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Original Research

Risk factors for overweight and obesity: results from the 2001 National Health Survey

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KEYWORDS
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Summary *Objectives:* A significant rise in the proportion of overweight and obese adults has produced a serious health epidemic in Australia and worldwide. The current research aimed to identify sociodemographic and behavioural predictors of overweight and obesity among a large representative sample of Australian adults.
Study design: We used the National Health Survey conducted by the Australian Bureau of Statistics in 2001. The survey involved a stratified multistage area sample of private dwellings and face-to-face interviews.
Methods: We analysed data from 8643 females and 7600 males who responded to the 2001 National Health Survey. Multinomial logistic regression examined the association of being overweight or obese versus a healthy weight with a range of sociodemographic and behavioural variables.
Results: Fewer females than males were overweight while similar proportions were obese. For females and males, overweight and obesity were significantly associated with older age, being born in Australia, not being in a marriage-like relationship, low education, physical inactivity, and being a non/ex-smoker. High household incomes are protective from obesity but not from being overweight. Additionally, females with high levels of area social disadvantage and males in professional or white-collar occupations were more likely to be overweight or obese than a healthy weight.
Conclusions: Reductions in mortality and morbidity associated with overweight and obesity may be achieved by targeting health promotion strategies to high-risk groups such as those who are older, single, Australian born, socioeconomically disadvantaged, physically inactive, and non-smokers.

Introduction

Overweight and obesity have produced a serious health epidemic in Australia and worldwide. It is currently estimated that 4.9–7.4 million Australians

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(42–64% of men and 25–49% of women) are overweight and 2.4–2.5 million (16–19% of men and 17–22% of women) are obese.[1,2] Obesity places considerable economic burden on already strained healthcare systems as it reduces quality of life and leads to premature mortality.[3] In 1989 the estimated cost of obesity-related conditions in Australia, such as non-insulin-dependent diabetes mellitus, hypertension, coronary heart disease and cancer, was A$395 million.[3] Overweight and obesity are undoubtedly costing Australians considerably more given that the prevalence of these conditions has more than doubled over the past 20 years.[4] Individual-based approaches to weight change are regarded to have had limited success and population-based strategies are rare.[5] As acknowledged by Swinburn, comprehensive and innovative interventions are required and need to target children and high-risk adults.[5] So who is at 'high risk' for being overweight or obese?

A number of factors have been associated with overweight and obesity. Within affluent societies weight gain appears to be more common among older women with relatively low socioeconomic status (SES).[6,7] Sociodemographic correlates of weight gain and being overweight include marriage and living with a partner,[6,8–10] residing in small towns and villages,[11,12] low education level[4,6,13–16] and area social disadvantage.[17] Two important behavioural indicators of body weight are engaging in physical activity and smoking status. Increasing levels of leisure-time physical activity have been found to decrease obesity[13,18,19] and daily smokers are much less likely than others to be overweight or obese.[4,12,20]

The development of interventions that successfully target 'high-risk' groups is dependent upon the identification of compelling risk factors. To date, past research has revealed inconsistent risk factors for weight gain. Such inconsistencies could be attributed to the use of minority populations,[12,20–23] older samples,[6,22,24] women only,[6,8,16] and the use of a limited range of socioeconomic measures.[10,13,21,22,25] The present study aimed to identify reliable risk factors for overweight and obesity by examining a wide range of sociodemographic and behavioural factors as predictors in a large nationally representative sample of Australian adults.

Methods

Sample selection

Data were obtained from the 2001 National Health Survey (NHS), which was conducted by the Australian Bureau of Statistics (ABS) using a stratified multistage area sample of private dwellings.[26] Trained ABS interviewers performed face-to-face interviews with one selected resident from each dwelling. The response rate was 92% following sample loss, with a total of 26 863 respondents.

Measurement

The outcome was body weight. Body mass index (BMI), a measure of a person's weight in relation to their height (kg/m^2), was used to classify respondents into weight categories. In line with guidelines set by the World Health Organization, a BMI $<18.5\,kg/m^2$ was defined as underweight, BMI 18.5 to $<25\,kg/m^2$ as healthy weight, BMI 25 to $<30\,kg/m^2$ as overweight, and BMI $\geqslant 30\,kg/m^2$ as obese.[27]

The following sociodemographic and health behaviour characteristics were investigated as covariates: age, country of birth, marital status, region of residence, exercise level, smoking status, education level, occupation status, household income, and index of relative socioeconomic disadvantage (IRSD). Social marital status was used to differentiate 'married' (living with a partner in a spouse/de facto relationship) from 'not married' (not living with a partner). Based on the frequency, duration and intensity of exercise undertaken for recreation, sport or health/fitness purposes during the two weeks prior to interview, the ABS derived an exercise level for each respondent. Respondents were classified as being sedentary, or as engaging in a low, moderate, or high level of exercise. Education was categorized into the following five groups: tertiary degree/diploma, vocational qualification, unspecified post-school qualification, completed secondary school, and not completed secondary school. Occupation was categorized into the following five groups: professional, white-collar, blue-collar, unemployed, and not in the labour force. Household income was categorized into quintiles. The IRSD is an area socioeconomic index compiled at the collection district level by the ABS and includes such variables as the income, education, occupation, housing, household composition and English fluency of residents. IRSD was classified into quintiles.

Statistical analysis

Cases for which a minimum ($<1.0\%$) of responses were coded as 'not stated' or 'not applicable' were excluded from analyses as were data from participants aged under 18 years. Since only 2.5%