

Weight Control Attempts among Portuguese Adults: Prevalence, Motives and Behavioral Strategies



Tentativas de Controlo do Peso na População Adulta Portuguesa: Prevalência, Motivos e Comportamentos

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ABSTRACT

Introduction: In Portugal, there are no representative data on how many people are actively trying to control their weight and which strategies and motives underlie those attempts. The aim of this study was to estimate the prevalence of weight loss/maintenance attempts and to identify the associated behavioral strategies and motives, in a representative sample of Portuguese adults.

Material and Methods: Cross-sectional study with a sample of 1098 Portuguese adults. Sociodemographic information, anthropometric data and weight loss/maintenance strategies and motives were assessed by telephone interview.

Results: About 44% of Portuguese adults (53% women and 35% men) are actively trying to control their weight. About 22% of women with normal weight are trying to lose weight while 53% of men and 34% of women with excess weight are not trying to manage their weight. About 49% of men with higher educational level are trying to control their weight, which compares to 32% among the least educated men. The most frequently used strategy to manage weight is regular vegetable consumption and the motives most frequently reported were improving health/preventing diseases and improving wellbeing.

Discussion and Conclusion: More than half of Portuguese women and about one-third of men are actively trying to control their weight, using behavioral strategies which are generally consistent with public health recommendations. The predominant motives are related to improving health and wellbeing. This study contributes to understanding weight management in Portugal, and could be useful in the development of obesity prevention strategies that match the population profile.

Keywords: Behavior; Obesity; Overweight; Portugal; Weight Loss.

RESUMO

Introdução: Em Portugal não existem dados atuais sobre tentativas de controlo do peso nem sobre estratégias e motivos na base dessas tentativas na população. Este estudo teve como objectivos determinar a prevalência das tentativas de perda/manutenção do peso e identificar as estratégias comportamentais e os motivos associados, numa amostra representativa da população adulta portuguesa.

Material e Métodos: Estudo transversal constituído por 1098 indivíduos adultos. A informação sociodemográfica, os dados antropométricos e as estratégias e motivos associados à perda/manutenção do peso foram recolhidos por entrevista telefónica.

Resultados: Cerca de 44% dos adultos portugueses (53% de mulheres e 35% dos homens) estão ativamente a tentar controlar o peso. Salienta-se que 22% das mulheres com peso normal tentam perder peso e que 53% dos homens e 34% das mulheres com peso excessivo não o fazem. Entre os homens, 49% com nível educacional superior estão a tentar controlar o peso *versus* 32% com nível educacional básico. A estratégia mais frequentemente adoptada para gerir o peso é o consumo regular de hortícolas e os motivos mais referenciados são melhorar a saúde/prevenir doenças e melhorar o bem-estar.

Discussão e Conclusão: Mais de metade das mulheres e cerca de um terço dos homens em Portugal estão ativamente a tentar gerir o seu peso, utilizando estratégias comportamentais consistentes com as recomendações de saúde pública. Os motivos de saúde e bem-estar predominam sobre os restantes. Este estudo contribui para o conhecimento da gestão do peso em Portugal, alertando para o desenvolvimento de estratégias de prevenção da obesidade adequadas ao perfil da população.

Palavras-chave: Comportamento; Excesso de Peso; Obesidade; Perda de Peso; Portugal.

INTRODUCTION

Obesity represents one of the most important public health challenges in developed societies and its prevalence increased worldwide over the last few decades.¹ The most recent data on prevalence published in Portugal found that approximately 67% of adult men and 58% of women are overweight or obese [Body Mass Index (BMI) ≥ 25 kg/m²].² A genetic predisposition and also social, economic, cultural and environmental changes underlying the aetiology of this pathology.¹ Obesity increases the risk of different chronic diseases and international guidelines regarding weight management in adults show that changes in lifestyle leading to a sustainable 3-5% weight loss result in major improvements in risk factors for these diseases.³ However, most weight-

loss interventions have only shown short-term results with weight loss usually recovering in three to five years. In fact, long-term maintenance of weight-loss remains a challenge. For all these reasons, many people's lifestyle remain focus on weight-control attempts.^{4,5}

There are several guidelines regarding strategies and behaviours related to nutrition and physical activity aimed at long-term weight management. For instance, the National Institute for Health and Care Excellence (NICE)⁶ recommends fibre-rich food intake, eating at least 5 portions of fruit and vegetables each day, reducing caloric and fat intake, reducing consumption of alcoholic and sugary beverages, daily breakfast consumption, reducing

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sedentary behaviours and daily physical activity (among others). The major current weight management strategies in literature recommend reducing caloric intake and increasing physical activity, in an individualized manner.⁷⁻¹⁰ However, beyond these health promotion strategies, studies show that sometimes other potentially harming weight control procedures are also used (examples of which are the use of laxatives, diuretics, food supplements and prolonged fasting).^{11,12} Weight-loss attempts are most usually health-related whilst physical appearance and physical and psychological wellbeing are other commonly associated motives.^{13,14}

In Portugal, this subject has been neglected and there are no representative data in the current scientific literature allowing for conclusions regarding the number of people that are actively engaged in weight-control attempts, i.e. weight-loss or weight-maintenance, which strategies are specifically used for these purposes and on which motives are these attempts based. Therefore and due to the increasing importance given to weight increase³, a better understanding of Portuguese people's behaviour regarding weight control, including strategies and motives, would be useful to address public health policies and to promote more efficient weight management strategies in the adult Portuguese population. Our study aimed to determine the prevalence of weight-loss and weight-maintenance attempts in a representative sample of Portuguese adults, their behavioural strategies regarding nutrition and physical activity, as well as their motives associated to weight control.

