

What young Dutch adults say they do to keep from gaining weight: self-reported prevalence of overeating, compensatory behaviours and specific weight control behaviours

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Abstract

Objective: The aim of this study was to explore the prevalence of and differences in self-reported occasions of overeating (such as at celebrations and other parties), compensatory behaviours and specific weight gain prevention strategies among young Dutch adults according to sociodemographics and overweight status.

Design and subjects: Cross-sectional data were analysed from Dutch adults aged 20–40 years, recruited from an Internet research panel ($n = 857$, response rate = 76.6%). Using electronic questionnaires, self-report data were collected on sociodemographics, body mass index (BMI), occasions of overeating, compensatory behaviours, and diet and physical activity used as weight gain prevention strategies. Associations were tested using multiple linear and logistic regression analyses.

Results: Of the participants, 48.6% reported occasions of overeating at least once a week during the 4-week period, 44.6% reported compensating for these occasions and 72.9% reported engaging in dietary and physical activities specifically for weight gain prevention purposes. Only 32.1% of the respondents reported using the recommended combination of diet and physical activity as a weight gain prevention strategy. In addition, results showed that overweight people ($\text{BMI} \geq 25 \text{ kg m}^{-2}$) and women were more likely to report overeating than people with healthy body weights (odds ratio (OR) = 1.79; 95% confidence interval (CI) 1.32–2.42) and men (OR = 1.50; 95% CI 1.14–1.97). Overweight people, women and people who regularly reported overeating were also significantly more likely to report compensatory behaviours by eating less and to report specific weight gain prevention strategies using diet and physical activity.

Conclusion: The present study suggests that people experience frequent occasions of overeating and try to compensate for such occasions in different ways. However, the combination of dietary changes and physical activity recommended by experts was seldom reported.

Keywords

Weight gain prevention strategies
Overeating
Compensatory behaviours

Both diet and physical activity are important for effective weight maintenance¹. Although earlier studies have shown that high percentages of people are engaged in weight gain preventive action², the rising prevalence of overweight and obesity shows that these are not always effective. This might be explained by the fact that the duration of engagement in weight control behaviours is often very brief and therefore not sufficient to prevent weight change over time, as suggested by a prospective cohort study on the prevalence and duration of specific weight loss strategies³. Another explanation might be that people are engaged in non-effective weight gain prevention behaviours. To date, little is known about which dietary and physical activity behaviours people apply to prevent weight gain, since most existing work has focused

on weight loss or because more detailed information about such behaviours was not obtained^{4–7}. Exercise and caloric restriction are the two relevant and most commonly studied strategies of weight control. However, these strategies may consist of a diverse range of more specific behaviours including restricting fats, sugar, snacks or soft drink intakes, eating breakfast and plenty of fruit and vegetables, walking, cycling and participating in a range of sporting activities^{3,8–10}.

To try to explain further the discrepancy between reported preventive actions on the one hand and more people becoming overweight on the other, it is important to explore what specific weight control behaviours people engage in to prevent weight gain and to what extent people combine these behaviours. It is important to

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explore the latter in particular, because Serdula's study⁶ suggests that only a minority of people use the recommended combination of increased physical activity and restricted food intake.

The discrepancy between a high degree of preventive action and the increasing trend of overweight might also be explained by an 'obesogenic' environment with easy availability of palatable, energy-dense foods that may induce overeating despite people's high motivation and self-perceived action to maintain their body weight^{11–13}. Occasions of overeating (i.e. eating more calories than needed to maintain body weight) are common in many societies with traditions of parties and celebrations. These occasions of overeating can be induced by such obesogenic environments and can be induced still further by negative mood states^{12–17}. Such occasions of overeating may form a risk for weight gain and eventually for becoming overweight or obese if overeating happens frequently over longer periods of time without effective compensation^{17,18}. To date, little is known about the prevalence of occasions of overeating, awareness of such occasions, and possible compensatory behaviours and weight maintenance strategies, and to what extent people use the recommended combination of physical activity and restriction of food intake in their efforts to prevent weight gain.

This is one of the first studies to explore the prevalence of self-reported occasions of overeating, compensatory behaviours in response to overeating and specific weight gain prevention behaviours related to diet and physical activity, and whether these behaviours differ according to sociodemographics and body weight status. Additionally, this study explored whether people who reported overeating use different or more weight gain prevention strategies.

