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Social Support, Weight Loss Attempts and Satisfaction

Allison Drew
EPID 694- MPH Research Project
Virginia Commonwealth University/VCU Medical Center
School of Medicine
Master of Public Health Program
Dr. Kate Lapane, Advisor
Department of Epidemiology and Community Health
December 9, 2008

Submission Statement

Master of Public Health Research Project

This MPH Research Project report is submitted in partial fulfillment of the requirements for a Master of Public Health degree from Virginia Commonwealth University's School of Medicine. I agree that this research project report be made available for circulation in accordance with the program's policies and regulations pertaining to documents of this type. I also understand that I must receive approval from my Faculty Advisor in order to copy from or publish this document, or submit to a funding agency. I understand that any copying from or publication of this document for potential financial gain is not allowed unless permission is granted by my Faculty Advisor or (in the absence of my Faculty Advisor) the Director of the MPH Program.



Student Signature

12/09/2008

Date

Master of Public Health
Research Project Agreement Form
 Department of Epidemiology and Community Health

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Number of semester hours (3-6): 3 Semester: Fall Year: 2008 _____

Please complete the following outline. Do not exceed 2 pages (A-H).

A. PROJECT TITLE:

“Social Support, Weight Loss Attempts and Satisfaction”

B. PURPOSE (state hypothesis/research question):

We hypothesize that higher social support will be associated with attempts at weight loss in the past 12 months, attempts not to gain weight in the past 12 months, and participants' satisfaction with their weight status.

C. SPECIFIC OBJECTIVES (list major aims of the study):

To examine:

- 1) the association of social support with attempts to maintain weight in the past 12 months;
- 2) the association of social support with attempts at weight loss in the past 12 months; and,
- 3) the association of social support with satisfaction with current weight status.

D. DESCRIPTION OF METHODS

D.1. Identify source(s) of data (eg. existing data set, data collection plans, etc):

NHANES 2003-2004 and 2005-2006.

D.2. State the type of study design (eg. cross-sectional, cohort, case-control, intervention, etc):

Cross-sectional

D.3. Describe the study population and sample size:

All available data on adults 40+ who participated in all required sections of the NHANES questionnaire and reported an overweight or obese weight status 12 months before the interview took place.

D.4. List variables to be included (If a qualitative study, describe types of information to be collected)

Age, sex, SES, education, height, weight, ethnicity, BMI, social support, weight history, and body measurements.

D.5. Describe methods to be used for data analysis (If a qualitative study, describe general approach to compiling the information collected)

Percentages, prevalence, POR, adjusted and unadjusted ORs: SAS coding, SUDAAN.

E. ANTICIPATED RESULTS:

Significant association between social support and the three listed outcomes.

F. SIGNIFICANCE OF PROJECT TO PUBLIC HEALTH:

Identification of specific weight-associated social characteristics may lead to more specific and effective public health campaigns and interventions.

G. IRB Status:

- 1) Do you plan to collect data through direct intervention or interaction with human subjects? yes no
- 2) Will you have access to any existing identifiable private information? yes no

If you answered "no" to both of the questions above, IRB review is not required.

If you answered "yes" to either one of these questions, your proposed study must be reviewed by the VCU Institutional Review Board (IRB). Please contact Dr. Vance or Dr. Sridhar for assistance with this procedure.

Please indicate your IRB status:

- to be submitted (targeted date _____)
- submitted (date of submission _____; VCU IRB # _____)
- IRB exempt review approved (date _____)
- IRB expedited review approved (date _____)
- IRB approval not required

H. PROPOSED SCHEDULE: Start Date: 6/2008 Anticipated End Date: 12/2008

I. INDICATE WHICH OF THE FOLLOWING AREAS OF PUBLIC HEALTH KNOWLEDGE WILL BE DEMONSTRATED:

1. Biostatistics – collection, storage, retrieval, analysis and interpretation of health data; design and analysis of health-related surveys and experiments; and concepts and practice of statistical data analysis. yes no (if yes, briefly describe):
Analysis of pre-existing/collected data.
2. Epidemiology – distributions and determinants of disease, disabilities and death in human populations; the characteristics and dynamics of human populations; and the natural history of disease and the biologic basis of health. yes no (if yes, briefly describe):
Association of obesity with other individual characteristics.
3. Environmental Health Sciences – environmental factors including biological, physical and chemical factors which affect the health of a community. yes no (if yes, briefly describe):
Physical and biological determinants associated with obesity.
4. Health Services Administration – planning, organization, administration, management, evaluation and policy analysis of health programs. yes no (if yes, briefly describe):
5. Social/Behavioral Sciences – concepts and methods of social and behavioral sciences relevant to the identification and the solution of public health problems. yes no (if yes, briefly describe):
Discussion of social characteristics and how they impact weight variables in individuals.