MATERIAL AND METHODS

The participant selection was based on a probability sampling of phone numbers, in which fixed as well as mobile numbers were included. The fixed-network phone numbers were randomly generated ranked by Health Region, in proportion to the population corresponding at the time to that geographical area. According to the results of the 2010/2011 Portuguese Family Expenditure Survey (*Inquérito às Despesas das Famílias 2010/2011*),¹⁵ 67.7% of the family households had a fixed phone and 87.7% a mobile phone, an estimated 1.2 times more mobile numbers compared to fixed. Therefore, it was established that 83% of the phone calls would be addressed to the mobile network, divided between the three major Portuguese telephone companies (TMN, Optimus and Vodafone) and 17% would be addressed to the fixed network, divided between the 51 different national codes. The selection and data collection regarding our group of participants was carried out by researchers at the Epidemiology Department in the *Instituto de Medicina Preventiva* at the Faculty of Medicine of the University of Lisbon, based on telephone interviews and held during September 2012. These were carried out on working days and all researchers were trained for data collection.

The family households were selected through a random phone number digit selection. As this method could select both listed and non-listed phone numbers, potential participants in mainland Portugal and Azores/Madeira islands were reached based on previously defined telephone lists. In order to ensure representativeness by gender and age group, a power calculation deemed it was necessary to include 1,068 participants (age groups 18-40 and 41-65) and as such consecutive phone calls were made until the necessary number of participants was reached.

From the 1,847 successfully contacted participants, 363 refused to participate and 386 were excluded due to unmet eligibility criteria – living in collective accommodations, living in Portugal for less than one year at the time of the interview or of non-Portuguese nationality, unable to accurately respond to questions or being pregnant or nursing mothers. Our group included 1,098 eligible participants, i.e. with Portuguese nationality, living in a private accommodation and aged 18 to 65. All the participants gave their free verbal, specific and informed consent before participation in the study, according to the approved protocol.

Our study was approved by the Ethics Committee for Health at the *Hospital de Santa Maria*. The national regulation regarding personal data confidentiality and protection was taken into account (file nº 10026/2012 from the National Data Protection Committee [*Comissão Nacional de Proteção de Dados*]) and therefore no personal database was created.

A specific questionnaire ([Appendix](#)) was developed for this study, based on the psychometric scores recommended in the literature, including 11 socio-demographic questions involving participant's age, place of residence, marital status, schooling and socioeconomic status (obtained through Graffar's index),¹⁶ 12 questions regarding weight-loss and weight-maintenance attempts, including associated strategies and motives and also 8 questions regarding weight history, including body weight and height at the time of the interview, among others (supplementary document). BMI (kg/m^2) was assessed (based on self-reported body weight and height) and ranked according to WHO (World Health Organization) recommendations¹⁷ as: normal body weight ($\text{BMI} \geq 18.5 \leq 25 \text{ kg}/\text{m}^2$), pre-obesity ($\text{BMI} \geq 25$ and $< 30 \text{ kg}/\text{m}^2$) and obesity ($\text{BMI} \geq 30 \text{ kg}/\text{m}^2$).

Weight-control attempts

The participants described their weight-control attempts over the last 12 months, based on 7 response categories: 1) weight-loss; 2) weight-maintenance preventing weight increase; 3) weight-maintenance preventing weight-loss; 4) weight-increase; 5) no concern regarding body weight; 6) no current attempt, although weight-loss or weight-maintenance had been attempted more than 12 months ago and upon the age of 18; 7) not known/not answered. Categories 3) and 4) and categories 5) and 6) were pooled for the study.

Behavioural strategies

The participants that described a weight-loss or weight-maintenance attempt were asked to select on a dichotomous scale (yes or no) the strategies they were either currently using (from a list of 18) or had used in the past to weight-management attempt [for instance, 'in order to control body weight, I am following regular physical activity, i.e., at least three times a week' ('*para controlar o seu peso pratica atividade física de forma regular, isto é, pelo menos 3 vezes por semana*')].

Motives

As regards the motives associated to weight-loss or weight-maintenance attempts, the participants responded in a 4-point Likert scale [from 'I strongly disagree' ('*discordo fortemente*') to 'I strongly agree' ('*concordo fortemente*') to a list of 8 motives that attempted body weight control [for instance, 'to improve health in general or to prevent future diseases' ('*para melhorar a saúde em geral ou prevenir doenças futuras*')].

Statistical analysis

IBM Statistical Package for the Social Sciences® (SPSS) software, version 22, was used for data statistical analysis. Results are presented as percentages. The Chi-square test was used for the comparison between groups. Data are expressed with 95% confidence intervals (significance level $\alpha = 0.05$).

RESULTS

In total, 24.3% (n = 267) of the adult Portuguese participants were on a weight-loss attempt, 19.4% (n = 213) on a weight-maintenance attempt (i.e. preventing weight

gain) and 6.5% (n = 71) on a weight gain or maintenance attempt aimed to prevent weight loss (i.e., preventing weight loss); 49.8% (n = 547) took no action regarding their body weight.