Subjects and methods

Study populations

Data were taken from the Balance Intervention study. The Balance Intervention study was initiated by The Netherlands Nutrition Centre, and aimed at promoting quick 'caloric compensation': moderating food intake and/or increasing physical activity in response to overeating. To determine whether intervention materials were useful, encouraged information seeking, and increased motivation and caloric compensation behaviours, a three-group randomised trial with pre- and post-intervention measures using electronic questionnaires was conducted among participants aged 25–40 years, recruited from an Internet research panel ($n = 857$, response rate 76.6%). To be eligible for the study, participants had to be: (1) aged 20–40 years; (2) not currently pregnant; (3) willing to receive a brochure in the post at their home address and be able to listen to recordings of radio advertising on their home computer; and (4) not planning to be on holiday during

the 4-week intervention and data collection period. As a reward for participating in the study, the members of the Internet research panel received a gift voucher¹⁹.

One group received a printed brochure and electronic newsletters (print group), the second group was exposed to radio advertisements (radio group) and the third group was the control group. For the present study, we only used the data on the post-measures. We decided to combine the data of the control and intervention groups since we found no differences between groups for any of the relevant variables, including body mass index (BMI) and socio-demographics. The exception was 'compensatory behaviours', which were reported significantly more frequently in both the intervention groups¹⁹. For the descriptive data on the prevalence of compensatory behaviour, we therefore used the data of the control group only.

Measures

The Balance Intervention study made use of a self-developed questionnaire. The questionnaire was tested for reliability by analysing test–retest reliability, and the internal consistency of the scales was established in the sample of the present study with Cronbach's α ¹⁹.

Socio-demographic characteristics

Information on age, gender, ethnicity, educational level and self-reported height and weight was gathered during the recruitment procedure. Respondents were defined as being of Dutch ethnic origin if both their parents were born in The Netherlands, and otherwise were considered to be of non-Dutch ethnic origin. The information on height and weight was used to calculate BMI (BMI = weight (kg)/height (m)²).

Prevalence of overeating

People were asked to report the frequency of overeating over the last month, and we included a 12-item self-report measure to assess this. Overeating was defined as 'occasions you eat more than usual and more than you think is really good for you'. Overeating can be common in situations that could be labelled as 'high-risk', such as at parties and other celebrations, going out, and on public and other holidays and that can be recognised by a 'feeling of abdominal fullness'. In our study, the measure of 'overeating' was not comparable with having a binge-eating episode. Therefore, 'losing control over one's eating' or 'feeling guilty afterwards' were not part of this measure. Respondents were asked how often they experienced occasions of overeating in 12 pre-defined risk situations (see Table 2) over the last 4 weeks on a 5-point scale: (1) almost never; (2) less than once a week; (3) once or twice a week; (4) three to four times a week; (5) five times a week or more (Cronbach's $\alpha = 0.87$; test–retest reliability = 0.70).

Compensatory behaviours

The questionnaire continued with questions on how often participants were engaged in dietary or physical activity compensatory behaviour over a certain time period before or after situations of overeating. Several examples were given of how people can try to eat less (e.g. eating low-calorie food, limiting sweets and snacks, and smaller portion size) or be more physically active in response to occasions of overeating. Respondents were asked whether they compensated overeating at four designated moments for compensation over the last month: (1) the day before; (2) on the same day; (3) the day after; or (4) within a few days. These questions were answered on a 5-point scale: (1) almost never; (2) less than once a week; (3) one or twice a week; (4) three or four times a week; and (5) five times a week or more (compensation with caloric restriction, Cronbach's $\alpha = 0.75$; test-retest reliability = 0.65; compensation with increased physical activity, Cronbach's $\alpha = 0.87$; test-retest reliability = 0.66).

Specific weight gain prevention strategies related to diet and physical activity

To investigate self-reported frequency of strategies relevant for prevention of weight gain, we included questions on 28 dietary behaviours and seven physical activity behaviours (see Table 1). The list of behaviours was based on existing questionnaires used to measure weight control practices (i.e. reducing the amount of food, snacks, fats and sweets, eating plenty of fruits and vegetables, choosing low-fat or diet versions of foods, high- and moderate-intensity physical activity)^{3,20–22}.