SIGNATURE PAGE
Master of Public Health Research Project

Student: Name: Allison Drew

Preceptor: Name: _____ Title: _____

Address: _____

E-mail: _____ Phone: _____

Field of expertise: _____

Faculty
Advisor: Name: Dr. Kate Lapane

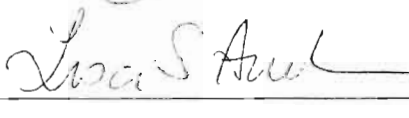
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Faculty Advisor:  Date: 11/14/08

MPH Program Director:  Date: 12/5/08

MPH Program Coordinator:  Date: 12-5-08

MPH Research Project Approval Form

Social Support, Weight Loss Attempts and Satisfaction

Submitted to the Graduate Faculty of the
Department of Epidemiology and Community Health
Virginia Commonwealth University

In partial fulfillment of the requirements for the degree of
Master of Public Health

Allison Drew

Comments:

Approval signatures:



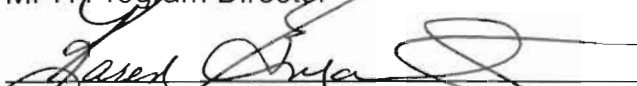
MPH Student Date 12/9/2008



MPH Research Project Faculty Advisor Date 12/9/2008



MPH Program Director Date 12/9/2008



MPH Program Coordinator Date 12-5-2008

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Many thanks to Dr. Kate Lapane for all her patience and help.

Abstract

Objective: The purpose of this study was to determine the extent to which the presence of social support correlates with attempts at weight loss in the past 12 months, attempts not to gain weight in the past 12 months, and participants' satisfaction with their weight status.

Methods: We used a cross-sectional study design using data collected by the 2003-2004 and 2005-2006 National Health and Nutrition Examination Surveys (NHANES) (CDC). For this study we included males and females, of multiple ethnicities, and a range of ages from 40 to 70 + years. Participants with missing data on height and weight were not included in the study. The final sample consisted of 3,982 participants. We defined social support using three domains: affiliation with religious organizations, relationships of trust, and social participation (Irwin J, et al., 2008). Weight loss attempts, weight maintenance attempts, and satisfaction were defined based on self-report.

Analysis: We analyzed different classifications of social support in relation to three separate weight loss variables. The measure of association was an odds ratio. Logistic regression models provided odds ratios adjusted for potential confounders. All analyses were conducted in SUDAAN version 10 (RTI, Research Triangle Park, NC) to account for the complex survey design.

Conclusion: Social support was not associated with weight loss variables. Various reasons for these results could include the age of the participants or the lack of questioning into the intensity of the social support being received.

Social Support, Weight Loss Attempts and Satisfaction

Obesity has reached incredibly high proportions not only in the United States, but also worldwide, and has become one of the largest causes of preventable disease and death. While productivity may still be increasing due to technological advancements, the modern environment has evolved in such a way that individuals no longer need to expend large amounts of energy in their everyday lives, which has resulted in weight gain.

The basic definition of overweight and/or obesity is an excessive accumulation of body fat or extra weight ¹. Obesity can also be described in more narrowly defined categories. Fabricatore and Wadden ² have defined obesity as a body mass index (BMI) of 30 kg/m² or greater. These authors have also classified three different types of obesity: Class I obesity, which is considered mild, is the BMI range of 30.0- 34.9 kg/m²; Class II obesity, which is considered moderate, is the BMI range of 35.0- 39.9 kg/m²; and Class III obesity, which is considered severe or extreme, is the BMI range greater than or equal to 40.0 kg/m² ². In 2003-2004, 66.3% of adults were considered overweight, 32.2% of which were considered to be in the range of obesity ³. Obesity itself is estimated to be responsible for roughly 300,000 preventable deaths each year in the United States ⁴. As can be deduced, these increases of obesity result from excess calorie consumption and/or inadequate physical activity for many individuals ³. Dunn ⁵ also indicated that motivation, health status, social support, and self-efficacy are very important predictors of behavior.

