

Original

Evidence-based nutritional recommendations for the prevention and treatment of overweight and obesity in adults (FESNAD-SEEDO consensus document). Methodology and executive summary (I/III)

M. Gargallo Fernández¹, J. Basulto Marset², I. Breton Lesmes³, J. Quiles Izquierdo⁴, X. Formiguera Sala⁵ and J. Salas-Salvadó⁶; FESNAD-SEEDO consensus group

¹Endocrinología y Nutrición. Hospital Virgen de la Torre. Madrid (on behalf of SEEDO). ²Grupo de Revisión, Estudio y Posicionamiento de la Asociación Española de Dietistas-Nutricionistas (on behalf of AEDN). ³Unidad de Nutrición Clínica y Dietética. Hospital General Universitario Gregorio Marañón. Madrid (on behalf of SEEN). ⁴Área de Nutrición Comunitaria, Centro Superior de Investigación en Salud Pública. Unidad de Educación para la Salud. Servicio de Programas, Planes y Estrategias de Salud. Dirección General de Investigación y Salud Pública. Conselleria de Sanitat. Generalitat Valenciana (on behalf of SENC). ⁵President of Fundación SEEDO (on behalf of SEEDO). ⁶Unidad de Nutrición Humana. IISPV. Universitat Rovira i Virgili. Reus y CIBER Obesidad y Nutrición. Instituto Carlos III. Madrid (on behalf of FESNAD). Spain.

Abstract

The present study is a consensus document of two Spanish scientific associations, FESNAD (Spanish Federation of Societies of Nutrition, Food and Dietetics Associations) and SEEDO (Spanish Association for the Study of Obesity), about the role of the diet in the prevention and treatment of overweight and obesity in adults. In this part of the document the methodology and the classification of levels of evidence are described.

In order to reach the strongest evidence possible, a systematic review of 543 medical studies dealing with these issues published in the last 15 years (from January 1st 1996 to January 31st 2011) has been conducted.

In the executive summary, along with the obtained evidences, a set of degree-classified recommendations are established. These recommendations could constitute a useful tool to design food guides addressed to the nutritional counseling for obesity and overweight treatment.

(*Nutr Hosp.* 2012;27:789-799)

DOI:10.3305/nh.2012.27.3.5678

Key words: *Obesity. Overweight. Prevention. Treatment. Diet.*

RECOMENDACIONES NUTRICIONALES BASADAS EN LA EVIDENCIA PARA LA PREVENCIÓN Y EL TRATAMIENTO DEL SOBREPESO Y LA OBESIDAD EN ADULTOS (CONSENSO FESNAD-SEEDO). METODOLOGÍA Y RESUMEN EJECUTIVO (I/III)

Resumen

En el presente trabajo se describe la metodología y los grados de evidencia utilizados en la elaboración del documento de consenso de la Federación Española de Sociedades de Nutrición, Alimentación y Dietética (FESNAD) y la Sociedad Española para el Estudio de la Obesidad (SEEDO) sobre el papel de la dieta en la prevención y el tratamiento de la obesidad y el sobrepeso.

Para obtener la mayor evidencia posible se ha efectuado una revisión sistemática de los datos de la literatura médica desde el 1 de enero de 1996 al 31 de enero de 2011 (15 años).

En el resumen ejecutivo, junto a las evidencias alcanzadas, se establecen unas recomendaciones clasificadas según grados que pueden servir de guía y orientación en el diseño de pautas alimentarias dirigidas a la prevención o al tratamiento de la obesidad o el sobrepeso.

(*Nutr Hosp.* 2012;27:789-799)

DOI:10.3305/nh.2012.27.3.5678

Palabras clave: *Obesidad. Sobrepeso. Prevención. Tratamiento. Dieta.*

Correspondence: Manuel Gargallo Fernández.
Hospital Virgen de la Torre.
E-mail: mgar@ya.com
Xavier Formiguera: xavierfs@comb.cat
Jordi Salas Salvadó: jordi.salas@urv.cat

Recibido: 12-XII-2011.
Aceptado: 15-XII-2011.

Abbreviations

BMI: Body mass index.

GI: Glycaemic index.

