

Income inequality impacts obesity in children

April 10 2018, by Anna Kellett

National income and income inequality impacts on body size of children and adolescents according to new research from the University of Auckland.

A study of over 200,000 children in 36 countries including New Zealand, Australia and the United Kingdom has found rates of obesity can be affected by the [income](#) levels, with [adolescent girls](#) showing higher rates of obesity in wealthier countries.

The study, "Obesity, underweight and BMI distribution characteristics of children by gross national income and [income inequality](#): results from an international survey," was published this week in *Obesity Science and Practice*.

Associate Professor Rinki Murphy of the University's School of Medicine led the study that included the University of Otago and the Medical Research Institute of New Zealand.

This study investigated the prevalence of underweight and obesity among female and male children and adolescents from different countries, and if it differed by either gross national index (GNI), an estimate of national income or the Gini index, a measure of [income inequality](#).

They analysed height and weight data from over 77,000 children aged 6-7 and over 205,000 adolescents aged 13-14 from 19 and 36 different countries.

They found that children and adolescents from 'lower' GNI countries had more underweight children at 6 per cent than just 3 per cent in 'higher' GNI countries, but the rate of obesity was not different.

The BMI of participants from 'higher' GNI countries had a higher median compared to 'lower' GNI countries. Adolescent girls from higher income inequality countries had a greater median BMI and a less skewed BMI distribution.

Low nutrition is the likely explanation for seeing greater numbers of underweight [children](#) in lower national income countries, but obesity is not confined to those living in higher national income countries. Increased availability of calorie-dense foods and decreased necessity for physical activity are likely to be common in both higher and lower income countries, but could potentially affect young people from both high and low GNI countries.

Dr. Murphy says the results are important because while childhood [obesity](#) is recognized as a global health problem, childhood underweight also remains a major public health concern as both are linked with increased morbidity and mortality.

"Differences in the entire BMI distribution of populations from different countries may have biological and environmental explanations, which are important to examine in the context of the economic wealth of the nation and income inequality," Dr. Murphy says.

"In wealthier nations increased BMI can be linked to increasing sales of products including food and energy saving devices such as cars and electronic entertainment such as television and video games, which in turn is associated with overconsumption of food and increased sedentary behaviour, which could promote increases in BMI of the population. Income inequality of a nation also could influence this relationship."

"We looked at the proportion of obese and underweight young people, and also at the entire bell-shaped curve of the body weight distribution in different populations around the world. We found that the shapes of body weight distribution did not differ by national income – but rather that the whole curve shifted across to the heavier end."

Dr. Murphy says more research needs to be done to find out why greater income inequality within societies was linked with greater body mass index of [adolescent](#) girls.

She says the next steps will be to investigate whether BMI distribution of people living in New Zealand differs with gender, socioeconomic status and/or ethnicity.

More information: R. Murphy et al. Obesity, underweight and BMI distribution characteristics of children by gross national income and income inequality: results from an international survey, *Obesity Science & Practice* (2018). [DOI: 10.1002/osp4.169](https://doi.org/10.1002/osp4.169)

Provided by University of Auckland

Citation: Income inequality impacts obesity in children (2018, April 10) retrieved 26 April 2024 from <https://medicalxpress.com/news/2018-04-income-inequality-impacts-obesity-children.html>

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