Considering the weight-control attempts according to gender (Fig. 1), more than half of female participants were currently on a weight-control attempt (aimed to weight loss or gain), unlike male participants in whom this prevalence was around one third.

More than half of pre-obese or obese participants were on a weight-control attempt (Fig. 2). Even so, approximately 44% of these participants described no intention to control their weight. As regards normal-weight participants, despite denying weight control motives, approximately 39% were on a weight maintenance attempt.

The prevalence of weight-control attempts according to socio-demographic characteristics of our group of participants is shown in Table 1. We did not find any significant difference between the groups of participants on a weight-control attempt regarding the age, marital status and socio-economic status ($p > 0.05$). In females, unlike in male participants, significant differences were found regarding the place of residence: a higher percentage of female participants living in the area of Lisbon and the Tagus Valley (*Lisboa e Vale do Tejo*) and in Madeira were on a weight loss attempt, while in the Alentejo region more female participants were on a weight maintenance attempt. In the remaining regions, despite describing no weight control intention ($p < 0.001$), significant differences regarding schooling status were found in male participants; although most of these were not attempting to control their body weight, more male participants with primary and secondary schooling level were on a weight-loss or on a weight

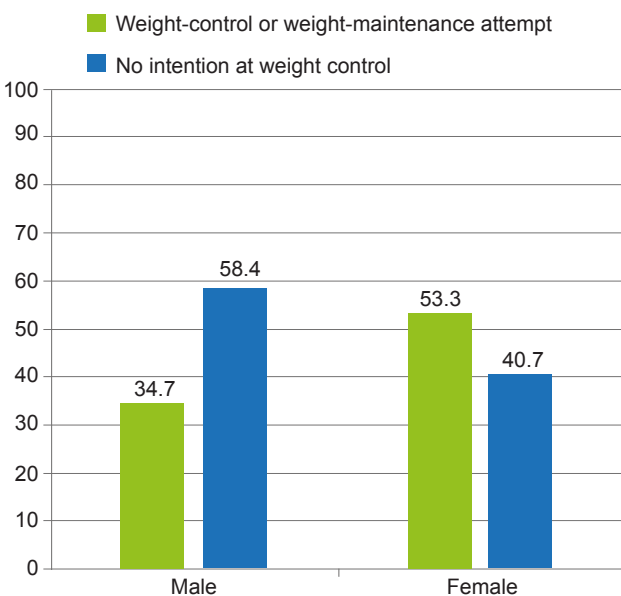


Figure 1 - Prevalence by gender of weight-control attempts in the adult Portuguese population. Values are expressed as a percentage.

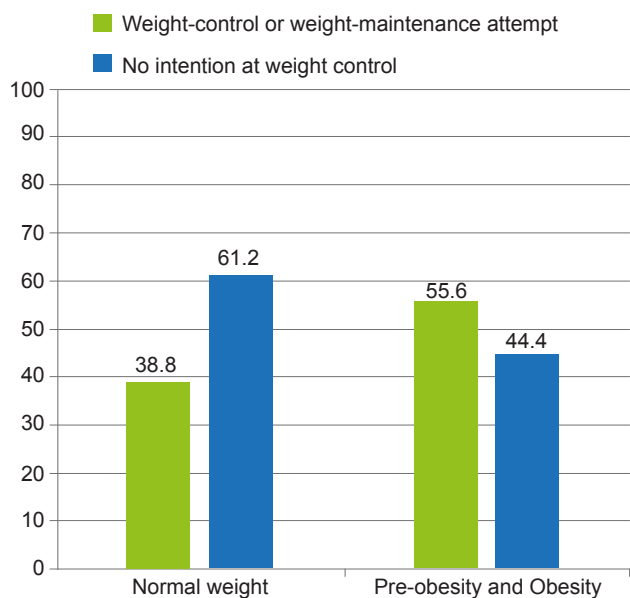


Figure 2 - Prevalence by weight category of weight-control attempts in the adult Portuguese population. Values are expressed as a percentage.

Table 1 - Prevalence of weight-control attempts according to sociodemographic characteristics (male)

Characteristics	Male (n = 565)			p*
	Weight-loss attempt	Weight-maintenance attempt	No intention to control weight	
Age				0.179
18-40	22.3	17.1	60.6	
41-65	16.0	19.1	65.0	
Place of residence				0.958
North	20.8	20.3	58.9	
Center	17.9	15.2	67.0	
Lisbon and Tagus Valley	18.6	16.0	65.4	
Alentejo	12.5	25.0	62.5	
Algarve	23.5	17.6	58.8	
Madeira	25.0	12.5	62.5	
Azores	18.8	25.0	56.3	
Marital status				0.144
Single	25.4	15.4	59.2	
Married/LAC	15.9	19.9	64.2	
Divorced/Widow	18.9	17.0	64.2	
Schooling level				0.009
Basic	16.7	15.3	68.1	
Secondary	20.5	14.1	65.4	
High	22.2	26.4	51.4	
Socioeconomic status				0.145
High	20.4	23.4	56.2	
Medium	17.6	14.5	67.9	
Low	22.2	13.9	63.9	
Body Mass Index				< 0.001
Normal weight	9.8	17.3	72.8	
Pre-obesity	23.5	21.7	54.8	
Obesity	46.3	7.4	46.3	

Values expressed as a percentage

* Chi-square test for comparison between groups (significant differences appear in bold); LAC – living as a couple.

maintenance attempt ($p = 0.009$). As expected, a higher percentage of pre-obese and obese female participants were on a weight-loss attempt, while more normal-weight female participants were on weight maintenance attempt or passive players regarding their body weight ($p < 0.001$). In contrast, the same percentage of obese male participants were on a weight-loss attempt and had no intention to control the weight; in addition, more normal-weight and pre-obese male participants displayed no intention to control their body weight ($p < 0.001$).