In three successive questions for each separate action, the participants were asked about their engagement in these behaviours for weight gain prevention. First, participants were asked which of the listed behaviours they engaged in over the last month. When the respondents reported that they engaged in a specific behaviour, they were asked about the frequency of this behaviour on a 5-point scale (0 = almost never/less than once a week/one or twice a week/three a four times a week/five times a week). Finally, they were asked whether they performed this behaviour specifically to prevent weight gain (yes/no). The scores of respondents who reported they engaged in a given behaviour but not to prevent weight gain were recoded to 0.

We used two principal component analyses to group the 28 weight gain prevention behaviours related to diet and the seven weight gain prevention behaviours related to physical activity into meaningful categories for further examination. Eight factors related to diet and two factors related to physical activity were identified based on examination of item loadings, scree plots and eigenvalues (see Table 1). Items with a factor score < 0.4 were excluded from further analyses.

Analyses

Descriptive statistics were used to describe the prevalence of people who experienced occasions of overeating regularly during the last month (≥ 1 time a week) and who reported regularly (≥ 1 time a week) engaging in compensatory behaviours or other weight gain prevention strategies related to diet and physical activity over the last month. These descriptives were calculated separately according to sociodemographics, weight status and the frequency of overeating. In addition, we calculated the overall percentages of respondents who experienced overeating regularly (≥ 1 time a week) in any of the 12 listed high-risk situations and who regularly (≥ 1 time a week) engaged in any of the specific compensatory behaviours related to diet or physical activity and any of the 10 identified weight gain prevention strategies (Table 4). Finally, the combination of diet and physical activity was calculated for respondents who reported regularly engaging in any of the dietary activity behaviours together with any of the physical activity behaviours.

We used multiple logistic regression analyses to test for differences in regularly engaging in overeating, compensatory and specific weight gain prevention behaviours according to sociodemographics, body weight status and the frequency of overeating. Regular occasions of overeating, and regular engagement in compensatory behaviours and specific weight gain prevention behaviours were the dependent variables (yes = 1; no = 0) in the regression model. Finally, in order to test whether compensatory behaviours negatively or positively predict being overweight or obese, additional logistic regression analyses were conducted, with overweight status as dependent variable and regular engagement in compensatory behaviours as independent variables, adjusted for the frequency of overeating and socio-demographic characteristics of the respondents.

Since this study was based on an intervention study with two intervention groups and a control group, all analyses were adjusted for group.

Results

Subjects

Participants were 52% female, 91% were of Dutch ethnic origin and 68% had higher educational levels (university degrees or higher professional training). Mean age was 27 years (standard deviation (SD) 5.3); the mean BMI was 24.3 kg m^{-2} , and 33.6% of the participants were overweight (BMI $\geq 25 \text{ kg m}^{-2}$). Slightly more men than women were overweight (34.9% versus 32.4%).

Overeating and compensatory behaviours

Descriptive data in Table 2 show that 48.6% of the respondents reported that they regularly experienced overeating in one of the listed high-risk situations over the last month. The prevalence for overeating was highest at the

Table 1 Factor loadings on newly developed scales for weight gain prevention strategies related to diet and physical activity, their internal consistency and test–retest reliability ($n = 847$)