GL: Glycaemic load.

HDL: High-density lipoprotein.

Kcal: Kilocalories.

LChD: Low-carbohydrate diet.

LDL: Low-density lipoprotein.

LFD: Low-fat diet.

MedDiet: Mediterranean diet.

OECD: Organisation for Economic Co-operation and Development.

SING: Scottish Intercollegiate Guidelines Network (Scottish Intercollegiate Network which develops Clinical Practice Guidelines).

VLCD: Very low calorie diet.

WHO: World Health Organisation.

Introduction-justification

The worldwide obesity prevalence is continually increasing, as demonstrated by recent studies which estimate a mean increase in the body mass index (BMI) of 0.4 kg/m² per decade since 1980.¹ Spain is not an exception to this trend, quite the contrary. Obesity in Spain is reaching alarming levels, and comparative studies with other European countries place us at the top of the table,² with prevalence figures of around 25%. A report by the Organisation for Economic Co-operation and Development (OECD)³ on the situation concerning obesity in Europe reached the following conclusion in the case of our country: "... obesity rates for Spanish adults are higher than the OECD average and the child rates are among the highest in the OECD. In Spain, two out of three men are overweight and one in six people suffer from obesity. One in three children aged between 13 and 14 years old is overweight. The OECD projects that the proportion of adults who are overweight (in Spain) will increase by 10% in the next 10 years".

Due to this situation and, irrespective of the institutional measures taken by public health authorities, as health professionals we must be responsible for implementing measures to prevent obesity and treat people who already have this problem.

When tackling the prevention and treatment of obesity it is evident that diverse causal and synergically acting factors must be taken into account. Some of these factors cannot be modified, (genetic-hereditary, foetal, etc.), but others on which we must focus our efforts, are potentially modifiable (diet, physical activity, exercise, maternal breastfeeding, etc.). As a result, the treatment and prevention of obesity must be tackled in a comprehensive manner, with different strategies which cover changes in lifestyle, pharmacological treatment, bariatric surgery, etc. without being limited to a single approach.

However, even with all possible measures being considered, diet constitutes the cornerstone of both prevention and treatment.

With respect to prevention, if we analyse the predisposing factors of obesity in Spain, it is worth recalling a study published in 2011 by the Spanish Food Safety and Nutrition Agency (AESAN). On one hand, in this study a deviation in the recommended energy profile was observed because the percentage intake of proteins and fat is greater than the recommended levels, and for carbohydrates it is lower than those levels. The overall intake of saturated fatty acids to total energy also exceeds recommendations. On the other hand, only 37.8% of the population states eating fruit every day. In the case of vegetables, the percentage of the population which eats them every day is also low (43%). Regarding physical activity, 46% of those surveyed declare that they do not practice any sport and they do not walk for at least 30 minutes per day.^{4,5}

Moreover other studies have revealed that, in the last 40 years, eating patterns in Spain have gradually moved away from a healthy diet,⁶ that currently 61% of energy intake comes from "highly processed" food⁷ and that 71% of Spaniards could be classified as "sedentary".⁸ Although there are differences in these calculations in different studies or consensuses,^{6,9-11} there is no doubt that in Spain both the diet and physical activity are going away from recommendations.

This is important data if you consider that the main causes of the current pandemic of obesity are, according to the World Health Organisation (WHO), sedentary lifestyles and diets with a high fat content.¹² As stated above, both factors are largely a result of changes taking place in society and in the behavioral patterns of communities.^{12,13}

Dietary aspects also play an essential role in the therapeutic approach, without which the treatment is practically condemned to failure. The usefulness of other types of interventions such as physical exercise is, at least, debatable if not included within the context of dietary treatment. In any event, exercise must be an important part of weight-loss programmes. The medicines which have demonstrated their effectiveness in reducing weight in recent years (orlistat, sibutramine and rimonabant) achieved their results in clinical trials in which the patients were following a hypocaloric diet; furthermore, it must be taken into account that most of these medicines have an anorexigenic effect, so ultimately their pharmacological action was based on making it easier to follow a diet. Even surgical treatment of obesity can fail on the long term if the patient does not alter their eating habits.