The regular consumption of vegetables during the main meals was the most frequent behavioural strategy adopted by participants, aimed either to weight-loss or to

weight-maintenance (Table 2). Frequent strategies used by more than half of the participants (aimed towards weight management) included: regular consumption of (i) soup at main meals, (ii) intake of water rather than other beverages, (iii) breakfast, (iv) a regular mid-morning and mid-afternoon snack consumption, (v) small portions, (vi) regular physical exercise and (vii) and increased awareness regarding nutrition and physical activity and food selection in a conscientious way. Some strategies were significantly more prevalent in female participants on a weight-loss attempt, namely regular breakfast consumption ($p = 0.042$), receiving orientation by a specialist ($p = 0.001$), taking medicines or nutritional supplements ($p < 0.001$), attending to weight-

Table 1 - Prevalence of weight-control attempts according to sociodemographic characteristics (female)

Characteristics	Female (n = 533)			p*
	Weight-loss attempt	Weight-maintenance attempt	No intention to control weight	
Age				0.206
18-40	29.3	25.5	45.2	
41-65	36.6	21.8	41.6	
Place of residence				< 0.001
North	25.8	26.3	47.8	
Center	26.0	27.6	46.3	
Lisbon and Tagus Valley	49.2	13.3	37.5	
Alentejo	30.8	46.2	23.1	
Algarve	39.3	14.3	46.4	
Madeira	71.4	14.3	14.3	
Azores	21.4	35.7	42.9	
Marital status				0.190
Single	27.3	30.2	42.4	
Married/LAC	35.7	20.4	43.9	
Divorced/Widow	35.4	21.5	43.1	
Schooling level				0.097
Basic	32.6	18.6	48.8	
Secondary	36.2	24.1	39.7	
High	31.3	29.9	38.9	
Socioeconomic status				0.249
High	36.3	26.9	36.8	
Medium	29.8	22.7	47.5	
Low	39.3	14.3	46.4	
Body Mass Index				< 0.001
Normal weight	22.1	27.0	50.9	
Pre-obesity	44.4	20.5	35.1	
Obesity	56.3	14.1	29.7	

Values expressed as a percentage

* Chi-square test for comparison between groups (significant differences appear in bold); LAC – living as a couple.

control programs ($p = 0.001$), taking laxatives or diuretics ($p = 0.001$) and inducing vomiting or prolonged fasting ($p = 0.016$).

When comparing the strategies used for weight-control by gender, six of these showed significant differences; a higher percentage of male participants were on regular physical activity ($p = 0.004$) and a higher percentage of female participants described drinking water rather than other beverages ($p < 0.001$), consuming small portions ($p < 0.001$), having regular mid-morning and mid-afternoon snacks ($p = 0.001$), selecting food in a sensible way ($p < 0.001$), taking breakfast regularly ($p = 0.011$), receiving orientation from a specialist ($p = 0.002$), taking into

account calories in each meal ($p = 0.019$), on medicines or nutritional supplements ($p < 0.001$), laxatives or diuretics ($p = 0.001$), attending a weight-control program ($p = 0.009$) and following fad diets ($p = 0.016$).

Amongst the most frequent weight-control motives described by participants were the intentions to globally improve health or prevent future diseases and to improve daily well-being (> 90%) (Table 3). When compared to females, a higher percentage of male participants were on a weight control attempt aimed to improve physical condition, allow a more comfortable practice of sports ($p = 0.002$) as well as intended to meet specific requirements associated to occupation ($p = 0.040$). On the other hand, a

Table 2 - Behavioural strategies used to control weight, according to weight-control motive (male)

Strategies	Homens (n = 196)		
	Weight-loss attempt	Weight-maintenance attempt	Total
Regular consumption of vegetables at the main meals	42.6	41.0	83.6
Regular consumption of soup at the main meals	36.4	33.8	70.3
Drinking water rather than other beverages	34.9	31.3	66.2
Regular consumption of breakfast	31.1	29.0	60.1
Mid-morning/mid-afternoon snack regular consumption	32.1	27.6	59.7
Eating small portions	33.2	26.4	59.6
Regular physical activity	28.9	26.8	55.7
Searching for information on nutrition/physical activity	29.0	25.9	54.9
Nutrition selection in a conscientious fashion	27.7	26.7	54.4
Eating slowly and chewing the food well	23.2	23.7	46.9
Receiving orientation by a specialist	10.2	6.6	16.8
Accounting for calories in each meal	6.1	3.1	9.2
Keeping nutrition/physical activity records	3.1	4.1	7.1
Taking medicines/nutrition supplements	3.6	1.0	4.6
Attending a weight-control program	2.6	1.5	4.1
Taking laxatives/diuretics	2.6	1.0	3.6
Inducing vomiting; prolonged fasting	2.6	0.5	3.1
Following fad diets	0.5	1.0	1.5

