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Trends in the Association of Obesity and Self-Reported Overall Health in 30 Years of the Integrated Health Interview Series

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Abstract

This research examines trends in the relationship between obesity based on self-report height and weight and self-perceived health over a 30-year period. Importantly, this period included the articulation of comprehensive public health campaigns on excess weight and thus provides opportunities for assessment of the efficacy of the campaign, as well as the broader psycho-social impact of excess weight. Using novel data from the Integrated Health Interview Series, odds ratios for the association between obesity and self-perceived health were estimated for repeated cross-sectional samples that are nationally representative of noninstitutionalized American adults aged 18–85 and older spanning 1976–2006. Our findings show that (i) there are weak associations between obesity and self-perceived poor health; (ii) these associations are particularly small among men, often to the point of being nonexistent; and (iii) weak relationships for both men and women have remained virtually unchanged over the past 30 years. Several reasons why the public health campaign around excess weight has had limited traction are discussed including the collective problem of excess weight in America and how this undermines current approaches in public health efforts addressing excess weight.

Obesity has been the target of one of the most significant public health campaigns in the last 30 years, with issues of excess weight increasingly present in public discourse (1,2) and public policy (3). Yet the success of any public health campaign rests fundamentally on increasing public recognition of the health consequences of particular behaviors or conditions (4). In most cases, campaigns articulate risks associated with particular behaviors and stress their links to particular diseases or health conditions. For example, various public campaigns link smoking to lung cancer, respiratory, and cardiovascular diseases (5). At a population level, a successful public health campaign must alter beliefs around health and

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DISCLOSURE

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associated risk behaviors. In the case of obesity, we know little about the success of such efforts. Building upon small-scale qualitative studies of obesity and perceptions of health (6,7), we examine, for apparently the first time, the associations between obesity and self-perceived health in nationally representative survey data covering the period (1976–2006). Such associations are ultimately a key indicator of the success of the public health campaign around obesity.

Methods and Procedures

Participants

Funded by the National Institute of Child Health and Human Development, the Integrated Health Interview Series is a multi-panel, cross-sectional, harmonized data produced by researchers at the Minnesota Population Center (8). Based upon the National Health Interview Surveys, each annual survey includes more than 85,000 individuals who are asked questions about health, health behaviors, and health-care utilization. We restrict our analysis to American adults between the ages of 18 and 85 and older (mean = 45) for the years 1976–2006. This yields a sample of more than 1.1 million Americans representative of the noninstitutionalized adult population during these years. Data from 1977 are excluded due to excess missing data on the key variables.

Variables

Obesity is indexed using BMI, a calculated ratio of self-reported height and weight, where scores over 30 identify “obesity” (9). Although BMI is an indirect measure, it correlates well with direct measures of body fat (10) and has good reliability across age, sex, and ethnicity (9). Although our analyses are also not specifically concerned with comparisons of BMI across groups, we do conduct separate analyses by sex to assess robustness of the results.

The second key measure is self-reported health, operationalized as “would you say that in general your health is excellent, very good, good, fair, or poor?” We focus attention on those reporting “poor” health as this is both germane to the question at hand and consistently measured across surveys. The item has two strategic advantages. First, there is strong evidence of its validity as a measure of health status (11). Second, the question is logically consistent with an effort to assess changes in whether obesity is perceived as a health problem within a population. Given public health efforts to foster recognition of health risks, self-report is an ideal vehicle for assessing changes in perceptions of health under different public health contexts.

Statistical methods

Using the Integrated Health Interview Series data, we stratify by year and sex and estimate a series of logistic regression models where dichotomous poor health is regressed on obesity status while controlling for geographic region, age, race, and education. Adjusted odds ratios proxy for relative risk ratios and an odds ratio of one indicates no association. The models estimated follow conventional statistical logic in which exogenous, rather than endogenous (e.g., specific diseases caused by excess weight), factors may be important confounders to include in the models. Other factors not incorporated in our analyses clearly influence self-

perceived health. Yet, to alter our conclusions, such factors would need to suppress the association between excess weight and self-reported poor health in a time-varying manner (i.e., later rather than earlier) and it is not clear what such a confounder might be.