Elinder and Jansson ⁶ discussed the role of the most studied variables in obesogenic environments and how to use indicators to measure and evaluate these variables. Of great importance is their discussion on obesogenic environments which, when affecting the weight of the population in that environment, also have the effect of distinguishing through weight

differences, those individuals with higher hereditary resistance to excessive weight gain ⁶. This could indicate that while there are a large number of obese individuals, the potential for obese individuals may actually be even higher but has been curbed by whether or not an environment is obesogenic. Allman-Farinelli, et al. ⁷ also stated that the proportion of overweight and obese individuals has increased due to the environment of the past ten years.

Delva, Johnston, and O'Malley ⁸ surveyed youth, who were considered to be at risk for being overweight or obese, about their lifestyles and behaviors. Results indicated that when parents regulated their children's television watching and spent more time supervising their children after school, the children in question were less likely to be overweight or obese ⁸. Parental supervision may count as a form of social support and regulation of physical activity and dietary intake.

Averett, Sikora, and Argys ⁹ explored the potential association of relationship status and body mass index by analyzing data that included marital status, cohabitation status, and body mass index; the authors hypothesized that the relationship between BMI and marital status would be different for men and women. Results showed that women tended to remain at lower BMI's when single and during divorce, with a slight increase during cohabitation; men tended to gain weight during marriage and cohabitation ⁹. These findings may contradict assumptions that marriage can play a role of social support in weight loss and healthy weight maintenance.

Another study which relates to marriage and cohabitation by Elfhag and Rasmussen ¹⁰ examined food consumption, eating behaviors, and self-esteem of single, married, and cohabiting mothers, whose children were approximately twelve years of age. Not only did single mothers have lower fruit and vegetable intake and lower self-esteem, their daughters tended to have higher BMI's, lower self-esteem, and restrained eating ¹⁰. A study by Lemeshow, et al. ¹¹ found support for the

association between social factors, emotional factors, and overweight status. Sanchez, et al.¹² stated that adequate fruit and vegetable intake was associated with self-efficacy beliefs. Single mothers were also more likely to see therapists for depression, which may be an indication of low social support¹⁰. As is illustrated by these studies, BMI may be impacted by personal and family life characteristics such as single-mother families, or emotional problems that individuals either experience or are exposed to every day.

Kim, et al.¹³ explored the hypothesis that women who experienced higher levels of self-efficacy and social support would report higher levels of physical activity and have lower BMIs. Although social support correlated highly with self-reported physical activity, it did not correlate reliably with BMIs¹³. Winett, et al.¹⁴ found that physical activity was more highly increased with social support in their study of church based interventions for diet and physical activity. This study also emphasized continual prompts and group-based goal-setting as a means to encourage the participants in the targeted behaviors¹⁴.

Hemmingsson, et al.¹⁵ hypothesized that the intensity of social support would correlate with an increase of physical activity in severely obese subjects. Two groups were formed for this study: the first had standard social support with their walking recommendations, and the second received additional social support with their walking recommendation¹⁵. The group that received additional social support with the walking intervention had a 56% compliance rate at 18 weeks contrasted with the 0% compliance of the standard support group at 18 weeks¹⁵. Levy, et al.¹⁶ also discussed the role of social support in weight loss, citing several studies that have also found higher social support correlates with more successful weight loss attempts and more successful treatment programs.

Irwin, et al.¹⁷ defined social support as the “instrumental, expressive, informational, and/or emotional functions performed for an individual by family members, friends, or other significant others”. Bonding social capital in particular encompasses forms of social support such as trust, religious, and social participation¹⁷. Irwin, et al.¹⁷ suggested that social support might be critical to well being, which can impact all areas of life.

Objective

The purpose of this study was to determine the extent to which the presence of social support correlates with attempts at weight loss in the past 12 months, attempts not to gain weight in the past 12 months, and participants’ satisfaction with their weight status.

