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Prevalence trends in obesity defined by the Relative Fat Mass (RFM) index among adults in the United States: 1999–2018

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Abstract

Background: The Relative Fat Mass (RFM) is a simple anthropometric index based on the ratio of height to waist circumference developed to estimate whole-body adiposity. Among women and men, RFM has a very high accuracy (>90%) to diagnose fat-defined obesity using dual energy X-ray absorptiometry. This study estimated the age-adjusted national prevalence trends of RFM-defined obesity for women and men 20-74 years of age in the United States between 1999 and 2018.

Methods: Data were obtained from the National Health and Nutrition Examination Surveys (NHANES). Obesity was defined as an RFM $\geq 40\%$ (body fat %) for women and $\geq 30\%$ for men. These validated RFM cutoffs are based on their association with increased risk of mortality.

Results: Final dataset for analysis included 42,651 adults. Among women, the obesity prevalence increased from 50.1% (95% confidence interval, 45.6% to 54.7%) in 1999-2000 to 63.5% (58.9% to 68.0%) in 2017-2018 (linear trend $P < 0.001$). Among men, the obesity prevalence increased from 33.0% (29.1% to 37.0%) in 1999-2000 to 46.5% (41.3% to 51.7%) in 2017-2018 (linear trend $P < 0.001$). Overall, RFM-defined obesity prevalence increased by 13.6 percentage points from 1999 to 2018 (linear trend $P < 0.001$). During the same period, obesity prevalence estimated using the body mass index increased by 12.3 percentage points (linear trend $P < 0.001$).

Conclusion: Among US adults 20-74 years of age, during the period between 1999 and 2018, the prevalence of obesity, as defined by the RFM, continued to increase linearly both in women and men. RFM-defined obesity prevalence was considerably higher among women.

Keywords: NHANES, Obesity, Prevalence, Relative Fat Mass, RFM, Trends

Abbreviations: NHANES, National Health and Nutrition Examination Survey; RFM, Relative Fat Mass

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