Values are expressed as percentages. Superscript numbers appear in descending order.

higher percentage of female participants were on a weight control attempt aimed to keep or to obtain a comfortable physical appearance ($p = 0.001$), to improve body-related self-esteem ($p < 0.001$) and to prevent discrimination or feel more integrated in society ($p = 0.009$). Significant differences were also found regarding the motives related to weight-loss vs. weight maintenance attempts in both genders: compared to participants who were on weight-loss attempts, a higher percentage of male participants were on a weight maintenance attempt aimed to meet specific requirements related to their occupation or profession ($p = 0.007$), to prevent discrimination or feel more integrated in society ($p = 0.049$); in addition, a higher percentage of female participants who were on weight-loss attempts aimed to improve their daily well-being ($p = 0.023$) as well as to improve body-related self-esteem ($p = 0.043$), compared to the female participants who were on weight maintenance attempts.

DISCUSSION

In our study, we found that approximately 44% of the adult Portuguese participants were actively on a weight-

control attempt. In particular approximately 24% were on a weight-loss attempt and approximately 19% on a weight maintenance attempt with a higher prevalence of both indicators found in female participants. In the current literature, only one study involving a group of participants representative of the adult Portuguese population analysed this subject and found, back in 2001, that 16% of the adult Portuguese participants were on a weight-control attempt.¹⁸ The increase in weight-control attempts found in our study reveals the tendency regarding the prevalence of obesity in the Portuguese population,² in line with other populations. For instance, in the USA, data from the Behavioural Risk Factor Surveillance System showed that 32.3% percentage of adult people in 1989 and 37.3% in 1999 were on a weight-loss attempt^{19,20}. Data from the National Health and Nutrition Examination Survey showed a 32.9% prevalence of weight-loss attempts in 1988-1994, rising to 48% in 2003-2008.^{8,21} Beyond the increase of obesity, other factors may also help to understand the growth in weight-control attempts, such as the changes in social rules regarding obesity and its risks, the increasing number of programs and products aimed to control body weight (both public and commercial)

Table 2 - Behavioural strategies used to control weight, according to weight-control motive (female)

Strategies	Female (n = 284)		
	Weight-loss attempt	Weight-maintenance attempt ^{††}	Total [†]
Regular consumption of vegetables at the main meals	51.1	37.2	88.3 ¹
Regular consumption of soup at the main meals	41.7	31.8	73.5 ⁵
Drinking water rather than other beverages	47.3	36.7	84.1 ^{2***}
Regular consumption of breakfast	39.0	32.3 [*]	71.3 ^{7*}
Mid-morning/mid-afternoon snack regular consumption	41.7	32.9	74.6 ^{4**}
Eating small portions	43.2	32.5	75.7 ^{3***}
Regular physical activity	23.4	18.8	42.2 ^{10**}
Searching for information on nutrition/physical activity	34.8	25.9	60.6 ⁸
Nutrition selection in a conscientious fashion	40.4	31.9	72.3 ^{6***}
Eating slowly and chewing the food well	29.1	22.0	51.1 ⁹
Receiving orientation by a specialist	21.3	7.8 ^{**}	29.1 ^{11**}
Accounting for calories in each meal	11.3	5.3	16.7 ^{12*}
Keeping nutrition/physical activity records	6.4	2.5	8.8 ¹⁶
Taking medicines/nutrition supplements	15.6	1.1 ^{***}	16.7 ^{13***}
Attending a weight-control program	9.2	1.4 ^{**}	10.6 ^{15**}
Taking laxatives/diuretics	10.3	1.8 ^{**}	12.1 ^{14**}
Inducing vomiting; prolonged fasting	3.9	0.4 [*]	4.3 ¹⁸
Following fad diets	4.6	1.4	6.0 ^{17*}

Values are expressed as percentages. Superscript numbers appear in descending order. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (Chi-square test for comparison between groups).

† Differences between genders. †† Differences between weight-loss and weight-maintenance attempts.

and a higher importance attributed to body weight or shape by the population, health in general or to inter-relationships.

When considering weight-control attempts by BMI category, the 22.1% percentage of normal weight female participants on a weight-loss attempt should be mentioned. Yaemsiri *et al.*⁸ found that approximately 29% of normal-weight adult American women described themselves as overweight and this self-perception was a strong predictor for weight-loss attempts. In Portugal, Santos *et al.*¹⁸ found that approximately 52% of normal-weight adult women described themselves as being overweight. This aspect was not evaluated in our study and further data would be necessary to determine whether the weight-control attempts in Portuguese normal-weight women are due to a distorted perception of a healthy weight due to a poor body image, in turn leading to a search for a socially valued ideal thinness (or due to a combination of both factors).