Weight gain prevention strategies related to diet	Factor loadings
Limiting fat intake (eigenvalue = 17.3; 30.5% of variance; Cronbach's $\alpha = 0.68$; test–retest reliability = 0.65)	
Eating few or no fried foods	0.75
Eating few or no high-fat products	0.72
Eating little or no fat	0.60
Sticking to a weight-loss diet	0.21
Having a regular eating pattern and eating lots of fruit and vegetables (eigenvalue = 4.69; 8.28% of variance; Cronbach's $\alpha = 0.68$; test–retest reliability = 0.70)	
Having a regular eating pattern	0.83
Eating three meals a day	0.83
Eating lots of fruits and vegetables	0.48
Eating lots of high-carbohydrate products	0.33
Consuming few or no alcoholic drinks	0.30
Not or only occasionally eating out	0.28
Limiting sweets and snacks (eigenvalue = 3.77; 6.67% of variance; Cronbach's $\alpha = 0.73$; test–retest reliability = 0.66)	
Cutting out sweets	0.80
Eating few or no snacks	0.82
Limiting sugar intake and avoiding sweet foods (eigenvalue = 3.40; 6.01% of variance; Cronbach's $\alpha = 0.50$; test–retest reliability = 0.72)	
Eating little or no sugar	0.69
Avoiding sweet foods	0.63
Trying to maintain a sugar-free diet	0.22
Eating no or few high-carbohydrate products	0.19
Using meal replacements	0.14
Sticking to a low-fat diet	0.14
Using diet products (eigenvalue = 2.79; 4.93% of variance; Cronbach's $\alpha = 0.49$; test–retest reliability = 0.78)	
Using diet products	0.92
Eating low-fat products	0.58
Fasting for a day	0.18
Eating few or no desserts and smaller servings (eigenvalue = 2.48; 4.39% of variance; Cronbach's $\alpha = 0.48$; test–retest reliability = 0.68)	
Eating few or no desserts	0.85
Eating smaller servings	0.56
Skipping a meal	0.27
Eating little or no meat	0.19
Drinking lots of water (eigenvalue = 2.34; 4.14% of variance; test–retest reliability = 0.66)	0.92
Limiting soft drink and fast-food intake (eigenvalue = 2.20; 3.89% of variance; Cronbach's $\alpha = 0.50$; test–retest reliability = 0.61)	
Eating few or no fast-foods	0.62
Drinking few or no soft drinks	0.58
High-intensity physical activity (eigenvalue = 3.7; 38.9% of variance; Cronbach's $\alpha = 0.69$; test–retest reliability = 0.39)	
Getting lots of exercise	0.93
Engaging in high-intensity exercise and sport	0.73
Moderate-intensity physical activity (eigenvalue = 2.2; 23.1% of variance; Cronbach's $\alpha = 0.58$; test–retest reliability = 0.58)	
Taking the stairs instead of the elevator	0.95
Walking during leisure time	0.49
Cycling to work instead of going by car or public transport	0.43
Cycling during leisure time	0.36
Gardening	0.16

Items with a factor score below 0.4 were excluded from further analyses.

weekend and when feeling slightly depressed. Overweight people and women were more likely to experience overeating at least once a week when compared with non-overweight people (odds ratio (OR) = 1.79; 95% confidence interval (CI) = 1.32–2.42) and men (OR = 1.50; 95% CI = 1.14–1.97).

A total of 44.6% of the respondents reported compensating overeating by eating less or being more physically active. Descriptive data on compensatory behaviours (see

Table 3) show that people were more likely to compensate overeating by restricting food intake than by increasing physical activity. Furthermore, only 21.4% of the respondents reported to combine compensatory behaviours related to restricting food and increasing physical activity. Multivariate analyses revealed that overweight people and people who reported regular overeating were more likely to compensate occasions of overeating with caloric restriction when compared with non-overweight people

Table 2 Proportion of respondents who experienced occasions of overeating at least once a week over the last month, according to body weight status and sociodemographics ($n = 848$)

	% of respondents who experienced overeating at least once a week								
	Total population ($n = 848$)	BMI (kg m^{-2})		Gender		Age (years)		Educational level	
		<25 ($n = 567$)	>25 ($n = 287$)	Female ($n = 441$)	Male ($n = 412$)	20–30 ($n = 652$)	31–40 ($n = 202$)	Low ($n = 272$)	High ($n = 581$)
Occasions of overeating*	48.6	33.7	47.4	37.8	38.9	38.4	38.1	34.9	39.9
At the weekend	22.4	18.5	30.2	23.0	21.8	21.5	25.2	21.3	22.9
When feeling (slightly) depressed	21.5	16.3	31.6	30.1	12.2	20.7	23.8	21.7	21.4
When watching television	19.9	17.2	25.3	21.0	18.8	18.1	25.7	18.4	20.7
During a day off or holiday	16.4	13.0	23.2	16.6	16.1	15.8	18.3	15.8	16.7
After work or school	15.9	13.9	20.0	18.0	13.7	15.3	17.8	11.8	17.9
Before going to bed	12.4	10.1	16.8	13.2	11.5	11.3	15.8	11.0	13.0
At a party or birthday celebration	11.9	10.1	15.4	11.4	12.5	10.8	15.3	12.5	11.6
When tired	9.4	7.1	14.0	11.2	7.6	8.4	12.9	8.5	9.9
When reading or studying	8.0	7.8	11.2	10.0	7.6	9.9	5.9	11.0	8.0
When relaxing with family or friends	8.8	6.4	13.7	9.1	8.6	8.2	10.9	8.8	8.9
When eating out	8.3	7.1	10.5	8.0	8.6	7.7	9.9	8.1	8.3
At work	8.0	5.2	13.7	7.3	8.8	7.7	8.9	4.8	9.5

BMI – body mass index.