Methods

We used a cross-sectional study design using data collected by the 2003-2004 and 2005-2006 National Health and Nutrition Examination Survey (NHANES)¹⁸. NHANES is a survey that combines interviews and physical examinations to assess the health and nutritional status of adults and children in the United States¹⁸. Trained interviewers, including a physician, medical and health technicians, and dietary and health interviewers, collect demographic, socioeconomic, dietary, medical, dental, physiological, and laboratory tests¹⁸. Most interviewers are fluent in Spanish and English¹⁸. NHANES provides prevalence estimates of major diseases, previously undiagnosed conditions, risk factors, and health indicators¹⁸. NHANES over-samples persons aged 60 years and older, African Americans, and Hispanics¹⁸. For this study we included males and females, of multiple ethnicities (White, Black, Hispanic, and Other), and a range of ages from 40 to 70 + years. Eligibility requirements included participation in all four questionnaires (Social Support, Weight History, Body Measurements, and Demographics), a self-reported BMI of overweight or obese for the previous year (calculated in SAS using the self-reported weight

from the previous year and current height), no missing social support data or outcome data, an age of 40 or older (the social support questionnaire was only asked of those participants 40 or older), and no current pregnancy at the time of the survey. The final sample consisted of 3,982 persons.

Determinants

Conceptually, we considered social support as emotional encouragement or feedback from family, friends, peers, or networks. Social support can be more specifically defined as activities or interactions that build or result in a positive form of bonding, trust, or religious and social participation¹⁷. NHANES includes questions related to social support, specifically emotional support, church/religious service attendance, and trust. Social support type was determined by self-report of social support sources, which included family members, friends, coworkers, social groups, religious groups, and neighbors. Social support categories included “none”, “not needed”, and “yes” divided into the subcategories of “trust”, “social”, and “religious”. While the categories “none” and “not needed” were mutually exclusive, the social support categories for “trust”, “social” and “religious” were not. Social support was condensed into a Yes/No format for the final adjusted analysis in order to gain more clearly distinguished effects between the presence and absence of social support.

Outcomes

We hypothesized that with increased social support, participants would report more attempts to lose weight, more attempts not to gain weight, and increased desire to change from their current weight. These outcomes were determined by the questions, “During the past 12 months, have you tried to lose weight?”, “During the past 12 months have you done anything to

keep from gaining weight?”, and “Would you like to weigh . . . more, less, or stay about the same?”

Potential confounders may include gender, race/ethnicity, age, cultural background, social/socioeconomic status, poor perception of social support, genetic obesity resilience or predisposition ⁶, and environmental factors ⁸.

Analysis

The eight NHANES data sets from 2003-2004 and 2005-2006 (Social Support, Weight History, Body Measurements, and Demographics) were formatted, merged, and recoded using SAS 9.1. Logistic regression models were used to calculate crude and adjusted estimates, with 95% confidence intervals, of the association between social support and the outcome variables; these analyses were performed in SUDAAN version 10 (RTI, Research Triangle Park, NC) to account for the complex survey design.

Results

Table 1 shows participant characteristics by the type of social support. . Most participants reported having at least some form of social support, with few reporting that no social support was needed. More than half of the participants indicating social and religious support were women with only ~17% of those reporting no help was needed and ~39% of those with no social support being women. Of all those who reported social support, White Non-Hispanic individuals had the largest proportions. Almost all age groups were equally proportioned across the social support categories. Among those who reported religious support, more participants were at least 70 years of age (26%) compared to social (14%) and trust (18%) forms of social support. Lower education levels tended to be equally distributed across the social support groups. More than half of those reporting that social support was not needed had attained less than a high school

education. Of all those reporting social support, married individuals represented the largest proportion, widowed/divorced/separated had the second largest proportions, and unmarried and cohabiting had similar low proportions. Among those reporting trusted social support, most were married. Among those with no social support, there were a greater proportion of persons with PIR less than one relative to the other social support categories. Also, and who reported no social support or no need for social support were the most likely to report having one to three friends relative to those reporting any form of social support.

In Table 2, we examined the effect of social support, as a yes/no variable, on the weight-related outcome variables, by adjusting for the other variables in the study. In the crude analysis, although social support tended to be positively associated with the outcomes, the confidence intervals were wide and included unity. Adjusting for potential confounders diminished any effect of social support.

