

Stress and weight change in university students in the United Kingdom

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Abstract

Students in the US have been shown to gain weight during their first year at university. This study examined whether students in Britain have a similar weight change during their first year at university, and tested the hypothesis that stress plays a role. A cross-sectional survey was conducted to assess stress and perceived weight change. Two hundred and sixty eight students at University College London completed the questionnaire at the end of their first year of university. On average, students reported a significant weight increase ($1.53 \text{ kg} \pm 2.70$, $p < 0.001$), although there was considerable variation, with 55% of the sample reporting weight gain, 12% weight loss, and 33% remaining stable. Logistic regression analyses demonstrated that stress was associated with greater risk of weight gain (OR, 1.27, 95% CI, 1.12 to 1.44, $p = 0.001$) and weight loss (1.33, 1.10 to 1.61, $p = 0.003$), but associations were stronger among women. The associations remained unchanged after adjustment for health behaviours. Our findings confirm a modest weight gain over the first year at university, which was associated with higher levels of perceived stress in women. © 2007 Elsevier Inc. All rights reserved.

Keywords: Weight change; Psychosocial stress; Health behaviours; University environment

1. Introduction

The increase in obesity worldwide has led to a significant expansion in research on preventive measures to combat obesity [1]. Being clinically overweight increases the risk of conditions such as heart disease, diabetes, and certain types of cancer [2,3]. Young adults are an important group to consider in research on obesity prevention, since unhealthy behaviours often develop early in life, but are difficult to tackle once they become life-long habits [4].

Gaining weight at university may play a role in the increasing numbers of overweight young adults [5]. Studies conducted in American universities have found that students are not eating the recommended amount of fruit and vegetables, are not taking recommended amounts of physical exercise, and are consuming increasing amounts of high-fat foods [6,7]. The same pattern is emerging in Europe [4,8].

During the first year of university, students may be more vulnerable to weight change because of the change in lifestyle [9], and commencing university can also be a time of increased stress, which may make students more susceptible to weight change [5,10,11]. One study found that a quarter of first year students gained at least 2.5 kg during the first semester of college [9], although others have found a mean weight loss or a non-significant weight gain [12,13]. One reason for the inconsistencies may be that stress has bidirectional effects on weight and can cause some individuals to gain but others to lose weight [14], and the balance may vary across contexts.

Understanding the factors that contribute to weight gain at university could help to establish a framework for universities to promote positive health behaviours for students [15]. University students also provide the researcher with a relatively homogeneous sample in terms of socioeconomic status (SES), making it easier to examine processes that are subject to SES differences [16]. The aims of this study were to assess associations between stress and self-reported weight change over the first year in a university environment in Britain. Given the changes in lifestyle (e.g. diet, alcohol consumption) and psychological factors (e.g. moving away from home, building a new social network, academic pressures), we hypothesized that students would experience a significant weight

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change during their first year at university. Based on prior evidence for a bi-directional effect of stress on weight change [14] we also predicted that stress would be associated with both weight loss and weight gain.

2. Methods

2.1. Participants

Two hundred and sixty eight students participated in the study, of which 100 were men and 168 were women. Convenience sampling was used to recruit participants at a university in London. All first year undergraduate students (approximately 3500) were emailed a link to an online version of the survey, which gained a response rate of 5% over a 4 day period until it was inactivated. Questionnaires were also handed out during lectures over a two week period, which achieved participation rates ranging from 50 to 100%. Only students aged between 18 and 25 were included in the analysis. Ethical approval was granted by the University College London Research Ethics Committee.

2.2. Measures

The survey included questions assessing sociodemographic factors, health behaviours, stress and weight change.

2.2.1. Weight and weight change and health behaviours

Participants reported their weights and heights in their preferred metric, from which we calculated BMI. Two questions asked students whether they had ‘gained weight’, ‘lost weight’ or ‘neither’, and to estimate the amount of weight change since starting university. They were also asked how often they weighed themselves on a six point scale ranging from ‘daily’ to ‘never’. Brief questions assessed smoking (on a scale of 1 to 8, ranging from ‘never’ to ‘20 cigarettes per day’), meal patterns

(number of meals and snacks per day), exercise (how many times in the last two weeks), alcohol intake (on how many days per week and what amount), and hours of sleep per night, during their first year at university, and retrospectively at school prior to starting university. The questions were from the International Health and Behaviour Survey (IHBS) and have been shown to have short-term reliability [16].

2.2.2. The Undergraduate Stress Questionnaire (USQ)

Stress was assessed with the Undergraduate Stress Questionnaire (USQ) [17]. The original version consists of 83 items based on events/hassles that students are likely to experience (e.g. tests or deadlines). In the present study the 10 item version of the USQ was employed, as previously used elsewhere [18], and an 11th item was added to the questionnaire relating to ‘financial worries’. Participants reported each stressor’s occurrence in the last two weeks (yes or no) and rated the severity of each stressor on a scale from 0 — not at all stressful to 2 — very stressful. The total number of items endorsed was the event frequency measure and the sum of the ratings for each scale was the event severity measure, with a higher score indicating a higher level of perceived stress. Overall scores for the USQ ranged from 0–11 for event frequency and 0–22 for event severity. In the present sample, Cronbach’s alpha for the frequency and severity scales was 0.47 and 0.55 respectively.

2.3. Statistical analyses

Participants were excluded if they did not complete all of the items described in Section 2.2. Participants were divided into three groups based on whether they had reported weight loss, weight gain, or no change. Differences in demographics, perceived stress and health behaviours between groups were examined using Chi-squared tests and one-way analysis of variance (ANOVA). Repeated measures ANOVA was employed to examine changes

Table 1
Health behaviours and demographics in relation to weight change during first year at university

Variable	Weight losers	Weight stable	Weight gainers
	(n=33)	(n=88)	(n=147)
Age (years)	19.55±1.37	19.33±1.45	19.07±1.05
n female (%)	21 (63.6)	44 (50.0) ^{a,b}	103 (70.1)
Self reported BMI (kg/m ²)	21.75±4.57	21.61±3.61	22.12±3.02
Weight change (kg)	-2.91±1.30	0.00 ^{a,b}	3.45±1.83 ^c
% regularly weighing	36.4	33.0	40.1
USQ score (frequency)	4.45±1.80	3.64±1.60 ^{a,b}	4.63±1.86
USQ score (severity)	5.73±2.64	4.04±2.35 ^{a,b}	5.77±3.07
Sleep (h/per night)	7.06±1.24	7.39±1.30	7.31±1.50
% smokers	24.2	18.2	23.1
% regular alcohol drinkers	66.7	69.3	63.9
% regular exercisers	60.6	75.0	70.1
Exercise (number of sessions/2 weeks)	3.55±3.86	4.44±4.76	4.25±4.40
Number of meals per day	2.41±0.73	2.64±0.69	2.59±0.56
Number of snacks per day	1.39±1.21	1.55±1.26 ^b	2.05±1.34 ^c

(Mean±SD). BMI, Body mass index; USQ, Undergraduate stress questionnaire.

^a Denotes significant difference between weight stable and weight losers.

^b Significant difference between weight stable and weight gainers.

^c Significant difference between weight gainers and weight losers ($p < 0.05$).

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