* Overall percentage of respondents who regularly (≥ 1 time a week) experienced overeating in any of the listed high-risk situations.

(OR = 2.36; 95% CI = 1.28–4.35) and people who only irregularly experience overeating (OR = 8.56; 95% CI = 4.85–15.10). Additionally, analyses revealed that people who reported regular overeating were more likely to compensate overeating with increased physical activity (OR = 4.44; 95% CI = 2.38–8.31) and that compensation of occasions of overeating with caloric restriction was positively associated with being overweight or obese (BMI ≥ 25) (OR = 3.09; 95% CI = 1.54–6.19).

Weight gain prevention strategies related to diet and physical activity

A total of 72.9% reported regularly engaging in one of the weight gain prevention strategies over the last month. Nevertheless, the recommended strategies (such as limiting sugar, snack and soft drink consumption) were seldom reported. Limiting sweets and snacks was most often mentioned as a strategy people engaged in (Table 4). Respondents were more likely to report weight gain

Table 3 Proportion of respondents who reported engaging regularly (≥ 1 time a week) in compensatory behaviours in the last month, according to body weight status and sociodemographics ($n = 276$)*

	% of respondents who reported compensatory behaviours once a week or more										
	Total population ($n = 276$)*	BMI (kg m^{-2})		Gender		Age (years)		Educational level		Overeating	
		<25 ($n = 186$)	>25 ($n = 90$)	Female ($n = 138$)	Male ($n = 138$)	20–30 ($n = 201$)	31–40 ($n = 75$)	Low ($n = 97$)	High ($n = 179$)	Irregular ($n = 146$)	Regular ($n = 130$)
Compensating overeating by eating less†	42.0	34.9	56.7	48.6	35.5	42.3	41.3	45.4	40.2	19.5	67.7
On the day before	2.5	1.6	4.4	2.2	2.9	2.5	2.7	1.0	3.4	0.7	4.6
On the same day	14.1	12.9	16.7	15.9	12.3	13.9	14.7	13.4	14.5	4.8	24.6
On the day after	13.4	12.4	15.6	13.8	13.0	13.4	13.3	12.4	14.0	2.7	25.4
Within a few days	12.0	11.8	12.2	14.5	9.4	10.9	14.7	12.4	11.7	2.7	22.3
With breakfast	6.5	4.3	11.1	8.0	5.1	7.0	5.3	8.2	5.6	2.7	10.8
With lunch	9.1	6.5	14.4	8.7	9.4	8.0	12.0	8.2	9.5	4.1	14.6
With dinner	12.7	12.9	12.2	13.8	11.6	12.4	13.3	12.4	12.8	4.8	21.5
Between-meal moments	29.3	24.7	38.9	34.1	24.6	28.4	32.0	30.9	28.5	11.0	50.0
After dinner	13.8	12.4	16.7	17.4	10.1	12.4	17.3	15.5	12.8	6.8	21.5
Compensating overeating by being more physically active†	23.9	23.7	24.4	23.2	24.6	25.4	20.0	23.7	24.0	12.3	36.9
On the day before	2.9	2.2	4.4	1.4	4.3	3.5	1.3	10.0	3.9	1.4	4.6
On the same day	13.8	12.4	16.7	17.4	10.1	12.4	17.3	15.5	12.8	6.8	21.5
On the day after	14.9	12.9	18.9	13.8	15.9	14.9	14.7	14.4	15.1	5.5	25.4
Within a few days	13.4	13.4	13.3	14.5	12.3	13.9	12.0	12.4	14.0	4.1	23.8

BMI – body mass index.

* $n = 276$; for the descriptive data of compensatory behaviours we used the data of the control group only.

† Percentage of respondents who were engaged in any of the listed compensatory behaviours related to diet or physical activity.

