HOLIDAY WEIGHT GAIN IN UNIVERSITY STUDENTS

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Abstract

The main objective of our study was to analyse body weight and fat mass variation during Christmas holidays in university students. We assessed body mass index (BMI) and fat mass in four occasions: pre-holiday, holiday period, post-holiday and one year after the first visit, and 54 female university students completed the study. Analysis of variance (ANOVA) for repeated measures was used to compare BMI and body composition data in the follow-up period. Weight, BMI, and fat mass increased significantly ($p<0.05$) from pre-holiday to post-holiday; BMI and fat mass decreased significantly ($p<0.05$) from post-holiday to one year after the first visit, but the mean values were still higher than those obtained in the first visit ($p<0.05$). These differences should be considered in clinical interventions for individuals seeking a better body weight control.

Key Words:
Weight gain; holiday; Christmas.

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INTRODUCTION

Overweight is one of the most prevalent and serious health problems in children[1, 2] and adults[3], and controversy remains regarding the underlying specific causes of weight gain. Recently, weight increase during holiday was proposed as an important contributor to the rising prevalence of obesity and different vacation periods like summer vacation[4] and the period between Thanksgiving and New Year's Day[5-8], are commonly referred as being related to weight gain, but the number of studies is very scarce. The objective of this study was to analyse body weight and body composition variation during Christmas holidays.

METHODS

One hundred and thirty seven female university students ranging in age from 17 to 30 years were invited during a class, to participate in this study and 125 made at least one measurement. A total of 54 students (39.4%) completed the four anthropometric and body composition measurements.

The main objective of this study was covered up, and students were told that the different measurements were meant to evaluate health aspects of university students. None of the subjects reported health conditions that were thought to request change in eating habits, and none had been on an intense weight losing diet during the last three months before the study was run.

Body composition (fat mass) was assessed using bipedal bioimpedance[9]; height and weight were measured using standardized procedures[10], by trained nutritionists, and BMI was calculated.

Measurements were obtained in four periods: pre-holiday (September/October 2003); holiday (early January), post-holiday (late February) and a year after the first visit (September/October 2004). Analysis of variance (ANOVA) for repeated measures was used and statistical significance level was set at $p<0.05$.

RESULTS

The mean age of the subjects that completed the study was 19.5 ± 1.6 years. Body weight, BMI, and fat mass (total and in percentage of total body mass) in the four measurement periods are presented in Table 1. Between pre-holiday and post-holiday periods, body weight, BMI, and fat mass increased significantly ($p<0.05$); during this period, mean weight gain was 1.39 Kg and mean fat mass increased 1.57 kg.

BMI and fat mass values during September/October 2004 were significantly lower ($p<0.05$) than in the post-holiday period, and significantly higher ($p<0.05$) than the values obtained one year before (September/October 2003). Through this one year period, the mean weight and fat mass increases were 0.74 kg and 0.86 kg, respectively.

Table 1 - Anthropometric measures and body composition during the year

	Pre-holiday (Sept./Oct. 2003)	Holiday period (early Jan.)	Post-holiday (late Feb.)	One year after the first visit (Sept./Oct. 2004)
Weight (kg)	55.21 (± 6.3)[a]	55.92 (± 6.4)[b]	56.61 (± 6.7)[c]	55.95 (± 6.5)[d]
BMI	21.10 (± 2.0)[a]	21.34 (± 2.0)[b]	21.61 (± 2.1)[a]	21.36 (± 2.1)[b]
Fat Mass (kg)	12.01 (± 4.2)[a]	12.97 (± 4.4)[b]	13.58 (± 5.5)[a]	12.81 (± 4.5)[b]
Fat Mass (%)	21.08 (± 4.2)[a]	22.65 (± 5.3)[b]	23.34 (± 4.5)[c]	22.32 (± 5.6)[b]

[a] Statistically different from all the others ($p<0.05$)
[b] Statistically different from pre-holiday and post-holiday ($p<0.05$)
[c] Statistically different from pre-holiday and holiday period ($p<0.05$)
[d] Statistically different from pre-holiday ($p<0.05$)
[e] Statistically different from pre-holiday and one year after the first visit ($p<0.05$).
Note: data expressed as mean (±sd).

DISCUSSION

The main finding of our study was that body weight, BMI, and fat mass increased progressively through Christmas holidays. Although the mean body weight difference between September/October 2003 and September/October 2004 (0.74 kg) may seem clinically unimportant, this data suggests that weight gained during Christmas holidays is not totally reversed and can have an important contribution to body weight increase during adulthood. One difficulty in our study was the large drop out rate. It is possible that the participation rate was low because students were recruited in classes and participation in each measurement was dependent on student's attendance to classes. Another limitation of our study was that we did not include male subjects in our sample. However, to our knowledge, this is the first study that looked at body composition changes during Christmas holidays. In relation to weight changes, other authors[8] found similar results. After one year of follow up, Yanovski et al.[8] reported modest increases of weight between Thanksgiving and New Year's Day, and higher mean weight after one year.

The weight and body fat increases that we found may be related to several environmental factors during Christmas holidays that may promote food intake and inhibit consumption monitoring[11], such as long eating durations (parties), distractions, social interactions that occur (family and friends), low effort of obtaining food (convenient leftovers), the way food is presented, and food variety. Nevertheless, we can not know whether the weight gain observed in this study results mainly from the increase in energy intake, or from decreased energy expenditure with physical activity, or both, during holidays.

In the future, high quality longitudinal studies should address the relation between body weight and body composition variation during Christmas holidays, with other changes in behaviour affecting other determinants such as physical activity, and the pathways through which other determinants may be linked.

CONCLUSION

BMI and fat mass increases during Christmas holidays were not fully reversed in the following year.

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