Despite this essential role, it must be recognised that, even when it is carried out correctly, traditional dietary treatment does not continually achieve totally satisfactory results. In this respect we must recall the words of Garrow, who said "most obese people who start dietary treatment give it up; of those that continue, most do not lose weight; and of those that lose weight, most will

regain it".¹⁴ Undoubtedly, the main problem with dietary treatments is the first of these points: the lack of continuation suffered by any type of diet.

In light of the above, we will understand that the subject of the prevention and dietary treatment of obesity is far from being a closed issue, but rather medical literature is providing more and more information which obliges us to rethink traditional concepts, or at least not to be dogmatic in this respect and to have an open mind with other approaches. In this sense, for several years it has been possible to note the appearance in scientific literature of numerous nutritional proposals which differ from the traditional dietary schemes prescribed for obesity. Furthermore, the huge abundance of popular unorthodox diets, known as "miracle diets", many of which are based on dietary modifications which bear no resemblance to the clinical guidelines,¹⁵ have forced experts, scientific associations and health agencies to review every aspect of the composition of the obese patient's diet in order to adopt a position¹⁶ and offer responses to the potential advantages of dietary patterns which differ from those which are usually prescribed. Furthermore, diverse information has been emerging about the relationship between certain habits and excess weight and obesity, such as the frequency of meals and snacks between meals, episodes of compulsive consumption of food and drink outside the home, exclusive maternal breastfeeding, etc. There is also research into nutritional factors such as fats, the type of carbohydrates, the glycaemic index (GI) of food and dietary fibre.

Moreover, in addition to the preparation of personalised diets, there is a growing tendency to treat obese patients with formula diets as a replacement for some meals. This dietary approach, which combines formula diets with regular meals, may represent an interesting tool for treating obesity which helps to improve the poor results of traditional dietary treatment and opens up a new approach which is yet to be properly developed.

However, this abundance of data can contribute to cause greater confusion rather than clarifying the scientific reality of this issue. Therefore, the FESNAD and the SEEDO understand that, regarding the treatment and prevention of obesity through the diet, it is necessary to review the scientific evidence which is currently available in order to establish a series of conclusions on the possible clinical usefulness and practical application of the different dietary possibilities so that they can be classified according to their degrees of evidence.

Therefore, the purpose of this consensus is to examine the scientific data published to date on the effectiveness, advantages and disadvantages of the different nutritional approaches which have been trialed for the prevention and treatment of obesity. With the outcome of this review we aim to provide a useful tool for any professional who has to recommend a diet for the treatment of an obese patient, or who has to design nutritional strategies for the prevention of obesity.

Finally, it must be noted that the opinions expressed in this document have been agreed upon between the representatives of the different associations listed in the authorship and, as such, they represent the position of all of them.

Scope, objectives and methodology

Scope and objectives

The aim of this document is to provide scientific evidence which makes it possible to homogenise dietary practices associated with the prevention and dietary-nutritional treatment of obesity.

Its applicability is restricted to adults (excluding pregnancy and breastfeeding) who are not suffering from malnutrition or diseases whose incidence is not high in Spain, or who live in countries with a low development index as defined by the United Nations.¹⁷ Additionally, the conclusions of this consensus are not necessarily applicable to patients with obesity and type 2 diabetes because, as detailed in the methodology, those studies which solely focus on obese patients with type 2 diabetes were excluded.

Dietary-nutritional aspects associated with surgery, pharmacology, physical exercise and psychology have not been reviewed.

The purpose of this document is to strengthen the daily work of the health professionals involved in the food, diet and nutrition of humans in relation to the prevention and treatment of overweight and obesity in adults.