Table 4 Proportion of respondents who engaged at least once a week over the last month in any of the behaviours to prevent weight gain related to diet and physical activity, according to socio-demographic subgroup (n = 847)

Weight gain prevention strategies related to diet	BMI (kg m ⁻²)		Gender		Age (years)		Educational level		Overeating	
	<25 (n = 567)	>25 (n = 287)	Female (n = 441)	Male (n = 412)	20–30 (n = 652)	31–40 (n = 202)	Low (n = 272)	High (n = 581)	Irregular (n = 146)	Regular (n = 130)
Limiting fat intake	29.1	40.3	38.6	26.7	31.4	37.6	33.3	32.6	25.2	41.0
Having a regular eating pattern and eating lots of fruit and vegetables	22.3	37.3	35.6	18.5	25.5	33.2	29.0	26.6	22.9	32.0
Limiting sweets and snacks	37.2	58.9	51.9	36.5	41.8	53.0	46.0	43.8	36.0	53.6
Limiting sugar intake and avoiding sweet foods	19.3	34.8	29.0	19.7	22.0	32.7	23.9	24.8	19.7	29.6
Using diet products	18.4	33.0	29.7	16.5	22.9	24.8	26.7	21.7	16.5	30.8
Eating few or no desserts and smaller servings	26.3	42.0	39.7	22.9	28.1	42.8	33.6	30.6	25.7	37.7
Drinking lots of water	17.7	39.7	29.5	20.4	24.0	28.7	26.1	24.7	25.5	25.0
Limiting soft drink and fast-food intake	25.3	39.4	34.8	24.8	28.7	34.2	29.4	30.3	23.2	37.4
High-intensity physical activity	19.7	24.4	22.7	19.8	20.3	24.3	22.8	20.6	19.7	22.8
Moderate-intensity physical activity	19.5	29.7	27.3	18.2	21.8	26.4	27.3	20.9	16.5	29.9

BMI – body mass index.

prevention strategies related to diet (69.6%) than to physical activity (35.4%); only 32.1% reported the recommended combination of dietary and physical activity behaviours.

Compared with men and non-overweight people, women and overweight people were more likely to report weight gain prevention strategies. In addition, the results showed that older people (aged 31–40) were more likely to eat fewer desserts and smaller servings in order to prevent weight gain than younger people (aged 20–30) (Table 5).

Discussion

The results of the present study revealed that nearly half of the respondents reported regular occasions of overeating and compensatory behaviours, and that a majority of the respondents reported engaging in at least one weight gain prevention strategy related to diet or physical activity. Respondents were more likely to report diet-related weight gain prevention than strategies related to physical activity, and only a few respondents reported the combination of dietary and physical activity behaviours to prevent weight gain. Recommended diet-related strategies such as limiting sugar, snack and soft drink consumption did not appear to be very popular. In addition, the results showed that women, overweight people and people who experience regular overeating were more likely to report compensatory behaviours in response to overeating and specific weight gain prevention strategies related to diet and physical activity when compared with men and non-overweight people.

In order to interpret the findings, several limitations of the study must first be acknowledged. Because of the cross-sectional nature of our study, we can only state that although overweight was associated with increased weight control behaviours, no conclusions about causes and effects can be drawn. Furthermore, our results rely on self-reports. Self-reported weight leads to underestimations of true BMI and prevalence of overweight²³, and self-reports of preventive actions may be liable to social desirability bias. Finally, in terms of generalisability of the results, it should be noted that the participants in the current study were recruited from an Internet panel. Although this resulted in high response rates, our sample included a higher proportion of more highly educated people and an under-representation of persons from ethnic minorities when compared with the Dutch population at large in this age group²⁴. Overweight and obesity rates for this age group were very comparable with the census data. In the present study, 33.6% were overweight while 30.5% were overweight in the represented group at large²⁴.

This study was a first step in identifying what people say they do to prevent weight gain. This is especially important for developing future interventions for obesity prevention, since previous studies on weight control were

Table 5 Adjusted odds ratio (OR) and 95% confidence interval (CI) for weight gain prevention strategies among young Dutch adults according to demographic characteristics, weight status and overeating