Our analyses involve 64 statistical models with multiple estimated parameters. To simplify the results, we report only key odds ratios and confidence intervals of interest in graph format. The full models are available upon request from the first author.

Results

Figure 1 shows the adjusted association between obesity (BMIs >30) and poor health in females and males. We also include a second order polynomial trend line to indicate the size and direction of the trend, if any. There are three important findings. First, for most years, the overall association between obesity and self-perceived poor health is not large. For females, the majority of odds ratios fall below 2.25; for males, most ratios fall in the range of 1.0–1.5. Although statistically significant in many cases, these ratios translate into at best a four or five point increase in the probability of perceiving one's health as poor. This leads to the second conclusion: men appear particularly resilient to associating excess weight with poor health. For 16 of 30 years, the confidence intervals for men overlap with 1.0, indicating no association, and, in 14 of 30 years, fall below those for women. There is also no clear trend or pattern to this. Third and remarkably, there is no evidence of change over time in associations between obesity and self-reported health. For both sexes, the trend lines are relatively flat and confidence intervals overlap over time. In other words, regardless of the 30-year public health campaign around excess weight, associations of weight and health are weak and have not changed at all.

Robustness of results was assessed using different samples, re-estimating models with different contrasts (e.g., “poor/fair” vs. “good/very good/excellent”), and using an alternative measure of BMI that was adjusted based on sex-specific ratios of self-report to measured height and weight from the NHANES surveys (12). In all cases, the overall pattern of effects was substantively identical to that reported.

Discussion

Taken together, these results are very discouraging for the 3-decade, multifaceted public health campaign around excess weight. The results beg the question: why do Americans not associate excess weight with poorer health, even in the face of an extensive and multifaceted public health campaign? Although our answers are somewhat speculative, there are several noteworthy issues.

First, food has a complex relationship to excess weight. Specifically, it is “caloric-balance,” rather than eating or particular types of eating *per se*, that determines weight and weight gain. Unlike smoking, for example, where a well-defined behavior is associated with risk of disease, the issue of excess weight involves a ratio of behaviors, eating to physical activity, which makes it a more difficult phenomenon to associate with health risks. Although medical practitioners understand such complexities, evidence suggests that the general public does not (13).

Second, it is unlikely that public health efforts around excess weight would succeed by adopting, although they try, strategies that worked well in other public health campaigns. For example, “second-hand smoke” arguments were particularly effective in arguing significant externalities and health implications beyond the individual user and this facilitated the stigmatization of smoking in the name of public good. With obesity, there is less obvious and debatable collateral damage. Health risks of obesity are person-specific.

Likewise, subsequent legal action in the case of smoking targeted the small number of cigarette producers in the form of big-dollar lawsuits organized around the failure to acknowledge and report the harmful effects of smoking, specific target marketing to children, and the social costs incurred by governments for the health consequences of smoking (14). In the case of excess weight, the population of such supply-side entities (even those that deny harmful consequences and aggressively target children in advertising) seems much more vast and less definable. As a consequence, the obesity campaign has been largely demand-side. Yet, in focusing on trying to alter consumer behavior, the problem returns to public comprehension of the complexities of caloric balance.

Fourth, adopting a rhetoric of comorbidity is less straight-forward in the case of excess weight. Clearly, there are a wide number of diseases comorbid with excess weight (e.g., coronary heart disease, type 2 diabetes, hypertension, dyslipidemia), but the onset of diseases associated with excess weight typically occurs years, if not decades, after the onset of excess weight. Moreover, associations are often small to moderate in strength, many comorbid diseases are increasingly controllable with modern pharmacological advances (15), and the issue of increased mortality due to excess weight remains hotly debated (16). In the end, those overweight can “time discount” many of the more serious health consequences and view them as eventually treatable.

