 years. See Appendix Figures 1 and 2 for median of the WHO growth reference and world median. See Appendix Figure 5 for results reported as z-scores of WHO growth reference. See Appendix Figure 6 for comparison of height and BMI gap between boys and girls.

References

1. Prentice AM, Ward KA, Goldberg GR, et al. Critical windows for nutritional interventions against stunting. *Am J Clin Nutr* 2013; **97**(5): 911-8.

2. Georgiadis A, Penny ME. Child undernutrition: opportunities beyond the first 1000 days. *Lancet Public Health* 2017; **2**(9): E399-E.

3. Alderman H, Behrman JR, Glewwe P, Fernald L, Walker S. Evidence of Impact of Interventions on Growth and Development during Early and Middle Childhood. In: rd, Bundy DAP, Silva N, Horton S, Jamison DT, Patton GC, eds. Child and Adolescent Health and Development. Washington (DC); 2017.

4. Tanner JM. Growth as a mirror of the condition of society: secular trends and class distinctions. *Acta Paediatr Jpn* 1987; **29**(1): 96-103.

5. Strauss J, Thomas D. Health, nutrition, and economic development. *J Econ Lit* 1998; **36**(2): 766-817.

6. Park MH, Falconer C, Viner RM, Kinra S. The impact of childhood obesity on morbidity and mortality in adulthood: a systematic review. *Obes Rev* 2012; **13**(11): 985-1000.

7. Caird J, Kavanagh J, O'Mara-Eves A, et al. Does being overweight impede academic attainment? A systematic review. *Health Educ J* 2014; **73**(5): 497-521.

8. Paajanen TA, Oksala NKJ, Kuukasjarvi P, Karhunen PJ. Short stature is associated with coronary heart disease: a systematic review of the literature and a meta-analysis. *Eur Heart J* 2010; **31**(14): 1802-9.

9. Black RE, Allen LH, Bhutta ZA, et al. Maternal and child undernutrition: global and regional exposures and health consequences. *Lancet* 2008; **371**(9608): 243-60.

10. Stevens GA, Finucane MM, Paciorek CJ, et al. Trends in mild, moderate, and severe stunting and underweight, and progress towards MDG 1 in 141 developing countries: a systematic analysis of population representative data. *Lancet* 2012; **380**(9844): 824-34.

11. NCD Risk Factor Collaboration (NCD-RisC). 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. *Lancet* 2017; **390**(10113): 2627-42.

12. de Onis M, Onyango AW, Borghi E, Siyam A, Nishida C, Siekmann J. Development of a WHO growth reference for school-aged children and adolescents. *B World Health Organ* 2007; **85**(9): 660-7.

13. Finucane MM, Paciorek CJ, Danaei G, Ezzati M. Bayesian Estimation of Population-Level Trends in Measures of Health Status. *Stat Sci* 2014; **29**(1): 18-25.

14. NCD Risk Factor Collaboration (NCD-RisC). A century of trends in adult human height. *Elife* 2016; **5**.

15. Haas JD, Campirano F. Interpopulation variation in height among children 7 to 18 years of age. *Food Nutr Bull* 2006; **27**(4): S212-S23.

16. Martin-Calvo N, Moreno-Galarraga L, Martinez-Gonzalez MA. Association between Body Mass Index, Waist-to-Height Ratio and Adiposity in Children: A Systematic Review and Meta-Analysis. *Nutrients* 2016; **8**(8).

17. de Onis M, Habicht JP. Anthropometric reference data for international use: recommendations from a World Health Organization Expert Committee. *Am J Clin Nutr* 1996; **64**(4): 650-8.

18. Butte NF, Garza C, de Onis M. Evaluation of the feasibility of international growth standards for school-aged children and adolescents. *J Nutr* 2007; **137**(1): 153-7.

19. NCD Risk Factor Collaboration (NCD-RisC). Rising rural body-mass index is the main driver of the global obesity epidemic in adults. *Nature* 2019; **569**(7755): 260-+.

20. Paciorek CJ, Stevens GA, Finucane MM, Ezzati M, Nutrition Impact Model Study G. Children's height and weight in rural and urban populations in low-income and middle-income countries: a systematic analysis of population-representative data. *Lancet Glob Health* 2013; **1**(5): e300-9.