Discussion

We did not find a correlation between social support and weight related outcomes. The results of this study illustrated that a large proportion of individuals who met the eligibility requirements reported social support in their lives. Most of these same individuals also reported attempts to lose or maintain weight in the past 12 months, yet still desired a weight change.

Over three fourths of participants desired to make a change in their current weight status (76.8% of individuals without social support and 82.7% of individuals with social support). Indeed, 63.1% of individuals without social support and 65.8% of individuals with social support reported attempts not to gain weight in the past 12 months. Further, among the overweight and obese participants, only 49.6% of individuals without social support and 55.3% of individuals with social support attempted to lose weight in the past 12 months.

There are several potential explanations for these discrepancies. While a great number of individuals wish to make a change in their current weight status, they may lack the motivation or self-efficacy needed to adopt effective weight-loss strategies as part of their lifestyle. Additionally, these individuals may have attempted weight loss through unhealthy strategies that were short-lived and ineffective, and due to no discernible change in their weight, may not consider this behavior to be attempted weight loss. Other individuals may have already developed a pattern of unhealthy weight-loss attempts and are now undergoing a phenomenon known as weight-cycling. If so, they may be struggling merely to maintain their current weight, let alone change their current weight status. Individuals with eating disorders may also be less likely to admit they are attempting weight loss, but depending on the type of disorder they are dealing with, may more readily admit to attempts to maintain weight loss or a desire to change their weight.

Segar, Eccles, and Richardson ¹⁹ addressed the type of physical activity goal and how it influences physical activity participation, a very relevant topic to these proportion discrepancies. They found that individuals who are participating in physical activity for an extrinsic reason, such as decreasing weight due to societal pressures, were less likely to enjoy the physical activity and less likely to integrate this behavior into their lifestyle over the long term ¹⁹. The participants in their study who were physically active for intrinsic reasons, as a method of stress reduction or increasing self-esteem, were more likely to enjoy their physical activity, and had longer adherence rates ¹⁹. Since most of the persons in the current study reported the desire to change their weight, their motivation is likely extrinsic, which could explain the lower rates of actual weight loss attempts. Segar, Eccles, and Richardson ¹⁹ also found that participants, who wished

to maintain their weight, as opposed to lose weight, also had higher adherence rates, similar to participants with intrinsic reasons for physical activity.

We interpret the negative findings of this study with caution. The NHANES questionnaire does not address the intensity of social support or, in the case of groups and social networks, how often individuals interact with their sources of support. Certain types of intensified social support may have more observable effects on weight-change behaviors and duration of time spent with social support sources may also enhance observable effects. For example, Keller and Cantue²⁰ performed a study on walking interventions in Mexican-American women. One of their primary findings was that the development of a friendship with a walking partner was key to initiating and sustaining walking behavior and therefore, improving the measures of their body fat and weight, and their lipid profiles²⁰. These walking partners encouraged each other to take care of themselves physically and empowered each other to continue the walking program²⁰. Hemmingsson, et al.¹⁵ and Levy, et al.¹⁶ also found that intensity of social support correlated with an increase of physical activity in severely obese subjects and higher levels of social support correlated with more successful weight loss attempts and more successful treatment programs.

Questions aimed towards the specific type of social support received, in addition to the source of support, may also have yielded more significant findings. For example, Baughman, et al.²¹ evaluated several factors thought to be related to obesity and found associations with ethnicity, education, social support for healthy eating, and social support for exercise. Specifically, social support from friends for healthy eating had a small negative association with calories consumed while cons for healthy eating had a small positive association with calories consumed²¹. Lack of support for exercise from one's family was also associated with larger

BMI; Baughman, et al. ²¹ found that people often felt too large to exercise, too shy, or too embarrassed to exercise because of their weight, or not being the sporty type. Some family and friends may share these same stereotypes of exercise and thus may not encourage exercise by overweight persons ²¹. This could explain the proportion of individuals who feel they lack social support.

Strengths

Though this study did not find any association between social support and the weight-related outcomes, its content is generalizable to the current U.S. population due to the NHANES sampling methods and weighting procedures used. The proportions displayed reflect the distribution and characteristics of individuals reporting recent weight status as overweight or obese. The variables included in the analysis also take into account the potential relationship of basic demographics and weight status.