Methodology

At the beginning of this study the team of writers (experts on the matter and members of the scientific associations involved in this consensus) established the strategy and methodological aspects to develop in order to complete this consensus, considering the following points of interest:

- the approach, the scope and the objectives of the document,
- identification of the recommendations which could presumably have the greatest impact on the care and health outcomes of the population in relation to the prevention and treatment of obesity,
- establishing general aspects to address,
- writing of specific questions to which the document is intended to respond,
- selection of a common methodology for the drawing up of this document,
- design of a general index of the document,
- proposal of experts in the prevention and treatment of obesity for the external, independent and multidisciplinary review of the document,

Table I
*Levels of evidence*¹⁹

<i>Levels of evidence</i>	
1	1++ High quality meta-analysis, systematic reviews of RCT's or RCT's with a very low risk of bias.
	1+ Meta-analysis well executed, systematic reviews of RCT's or RCT's with a low risk of bias.
	1- Meta-analysis, systematic reviews of RCT's or RCT's with a high risk of bias.
2	2++ High quality systematic reviews of case-control or cohort studies.
	2+ High quality case-control or cohort studies with a very low risk of confusion or bias and a high probability that the relationship is causal.
	2- Well executed case-control or cohort studies with a low risk of confusion or bias and a moderate probability that the relationship is causal.
3	Non-analytical studies (e.g. clinical cases, case series).
4	Opinion of expert(s).

- debate, acceptance and, where applicable, ratification of the scientific associations involved in the consensus.

Subsequently there was a period of time to share any documents which covered the general relevant areas of the index of interest to any of the experts on the team of writers.

In line with the proposal by the National Health System,¹⁸ the criteria for which sources of information to use were based on the Medline database which is used to compile systematic reviews or individual studies. Eventually, other databases were consulted (Cochrane Library, Elsevier, Embase, Excelenciaclinica.net, Clinical practice guidelines in the National Health System, Scielo, Scirus and ScienceDirect).

For each section the scientific bibliography published between 1st January 1996 and 31st January 2011 (15 years) was reviewed, when possible giving preference to studies carried out with Spanish or European people, and excluding studies carried out with: malnourished subjects; those with type 2 diabetes; studies associated with diseases with little incidence or prevalence in Spain; or carried out in countries with a low development index as defined by the United Nations.¹⁷

Furthermore, the following inclusion criteria were followed: studies carried out with humans; with a minimum of 10 subjects per group; preference for large sample sizes, if available; dropout rate: less than 20% if the study lasts for less than 1 year, and less than 40% if the study lasts for one year or above; focused on the adult age (excluding studies carried out with pregnant or breastfeeding women); and in the section entitled "Prevalence of obesity" priority was given to studies carried out with a healthy population or subjects.

To convert the questions under evaluation in each section into specific search strategies, documental language was used, using, when available, the terms contained in the thesaurus of the National Library of Medicine of the United States (Mesh) and the descriptors and search links (logical operators) were defined.

The search strategies are not included in this document, but they are available on request.

The system selected to classify evidence or formulate recommendations was the one proposed in 2008 by the European Association for the Study of Obesity¹⁹ which consists of a simplified version of the system proposed by the Scottish Intercollegiate Guidelines Network (SING).²⁰

The scale proposes two attributes to assess the quality of the scientific evidence available (levels of evidence): the design of the study and the risk of bias. For classifying the design of the study the numbers 1 to 4 are used. To assess the risk of bias, signs were used to show the extent to which these key criteria associated with this potential risk are met (++, + and -) (table I). On the basis of this evaluation of the quality of the scientific evidence of the studies, grades are used to classify the strength of the recommendations (table II).

For the assessment and synthesis of the scientific evidence the internal validity of the studies, the presence or absence of statistical significance, the accuracy of the results (confidence intervals, importance and magnitude of outcomes, etc.), and their applicability were taken into account. In order to formulate recommendations, firstly the overall quality of the scientific evidence was assessed and then the strength of the recommendations was graded, as detailed above. The quantity, quality and consistency of the scientific evidence, the generalisation of the results, their applicability and their clinical impact were also taken into account.

Once the team preparing this document had an advanced draft for it, an independent external review stage was carried out by external reviewers and by representatives of the different scientific or professional associations belonging to the FESNAD, making it possible to increase the external validity of the document, to clarify and enrich the guidelines, to ensure the accuracy of its recommendations and to ensure that the final product has been adapted to the environment for which it is intended.