Finally, people evaluate themselves, including their health, by drawing upon immediate others and immediate circumstances as reference points. As obesity becomes increasingly statistically “normal” in the population, networks of comparison change; people increasingly view themselves in relation to others who are themselves increasingly heavier. Reference groups that both convey and reinforce the normalcy of excess weight will inevitably challenge, if not undermine, public health campaigns, the views of doctors and other “experts,” and indeed anyone advancing the idea that heavy people are jeopardizing their health. This is the fundamental challenge of public health around excess weight and it requires recognition of obesity as a collective problem and emphasizes the necessity of different collective solutions (17).

References

1. Nagourney, E. New York Times. Mar 17. 2009 Patterns: Big waist is an extra burden on lungs.
2. He XZ, Baker DW. Body mass index, physical activity, and the risk of decline in overall health and physical functioning in late middle age. *Am J Public Health*. 2004; 94:1567–1573. [PubMed: 15333316]
3. Conquering Obesity: The US Approach to Combating this National Health Crisis. Hearing before the Subcommittee on Human Rights and Wellness of the Committee on Government Reform, House of Representatives; 108th Congress, Second Session; 15 September 2004;

4. Wallace, R. Maxey-Rosenau-Last Public Health and Preventative Medicine. 15. McGraw-Hill Medical; New York: 2007.
5. Centers for Disease Control and Prevention. [accessed 19 May 2008] Fact Sheet: Health Effects of Cigarette Smoking. <http://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/effects_cig_smoking/index.htm>
6. Lewis S, Thomas SL, Blood RW, et al. Do health beliefs and behaviors differ according to severity of obesity? A qualitative study of Australian adults. *Int J Environ Res Public Health*. 2010; 7:443–459. [PubMed: 20616984]
7. Moore SE, Harris C, Wimberly Y. Perception of weight and threat to health. *J Natl Med Assoc*. 2010; 102:119–124. [PubMed: 20191924]
8. Minnesota Population Center and State Health Access Data Assistance Center. Integrated health interview series: Version 2.0. Minneapolis: University of Minnesota; 2008.
9. Gallagher D, Visser M, Sepúlveda D, et al. How useful is body mass index for comparison of body fatness across age, sex, and ethnic groups? *Am J Epidemiol*. 1996; 143:228–239. [PubMed: 8561156]
10. Morabia A, Ross A, Curtin F, Pichard C, Slosman D. Relation of BMI to a dual-energy X-ray absorptiometry measure of fatness. *Br J Nutr*. 1999; 82:49–55. [PubMed: 10655956]
11. Miilunpalo S, Vuori I, Oja P, Pasanen M, Urponen H. Self-rated health status as a health measure: the predictive value of self-reported health status on the use of physician services and on mortality in the working-age population. *J Clin Epidemiol*. 1997; 50:517–528. [PubMed: 9180644]
12. Villanueva EV. The validity of self-reported weight in US adults: A population based cross-sectional study. *BMC Public Health*. 2001; 1:11. [PubMed: 11716792]
13. Rothman RL, Housam R, Weiss H, et al. Patient understanding of food labels: the role of literacy and numeracy. *Am J Prev Med*. 2006; 31:391–398. [PubMed: 17046410]
14. Vernick JS, Rutkow L, Teret SP. Public health benefits of recent litigation against the tobacco industry. *JAMA*. 2007; 298:86–89. [PubMed: 17609494]
15. US Department of Health and Human Services. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults. Public Health Service, National Institutes of Health. National Heart, Lung, and Blood Institute; 1998. <http://www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.pdf>
16. Gibbs WW. Obesity: an overblown epidemic? *Sci Am*. 2005; 292:70–77. [PubMed: 15934655]
17. Oakes JM. Invited commentary: rescuing Robinson Crusoe. *Am J Epidemiol*. 2008; 168:9–12. [PubMed: 18480065]

Figure 1.

Estimated odds of reporting "poor health" if obese adjusted for geographic region, age, race, and education: Integrated Health Interview Series 1976–2006.