Limitations

Limitations included an inability to measure the quality, intensity, or extent of social support, and an inability to measure social support in individuals less than 40 years of age. It is possible that social support and weight status may be more closely related in age groups less than 40 years of age. Also, due to the nature of the cross-sectional survey design, there is no guaranteed measurement of social support in the same individuals over time. The ability to measure social support and weight status in the same individuals over time may very well reveal that social support changes with age. Self-report information can also be inaccurate, especially in regards to height and weight estimates and recall of previous years' estimates.

Conclusion

Although this study did not find any associations, there is a large amount of literature that supports the association between social support and weight loss/weight loss attempts. Questions investigating the frequency of attendance to support groups, social organizations, or religious congregations may have yielded higher associations; further research could be done to determine what degree of attendance frequency and support intensity is capable of yielding observable behavior modification. Additionally, questions regarding the participant's current perception of his or her weight status would be revealing of cultural differences in physical ideals, i.e., overweight or obese participants who still wish to gain weight. Investigation of key factors associated with overweight and obese status is crucial to slowing the current trend of weight increases, both nationally and internationally.

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Table 1. Participant Characteristics by Social Support.

Variables	Social Support				
	None	Not Needed	<i>Trust</i>	<i>Yes Social</i>	<i>Religious</i>
Unweighted N	224	39	3586	164	243
Weighted N	3708564	601226	77314084	3970168	4173596
	Percentages				
Gender					
Woman	38.7	16.8	48.5	55.1	55.8
Ethnicity					
White Non-Hispanic	62.5	61.2	78.5	81.8	66.1
Black Non-Hispanic	16.0	9.6	10.7	8.8	25.9
Hispanic	13.9	25.8	7.3	4.2	6.5
Other	7.6	3.4	3.5	5.2	1.4
Age Groups					
40-49 years	29.0	26.8	34.7	42.1	27.6
50-59 years	27.3	33.6	28.0	25.7	21.9
60-69 years	19.9	22.3	19.2	17.9	24.4
70+ years	23.8	17.3	18.0	14.3	26.1
Nationality					
Born in US	84.2	65.7	90.3	93.6	94.8
Born in Mexico	7.8	10.2	2.5	1.0	2.3
Born elsewhere	8.0	24.1	7.2	5.4	2.9
Education					
Less than High School	36.9	50.9	31.4	34.7	37.1
High School Grad	38.1	37.8	40.1	37.9	35.0
Some College	12.2	1.5	15.6	14.6	15.7
College Graduate +	12.8	9.8	12.9	12.8	12.2
Marital Status					
Married	40.9	28.6	68.0	54.9	61.5
Widowed/Divorced/Separated	47.1	52.4	23.5	29.8	31.4
Unmarried	10.1	19.0	5.2	9.4	5.7
Cohabiting	1.9	0.0	3.2	5.9	1.4
PIR					
<1	15.4	8.3	8.1	8.4	9.5
1-2.99	45.6	41.1	34.3	38.7	47.7
3-4.99	22.3	31.8	29.9	28.6	22.9
5+	16.8	18.8	27.6	24.2	19.9
Number of Friends					
1-3 friends	56.1	45.5	26.5	25.3	19.1
4-6 friends	22.4	36.0	38.5	44.2	36.3
7+ friends	21.5	18.5	35.0	30.5	44.6

Table 2. Association Between Social Support and Weight Loss Attempts, Weight Maintenance, and Desirability of Weight Change

			Attempted Weight Loss			
	Yes	No	Crude Odds Ratio	95% Confidence Interval	Adjusted Odds Ratio	95% Confidence Interval
Social Support	Weighted %					
None	49.6	50.4	1.00	Ref.	1.00	Ref.
Yes	55.3	44.7	1.25	0.92 - 1.71	1.03	0.72 - 1.46
			Attempted Not To Gain Weight			
None	63.1	36.9	1.00	Ref.	1.00	Ref.
Yes	65.8	34.2	1.13	0.81 - 1.57	0.82	0.56 - 1.21
			Desire For Weight Change			
None	76.8	23.2	1.00	Ref.	1.00	Ref.
Yes	82.7	17.3	1.44	1.01 - 2.07	0.90	0.55 - 1.48