Table II
Levels of recommendation¹⁹

<i>Levels of recommendation</i>	
<i>A</i>	At a minimum a meta-analysis, systematic review or RCT with a classification of 1++ and directly applicable to the target population, or a systematic review or RCT with a body of evidence consisting mainly of studies graded at 1+, directly applicable to the target population, and demonstrating overall consistency in its outcomes.
<i>B</i>	A body of evidence which includes studies graded at 2++, directly applicable to the target population and which demonstrates overall consistency in its outcomes, or evidence extrapolated from studies graded at 1++ or 1+.
<i>C</i>	A body of evidence which includes studies graded at 2+, directly applicable to the target population and which demonstrates overall consistency in its outcomes, or evidence extrapolated from studies graded at 2++.
<i>D</i>	Evidence of level 3 or 4, or evidence extrapolated from studies graded at 2+.

Studies classified as 1- and 2- must not be used in the process of preparing recommendations because of their high bias potential.

EXECUTIVE SUMMARY OF EVIDENCE AND RECOMMENDATIONS

Diet in the prevention of obesity

1. Energy balance and body weight

1.1. Energy density

EVIDENCE

1. Dietary patterns of high energy density may lead to body weight increase in adults (Evidence Level 1+).

RECOMMENDATIONS

1. Body weight increase may be prevented through the use of diets containing lower energy density food (Recommendation Degree A).

1.2. Energy balance and obesogenic environment

EVIDENCE

2. The absence of supermarkets with fruit and vegetables availability, or their sitting at great distances—in particular from human settlements with low socio-economic levels—are conditioning factors for a higher population mean Body Mass Index (BMI) (Evidence Level 1+).

RECOMMENDATIONS

2. Strategies should be implemented which render possible food availability and access to healthy food, particularly fruit and vegetables, so as to generate favourable environments for maintaining a healthy population mean BMI (Recommendation Degree A).

1.3. Energy balance: eating out of home

EVIDENCE

3. The habitual intake of “fast food” (over once a week) might contribute to increased energy intake and to weight increase and obesity (Evidence Level 1+).

RECOMMENDATIONS

3. Restricting the habitual (more than once a week) intake of “fast food” might prevent weight increase due to this factor (Recommendation Degree A).

1.4. Energy balance: portion size

EVIDENCE

4. Offering larger portions conditions an increase of the individual’s caloric intake (Evidence Level 2++).

RECOMMENDATIONS

4. The use of smaller portions limits the energy intake (Recommendation Degree B).

1.5. Energy balance: breakfast

EVIDENCE

5. Research results on the relationship between the omission of breakfast and the risk of overweight and obesity in adults are both controversial and inconsistent.

1.6. Energy balance: snacks

EVIDENCE

6. Research results on the relationship between snack intake and the risk of weight gain are both controversial and inconsistent.

1.7. Energy balance: food intake frequency

EVIDENCE

7. Research results on the relationship between food intake frequency (number of meals per day) and body weight variation are inconsistent.

2. *Dietary patterns and body weight*

2.1. “Mediterranean” diet

EVIDENCE

8. Even though inconsistent results do exist, the studies so far performed suggest a possible role of the “Mediterranean” diet in the prevention of overweight and obesity (Evidence Level 2–).

9. The existing evidence suggests that greater adherence to the “Mediterranean” diet might prevent abdominal perimeter increase (Evidence Level 2+).

RECOMMENDATIONS

5. A greater adherence to the “Mediterranean” diet might prevent overweight and obesity and also the increase of the abdominal perimeter (Recommendation Degree C).

2.2. Vegetarian diets

EVIDENCE

10. Vegetarian diets are associated, in healthy adults, to a lower Body Mass Index (Evidence Level 2+).

RECOMMENDATIONS

6. Vegetarian diets intake might lead to a smaller weight gain over time in healthy adults (Recommendation Degree C).

3. *Nutrients and body weight*

3.1. Carbohydrates

EVIDENCE

11. Diets with higher content of complex carbohydrates (approximately $\geq 50\%$ of the total energy intake) are associated to a lower Body Mass Index in healthy adults (Evidence Level 2+).

12. The existing evidence regarding the relationship between the physical characteristics of carbohydrates (liquid or solid), the energy intake and the body weight are controversial.

13. There is not sufficient evidence to assert that the glycaemic index and glycaemic load of the diet are associated to increased body weight in healthy adults.