Although health benefits related to stable and long-lasting weight-loss are well recognized,³ it should be mentioned that more than half of overweight Portuguese men (53.1%) and 33.5% of women are not on any weight-control attempt (note: 46.3% and 29.7% of obese men

and women, respectively; unreported data). On one hand, scientific evidence shows that long-term success of weight-management is modest and that unsuccessful repeated weight-control attempts may lead to the development of distrust cognitive processes (due to internalised failure and consequently to passivity and scepticism attitudes).^{4,22,23} On the other hand, many people may feel unaware of what a healthy body weight is (regarding their own body weight) and the advantages of attempting to obtain it. These are the cases in which the role of physicians and health authorities is so important in promoting long-term weight-loss and management in population. Finally, there are also cases in which people assume a conscious and informed decision not to attempt weight-loss, possibly due to the fact that other aspects of life and health management are more valued. Further studies will help to identify and determine reasons behind weight-loss efforts in obese people.

The results of our study also show that approximately 49% of male participants with higher education level are actively on a weight-control attempt (when compared to 32 and 35% of male participants with basic and secondary level, respectively). Schooling status has been consistently

Table 3 - Weight-control motives (male)

Motives	Male (n = 196)		
	Weight-loss attempt	Weight-maintenance attempt ^{††}	Total
General health improvement/future disease prevention	49.0	47.4	96.4
Daily well-being improvement	49.0	47.4	96.4
Physical condition/sport practice improvement	43.8	41.2	85.1
Keeping/obtaining a comfortable physical appearance	43.1	41.0	84.1
Body-related self-esteem improvement	41.3	39.3	80.6
Health problem solving/professional counselling	32.5	29.9	62.4
Meeting professional specific requirements	17.3	25.5 ^{**}	42.9
Avoiding discrimination/improved social integration	14.3	19.9 [*]	34.2

Values expressed as percentages. The values regard the 'I agree' and 'I completely agree' responses to each Motive.

* $p < 0.05$; ** $p < 0.01$ (Chi-square test for comparison between groups). † Differences between genders. †† Differences between weight-loss and weight-maintenance attempts.

associated to weight-control attempts in population studies, as well as compliance with recommended public health weight-control strategies, with prevalence increasing as the years of schooling increase.^{11,24} An opposite tendency has been found in the prevalence of obesity in adults,^{25,26} including in the Portuguese population,^{2,27} i.e. obesity is highly more prevalent in people with low schooling level as well as with low socio-economic status. In fact, we found in our study that approximately 47 and 64% of pre-obese and obese participants have a basic schooling, respectively while only 23 and 12% of these have higher schooling (unreported data). Schooling status not only enhance people's income allowing for higher purchase of health-related products and services, but also enhance cognitive skills as well as the access to health-related information that may influence health behaviours, including those directly affecting body weight.²⁵ Therefore, development of strategies promoting weight-control, should take into account the inequality of literacy in the Portuguese population.

The participants on a weight-control attempt described different behavioural strategies. It is encouraging to find that the weight-control strategies most frequently used by participants in our study are in line with the WHO recommendations, as part of the European Charter on Counteracting Obesity.¹ The regular consumption of vegetables and soup, drinking water as the beverage of choice, regular daily breakfast and mid-morning and mid-afternoon snack consumption, regular physical activity and nutritional literacy are healthy lifestyle strategies promoted by the Portuguese National Program of Promotion of Healthy Nutrition (*Programa Nacional para a Promoção da Alimentação Saudável*) issued by the Portuguese Health Directorate General (*Direção-Geral da Saúde*).²⁸ It is important to note that the adopted weight-loss and weight-

maintenance strategies were much the same in both genders, except for six strategies that were considered as especially useful by female participants in the weight-loss stage. Three of these strategies – taking diet supplements (probably with no specific recommendation), taking laxatives or diuretic and inducing vomiting or following prolonged fasting – and also following fad diets (which usually are nutritionally unbalanced) are potentially harmful, the adverse aspects of which become evident on a long-term basis. Despite having been adopted by a small percentage of men and women, in line with other epidemiologic studies,^{11,19,29,30} strategies such as overfeeding behaviours and compulsive eating should be the subject of attention of health promotion entities as these have been associated to failure to control weight.³¹⁻³³

Gender-specific differences were found regarding the adoption of some weight-control strategies. Unlike other studies^{11, 20, 30} in which the same percentage of men and women described physical activity for weight-loss, physical activity was more prevalent in male participants on a weight-control attempt. In addition, female participants described more frequently the use of strategies related to nutrition behaviour (like for instance eating small portions), some being potentially harmful (like for instance taking diet supplements), in line with other studies.^{11,19} The knowledge of strategies aimed at weight-loss and weight-maintenance attempts may be useful in order to determine the interventions for promotion of healthy behaviours and lifestyle aimed at weight-control in these particular populations.

The message that weight-loss has a beneficial role in health, preventing disease as well as general well-being seems to be well accepted by the participants in our study, as these were the most frequently described motives related to weight control. These are in line with international studies showing that improvement of health and well-being

Table 3 - Weight-control motives (female)

Motives	Female (n = 284)		
	Weight-loss attempt	Weight-maintenance attempt ^{††}	Total [†]
General health improvement/future disease prevention	54.3	40.4	94.7 ¹
Daily well-being improvement	53.9	40.8*	94.7 ²
Physical condition/sport practice improvement	40.6	32.4	73.0 ^{5**}
Keeping/obtaining a comfortable physical appearance	53.5	40.1	93.6 ^{3**}
Body-related self-esteem improvement	52.8	40.1*	92.9 ^{4***}
Health problem solving/professional counselling	37.3	28.7	65.9 ⁶
Meeting professional specific requirements	18.8	14.8	33.6 ^{8*}
Avoiding discrimination/improved social integration	26.2	20.1	46.2 ^{7**}

Values expressed as percentages. The values regard the 'I agree' and 'I completely agree' responses to each motive. Numbers in superscript appear in descending order.