Characteristic	Limiting fat (<i>n</i> = 855)		Having a regular eat pattern and eating lots of fruit and vegetables (<i>n</i> = 856)		Limiting sweets and snacks (<i>n</i> = 856)		Limiting sugar intake and avoiding sweet foods (<i>n</i> = 856)		Using diet products (<i>n</i> = 855)		Eating few or no desserts and smaller servings (<i>n</i> = 855)		Drinking lots of water (<i>n</i> = 851)		Limiting soft-drink and fast-food intake (<i>n</i> = 855)		Moderate-intensity physical activity (<i>n</i> = 851)		High-intensity physical activity (<i>n</i> = 849)		
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	
Age (years)																					
20–30	0.85	0.60–1.21	0.78	0.54–1.14	0.79	0.56–1.11	0.70	0.48–1.02	1.13	0.75–1.69	0.56	0.40–0.79	1.12	0.76–1.65	0.94	0.65–1.35	0.90	0.61–1.33	0.84	0.57–1.25	
31–40	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	
Gender																					
Female	1.67	1.24–2.56	2.45	1.79–3.45	1.90	1.42–2.53	1.71	1.23–2.38	2.09	1.48–2.94	2.35	1.71–3.20	1.75	1.26–2.43	1.61	1.18–2.19	1.61	1.15–2.25	1.17	0.84–1.64	
Male	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)		(referent)		(referent)	
Educational level																					
Low	1.00	0.73–1.37	0.78	0.66–1.29	0.95	0.70–1.29	1.10	0.77–1.55	0.78	0.55–1.10	0.90	0.65–1.24	0.99	0.70–1.39	1.09	0.79–1.51	0.71	0.51–1.01	0.88	0.62–1.26	
High	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)		(referent)	
Weight status																					
Overweight (BMI > 25 kg m ⁻²)	1.49	1.08–2.06	1.96	1.40–2.75	2.21	1.62–3.01	1.98	1.41–2.79	2.21	1.56–3.16	1.70	1.23–2.36	3.40	2.41–4.79	1.80	1.30–2.49	1.62	1.14–2.30	1.22	0.85–1.75	
Normal (BMI < 25 kg m ⁻²)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)		(referent)		(referent)	
Overeating																					
Regularly (> 1 time a week)	1.89	1.40–2.54	1.37	1.00–1.88	1.81	1.34–2.40	1.50	1.09–2.09	2.00	1.43–2.81	1.55	1.14–2.10	0.79	0.57–1.10	1.79	1.31–2.43	1.20	1.42–2.78	1.15	0.82–1.61	
Irregularly (< 1 time a week)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)	1.00	(referent)		(referent)		(referent)	

BMI – body mass index.

OR adjusted for age, gender, educational level, occasions of overeating and intervention type used.

focused mainly on weight loss rather than on preventing weight gain. As in the studies on weight loss, we found that only low numbers of respondents reported the combination of dietary and physical activity behaviours to prevent weight gain, and that behaviours related to diet were more common^{6,25}. Additionally, the results of the present study clearly show that weight gain preventive behaviours vary according to gender and weight status, and frequency of overeating.

As has also been previously reported in studies on weight loss, the results of the present study showed that women are more likely to report engaging in weight gain preventive behaviours, despite the fact that more men than women are overweight^{21,22,26,27}. The fact that overweight people were more likely to report occasions of overeating, some compensatory behaviours and weight gain prevention strategies may be due to the fact that they may be more aware of such issues and try even harder to prevent further weight gain. Furthermore, the results showed that people who are aware of occasions of overeating appeared to use different and more varied weight gain prevention strategies. Because of the high frequency of overeating, these people might have more reason to act to prevent weight gain. It could also be that people who actively prevent weight gain report more overeating because they are more aware of these high-risk situations. From the present study, there are also some indications that compensatory behaviours related to caloric restriction after occasions of overeating are not protective for overweight. This might be explained by the possibility that compensatory behaviours induce overeating among people such as 'restrained' eaters, who may be more susceptible to overeating prompted by thoughts, emotions and situational cues^{28,29}.

In conclusion, our results suggest that specific high-risk situations for overeating occur frequently, and these may contribute to gradual weight gain. In addition, young Dutch adults who regularly experience overeating are more likely to engage in compensatory behaviours and specific weight control behaviours. This warrants a prospective study on the nature, frequency and duration of these behaviours to examine whether changes in overeating, compensatory behaviours and specific behaviours are related to energy balance and their impact on body weight change³.

In addition, the findings of the present study point to the need for interventions that encourage prevention of weight gain by increasing people's awareness of the importance of combining physical activity with healthy food choices. Such interventions should be aimed at men in particular and should also include people who are not yet overweight in the age group in which weight gain is very likely. Furthermore, it would be advisable to pay attention to the importance of specific weight control behaviours, such as moderate- and

high-intensity physical activity. Finally, we think that it is important to develop obesity prevention messages that focus on providing information about types of weight control strategies that would best support long-term weight control.

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