21. Wells JC, Sawaya AL, Wibaek R, et al. The double burden of malnutrition: aetiological pathways and consequences for health. *Lancet* 2020; **395**(10217): 75-88.

22. Dubois L, Kyvik KO, Girard M, et al. Genetic and Environmental Contributions to Weight, Height, and BMI from Birth to 19 Years of Age: An International Study of Over 12,000 Twin Pairs. *Plos One* 2012; **7**(2).

23. Jelenkovic A, Sund R, Hur YM, et al. Genetic and environmental influences on height from infancy to early adulthood: An individual-based pooled analysis of 45 twin cohorts. *Sci Rep* 2016; **6**: 28496.

24. Silventoinen K, Jelenkovic A, Sund R, et al. Genetic and environmental effects on body mass index from infancy to the onset of adulthood: an individual-based pooled analysis of 45 twin cohorts participating in the COllaborative project of Development of Anthropometrical measures in Twins (CODATwins) study. *Am J Clin Nutr* 2016; **104**(2): 371-9.

25. Brandkvist M, Bjorngaard JH, Odegard RA, Asvold BO, Sund ER, Vie GA. Quantifying the impact of genes on body mass index during the obesity epidemic: longitudinal findings from the HUNT Study. *BMJ* 2019; **366**: l4067.

26. Robinson MR, Hemani G, Medina-Gomez C, et al. Population genetic differentiation of height and body mass index across Europe. *Nat Genet* 2015; **47**(11): 1357-+.

27. Jelenkovic A, Hur YM, Sund R, et al. Genetic and environmental influences on adult human height across birth cohorts from 1886 to 1994. *Elife* 2016; **5**.

28. Grasgruber P, Sebera M, Hrazdira E, Cacek J, Kalina T. Major correlates of male height: A study of 105 countries. *Econ Hum Biol* 2016; **21**: 172-95.

29. Bogin B, Hermanussen M, Scheffler C. As tall as my peers - similarity in body height between migrants and hosts. *Anthropologischer Anzeiger* 2018; **74**(5): 365-76.

30. Alacevich C, Tarozzi A. Child height and intergenerational transmission of health: Evidence from ethnic Indians in England. *Econ Hum Biol* 2017; **25**: 65-84.

31. Bogin B, Smith P, Orden AB, Silva MIV, Loucky J. Rapid change in height and body proportions of Maya American children. *Am J Hum Biol* 2002; **14**(6): 753-61.

32. Frisch RE, Revelle R. Height and Weight at Menarche and a Hypothesis of Critical Body Weights and Adolescent Events. *Science* 1970; **169**(3943): 397-&.

33. Limony Y, Koziel S, Friger M. Age of onset of a normally timed pubertal growth spurt affects the final height of children. *Pediatr Res* 2015; **78**(3): 351-5.

34. Vizmanos B, Marti-Henneberg C, Cliville R, Moreno A, Fernandez-Ballart J. Age of pubertal onset affects the intensity and duration of pubertal growth peak but not final height. *Am J Hum Biol* 2001; **13**(3): 409-16.

35. Grasgruber P, Cacek J, Kalina T, Sebera M. The role of nutrition and genetics as key determinants of the positive height trend. *Econ Hum Biol* 2014; **15**: 81-100.

36. Das JK, Salam RA, Thornburg KL, et al. Nutrition in adolescents: physiology, metabolism, and nutritional needs. *Ann Ny Acad Sci* 2017; **1393**(1): 21-33.

37. Fogel RW, Grotte N. An Overview of the Changing Body: Health, Nutrition, and Human Development in the Western World since 1700. *N B o E Research Cambridge, MA* 2011.

38. Tumilowicz A, Beal T, Neufeld LM, Frongillo EA. Perspective: Challenges in Use of Adolescent Anthropometry for Understanding the Burden of Malnutrition. *Adv Nutr* 2019; **10**(4): 563-75.

39. Hawkes C, Ruel MT, Salm L, Sinclair B, Branca F. Double-duty actions: seizing programme and policy opportunities to address malnutrition in all its forms. *Lancet* 2020; **395**(10218): 142-55.