



Height affects how people perceive their quality of life

Your height in adult life significantly affects your quality of life, with short people reporting worse physical and mental health than people of normal height. This large, peer reviewed study, which appears in *Clinical Endocrinology*, shows that adult height is linked to how good a person thinks their health is. Short people judge their state of health to be significantly lower than their normal height peers do.

The data for this study came from the 2003 Health Survey for England, carried out by the UK Department of Health⁽¹⁾. In this survey, participants filled out a health-related quality of life (HRQoL) questionnaire and a nurse measured their height. Researchers, led by Senior Health Economist Torsten Christensen at Novo Nordisk A/S in Denmark, used this data to assess the relationship between height and HRQoL. A person's health-related quality of life refers to their perceived physical and mental health over time. The questionnaire does not measure how good a person's health actually is; it measures how good a person thinks their health is. The questionnaire examined five areas of well-being: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. The researchers controlled the results in the study for the effects of other well-known indicators of HRQoL such as age, gender, body weight, long-standing illness and social class. In total, this study used the results from 14 416 respondents.

People in the shortest height category (men shorter than 162 cm and women shorter than 151 cm) reported they experience significantly lower HRQoL than people of normal height. Additionally, the shorter you are, the more pronounced this effect becomes. This means that a small increase in height has a much larger positive effect on a short person than it does on a person of normal height. The results predict that people who are of short stature could increase their HRQoL by 6.1% if their height was increased by 7 cm for men and 6 cm for women. This 6.1% difference in HRQoL is equivalent to the HRQoL benefits of losing 10-15 kg for an obese person (with a BMI greater than 30)⁽²⁾.

Short height in adult life can either be due to normal development or caused by a number of diseases such as growth hormone deficiency or Turner syndrome. Treatment with growth hormone to children with these conditions can increase their final adult height by approximately 4-10 cm depending on the underlying cause⁽³⁾. Previous studies have not clearly established the impact of this increase in height upon patients' HRQoL. The results from this study show that any small increase to the height of short people can have a large positive impact upon how good they perceive their health to be when adult. HRQoL data

combine physiological, physical and social well-being into one outcome measure. The results from this study may also be useful for health economic assessments (such as those used by the National Institute for Clinical Excellence) for calculating the benefits of treatments for short stature.

Researcher Torsten Christensen said:

“We know that people who are short experience more difficulties in areas of their life such as education, employment and relationships than people of normal height. However, the relationship between height and psychosocial well-being is not well understood. Using this large and nationally representative sample of the UK population, we found shorter people report that they experience lower physical and mental well-being than taller people do. Our results also indicate that the shorter someone is, the stronger this relationship becomes. For example, an increase in height of 3 cm would have a positive impact on the health related quality of life of a short person, whereas the effect of an extra 3 cm would be negligible for a person of normal height.”

Although our study does not show that short height directly causes a reduction in physical and mental health, it does indicate that short people are more likely to feel that they experience a lower health-related quality of life. However, further research is now needed to clarify the precise relationship between changes in height and health-related quality of life.”

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Notes for editors

1. Additional information

Health related quality of life was assessed using the EQ-5D questionnaire (developed by EuroQoL). Using a specific British EQ-5D scoring formula, the questionnaire answers are summarised into a single score where 0 = dead and 1 = perfect health.

Average EQ-5D scores = 0.87 for men (6415 men sampled)
0.85 for women (8001 women sampled)
0.86 overall

Study population mean height (\pm 1 standard deviation): Men = 174.7 \pm 7.1cm
Women = 161.2 \pm 6.7cm

(1) National Centre for Social Research and University College London. Department of Epidemiology and Public Health. *SN 5098: Health Survey for England, 2003*. UK Data Archive (UKDA). Available online at: <http://www.data-archive.ac.uk/>

(2) Foxcroft, D. R. 2005. Orlistat for the treatment of obesity: cost utility model. *Obesity reviews*, 6, 323–328).

(3) National Institute for Clinical Excellence. Guidance on the use of human growth hormone (somatropin) in children with growth failure. May 2002.

2. Contact information

This paper appears in the latest edition of *Clinical Endocrinology*, **67**, 407-412. *Clinical Endocrinology* is the official clinical journal of the Society for Endocrinology.

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ABSTRACT

An evaluation of the relationship between adult height and health-related quality of life in the general UK population

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Objective Short stature has previously been shown to influence several social factors during childhood and adult life. However, limited data exist to determine the influence of short stature on health-related quality of life (HRQoL) because of underpowered studies and the fact that children find questionnaires very difficult to complete. The objective of this study was to examine the influence of height on HRQoL for the general adult population in the UK.

Design The 2003 Health Survey for England (HSE03), commissioned by the Department of Health, provides a random general population sample for the population living in private households in England. Observations for 14 416 adults (aged > 18 years) were included in the analysis.

Measurements The survey involved a questionnaire-based interview and a nurse visit, where measurements and blood samples were taken. HRQoL was measured using the EQ-5D questionnaire. Social class (I–V) was derived according to definitions from UK National Statistics. Height was converted from centimetres to height standard deviation scores (HSDS).

Results Mean EQ-5D scores were lower in subjects with greater height deficit than in taller subjects. Three significantly different subgroups were identified using an analysis of variance (ANOVA). The first subgroup 'HSDS ≤ -2.0' had significantly lower EQ-5D scores compared with the second group '-2.0 > HSDS ≤ 0' and the third group 'HSDS > 0'. Multivariate linear regression analysis showed significant correlations between height and HRQoL, such that an increase in height of 1 HSDS predicts an improvement in EQ-5D score of 6.1% for subjects shorter than -2.0 HSDS. Social class was a significant predictor of HRQoL in taller, but not in shorter, subjects.

Conclusion The results of this study demonstrate that height in adult life is correlated with HRQoL and that short stature in adult life may be associated with a significant reduction in HRQoL.