* $p < 0.05$; ** $p < 0.01$ (Chi-square test for comparison between groups). † Differences between genders. †† Differences between weight-loss and weight-maintenance attempts.

are the most frequently described motives related to weight-loss.^{14,30} We should note that weight-control motives related to keep or to obtain a good physical appearance and to improve body-related self-esteem were also described by a high percentage of participants, perhaps less influenced by social desirability than by health-related reasons. Together with the intention to prevent discrimination or to feel better integrated in society, these were more described by female participants whilst the male participants more frequently described reasons related to the improvement of physical condition or sporting activity, as well as meeting specific professional requirements. Despite these significant differences by gender and despite women being normally more subject to cultural pressures regarding their body and body weight-control,³⁴ approximately 80% of male participants on a weight-loss or weight-maintenance attempt also described body-related appearance and self-esteem preoccupations, also in line with other studies.³⁰

The results of our study should be interpreted in the light of the fact that the measures used by the participants were self-reported. In some, a bias associated to social desirability³⁵ may enhance the indication to use healthier behavioural strategies regarding weight-control attempts (such as physical activity, for instance) or may reduce the indication to use less healthy strategies (such as inducing vomiting or prolonged fasting, for instance). The self-reported weight and height values may also raise some issues regarding the accuracy of BMI values. Men tend to over-report their weight and height, while women tend to under-report weight and to over-report height,^{36,37} a tendency which is more marked when data are obtained by a telephone interview.³⁸ Therefore, self-reported measurements may lead to under or over-estimated normal weight, pre-obesity or obesity prevalence. However,

some studies suggest that self-reported weight is strongly correlated to objectively measured weight³⁹. Other limitation to this study is the fact of not assessing the efficacy of behavioural strategies, which should be considered in future studies. Despite these limitations, our study involves a national representative sample, therefore allowing for the generalization of results to the adult Portuguese population.

CONCLUSIONS

More than one third of adult Portuguese participants are actively on a weight-control attempt and mostly describe behavioural strategies in line with public health recommendations. Several behavioural strategies related to nutrition and physical activity were found, as well as diverse gender specific weight loss motives. This research has therefore contributed to the understanding weight-control in Portugal, calling for the development of obesity prevention strategies suitable to the Portuguese population.

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CONFLICTS OF INTEREST

The authors declare that there were no conflicts of interest in writing this manuscript.

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REFERENCES

1. World Health Organization European Charter on counteracting obesity. WHO European Ministerial Conference on Counteracting Obesity: Diet and physical activity for health. Istanbul: WHO; 2006.
2. Sardinha LB, Santos DA, Silva AM, Coelho-e-Silva MJ, Raimundo AM, Moreira H, et al. Prevalence of overweight, obesity, and abdominal obesity in a representative sample of Portuguese adults. *PLoS One*. 2012;7:e47883.
3. Jensen MD, Ryan DH, Apovian CM, Ard JD, Comuzzie AG, Donato KA, et al. 2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults: A Report of the American College of Cardiology/ American Heart Association Task Force on Practice Guidelines and The Obesity Society. *J Am Coll Cardiol*. 2014;63:2985-3023.
4. Powell LH, Calvín JE. Effective obesity treatments. *Am Psychol*. 2007;62:234-46.
5. Wadden TA, Phelan S. Behavioral assessment of the obese patient. In: Wadden TA, Stunkard AJ, editors. *Handbook of obesity treatment*. New York: Guilford Press; 2002. p. 186-226.
6. National Institute for Health and Care Excellence (NICE). Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children. London: NICE; 2006 [consultado 2014 Dez 3]; Disponível em: <http://www.nice.org.uk/guidance/cg43>.
7. Andreyeva T, Long MW, Henderson KE, Grode GM. Trying to lose weight: diet strategies among Americans with overweight or obesity in 1996 and 2003. *J Am Diet Assoc*. 2010;110:535-42.
8. Yaemsiri S, Slining MM, Agarwal SK. Perceived weight status, overweight diagnosis, and weight control among US adults: the NHANES 2003-2008 Study. *Int J Obes*. 2011;35:1063-70.
9. Korkeila M, Rissanen A, Kaprio J, Sorensen TI, Koskenvuo M. Weight-loss attempts and risk of major weight gain: a prospective study in Finnish adults. *Am J Clin Nutr*. 1999;70:965-75.
10. Jackson SE, Wardle J, Johnson F, Finer N, Beeken RJ. The impact of a health professional recommendation on weight loss attempts in overweight and obese British adults: a cross-sectional analysis. *BMJ Open*. 2013;3:e003693.
11. Kruger J, Galuska DA, Serdula MK, Jones DA. Attempting to lose weight: specific practices among U.S. adults. *Am J Prev Med*. 2004;26:402-6.
12. Williams L, Germov J, Young A. Preventing weight gain: a population cohort study of the nature and effectiveness of mid-age women's weight control practices. *Int J Obes*. 2007;31:978-86.
13. O'Brien K, Venn BJ, Perry T, Green TJ, Aitken W, Bradshaw A, et al. Reasons for wanting to lose weight: different strokes for different folks. *Eat Behav*. 2007;8:132-5.
14. Hankey CR, Leslie WS, Lean ME. Why lose weight? Reasons for seeking weight loss by overweight but otherwise healthy men. *Int J Obes Relat Metab Disord*. 2002;26:880-2.
15. Instituto Nacional de Estatística IP. *Inquérito às despesas das famílias 2010/2011*. Lisboa: INE; 2012.
16. Graffar M. *Une méthode de classification sociale d'échantillons de population*. Courier. 1956;6:4.
17. World Health Organization. Obesity: preventing and managing the global epidemic. Report of a WHO consultation. WHO Technical Report Series. 2000;894:1-253.
18. Santos O, Sermeus G, Carmo ID, Anelli M, Kupers P, Martin E. In search of weight loss - a four-country survey on what people were doing for losing weight at the turn of the century. *Endocrinol Diabetes Obes*. 2010;4:21-31.
19. Serdula MK, Williamson DF, Anda RF, Levy A, Heaton A, Byers T. Weight control practices in adults: results of a multistate telephone survey. *Am J Public Health*. 1994;84:1821-4.
20. Serdula MK, Mokdad AH, Williamson DF, Galuska DA, Mendlein JM, Heath GW. Prevalence of attempting weight loss and strategies for controlling weight. *JAMA*. 1999;282:1353-8.
21. Villanueva EV. The validity of self-reported weight in US adults: a population based cross-sectional study. *BMC Public Health*. 2001;1:11.
22. Wooley SC, Garner DM. Obesity treatment: the high cost of false hope. *J Am Diet Assoc*. 1991;91:1248-51.
23. Johnson CC, Myers L, Webber LS, Hunter SM. Learned helplessness with excess weight and other cardiovascular risk factors in children. *Am J Health Behav*. 1997;21:51-59.
24. Bish CL, Blanck HM, Serdula MK, Marcus M, Kohl HW, Khan LK. Diet and physical activity behaviors among Americans trying to lose weight: 2000 Behavioral Risk Factor Surveillance System. *Obes Res*. 2005;13:596-607.
25. Yu Y. Educational differences in obesity in the United States: a closer look at the trends. *Obesity*. 2012;20:904-8.
26. Roskam AJ, Kunst AE, Van Oyen H, Demarest S, Klumbiene J, Regidor E, et al. Comparative appraisal of educational inequalities in overweight and obesity among adults in 19 European countries. *Int J Epidemiol*. 2010;39:392-404.
27. Marques-Vidal P, Paccaud F, Ravasco P. Ten-year trends in overweight and obesity in the adult Portuguese population, 1995 to 2005. *BMC Public Health*. 2011;11:772.
28. Direção-Geral da Saúde. Programa Nacional para a Promoção da Alimentação Saudável. Lisboa: DGS [consultado 2014 Abril 22]. Disponível em: <http://www.alimentacaosaudavel.dgs.pt>.
29. Timperio A, Cameron-Smith D, Burns C, Crawford D. The public's response to the obesity epidemic in Australia: weight concerns and weight control practices of men and women. *Public Health Nutr*. 2000;3:417-24.
30. Crawford D, Owen N, Broom D, Worcester M, Oliver G. Weight-control practices of adults in a rural community. *Aust N Z J Public Health*. 1998;22:73-9.
31. Birch LL, Fisher JO, Davison KK. Learning to overeat: maternal use of restrictive feeding practices promotes girls' eating in the absence of hunger. *Am J Clin Nutr*. 2003;78:215-20.
32. Field AE, Manson JE, Laird N, Williamson DF, Willett WC, Colditz GA. Weight cycling and the risk of developing type 2 diabetes among adult women in the United States. *Obes Res*. 2004;12:267-74.
33. Nicklas JM, Huskey KW, Davis RB, Wee CC. Successful weight loss among obese U.S. adults. *Am J Prev Med*. 2012;42:481-5.
34. Rodin J. Cultural and psychosocial determinants of weight concerns. *Ann Intern Med*. 1993;119:643-5.
35. Tourangeau R, Yan T. Sensitive questions in surveys. *Psychol Bull*. 2007;133:859-83.
36. Merrill RM, Richardson JS. Validity of self-reported height, weight, and body mass index: findings from the National Health and Nutrition Examination Survey, 2001-2006. *Prev Chronic Dis*. 2009;6:A121.
37. Oliveira A, Ramos E, Lopes C, Barros H. Self-reporting weight and height: misclassification effect on the risk estimates for acute myocardial infarction. *Eur J Public Health*. 2009;19:548-53.
38. Yun S, Zhu BP, Black W, Brownson RC. A comparison of national estimates of obesity prevalence from the behavioral risk factor surveillance system and the National Health and Nutrition Examination Survey. *Int J Obes*. 2006;30:164-70.
39. Fitzgibbon ML, Stolley MR, Kirschenbaum DS. Obese people who seek treatment have different characteristics than those who do not seek treatment. *Health Psychol*. 1993;12:342-5.

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