RECOMMENDATIONS

7. Diets for healthy adults aiming to prevent weight gain should contain a considerable proportion (approximately $\geq 50\%$ of the total energy intake) of complex carbohydrates (Recommendation Degree C).

3.2. Lipids

EVIDENCE

14. Fat intake, after adjusting for the total energy intake, is not associated to weight gain in healthy adults (Evidence Level 2+).

15. Investigations addressing the relationship between saturated fatty acids intake in healthy adults and risk of obesity have yielded contradictory results.

16. Monounsaturated fatty acids intake has shown no association to weight gain in healthy adults (Evidence Level 2+).

17. Polyunsaturated fatty acids intake has shown no association to weight gain in healthy adults (Evidence Level 2+).

18. The evidence regarding the intake of ω -3 fatty acids and its effects on body weight variability or prevention of weight excess in adults is insufficient for establishing any definite recommendation.

19. The limited epidemiological studies available show a consistent relationship between the role of trans fatty acids in weight gain and in the increase of abdominal fat (Evidence Level 2–).

RECOMMENDATIONS

8. In order to prevent weight gain in healthy adults, control of the total energy intake is more important than control of total fat (Recommendation Degree C).

3.3. Protein

EVIDENCE

20. The evidence regarding the total protein intake and its effects on body weight variability or prevention of weight excess in adults is insufficient for establishing any definite recommendation.

21. The evidence regarding the intake of animal protein and its effects on body weight variability or prevention of weight excess in adults is insufficient for establishing any definite recommendation.

22. The evidence regarding the intake of vegetable protein and its effects on body weight variability or prevention of weight excess in adults is insufficient for establishing any definite recommendation.

23. No evidence has been found regarding the intake of vegetable (soybean) protein and its effects on body weight variation that might allow definite recommendations concerning weight gain prevention in adults.

3.4. Vitamins and minerals

EVIDENCE

24. The existing evidence shows that calcium supplementation is not associated to a lower weight gain (Evidence Level 1+).

25. The existing evidence shows that combined supplementation of calcium with vitamin D does not achieve clinically relevant improvements in body weight control in postmenopausal women (Evidence Level 1+).

26. The available evidence regarding the role of vitamin D alone for preventing weight gain in healthy adults is controversial and does not allow any conclusions to be drawn.

3.5. Dietary fibre

EVIDENCE

27. A high dietary fibre intake in the context of a diet rich in food of vegetable origin is associated to a better control of body weight in healthy adults (Evidence Level 2++).

RECOMMENDATIONS

9. Increasing the intake of dietary fibre from vegetable origin food might prevent weight gain in healthy adults (Recommendation Degree B).

3.6. Water

EVIDENCE

28. The available evidence regarding water intake and its effects on body weight variation and/or prevention of weight excess in healthy adults is insufficient for establishing any definite recommendation.

3.7. Ethanol

EVIDENCE

29. The available studies yield contradictory and inconsistent observations, although some evidence does suggest some level of association between high ethanol intake and weight gain (Evidence Level 2-).

RECOMMENDATIONS

10. A restriction of high ethanol intake might prevent weight gain associated to this factor (Recommendation Degree D).

4. Food and body weight

4.1. Fruit and vegetables

EVIDENCE

30. A high intake of fruit and vegetables is associated with a lower long-term body weight increase in adults (Evidence Level 2+).

RECOMMENDATIONS

11. The dietary prevention of body weight gain may be modulated through the use of diets with a high fruit and vegetable content (Recommendation Degree C).

4.2. Whole grains (cereals)

EVIDENCE

31. A high intake of whole grains is associated with a lower Body Mass Index (Evidence Level 2+).

RECOMMENDATIONS

12. It is recommended that, in order for body weight gain prevention, the diet contain a considerable proportion of whole grains (Recommendation Degree C).

4.3. Sugars

EVIDENCE

32. The evidence regarding free or total sugars intake (with the exception of sugared beverages) in relation to body weight gain is controversial.

4.4. Sugared beverages ("soft drinks")

EVIDENCE

33. Frequent intake of sugared beverages is associated with a higher Body Mass Index (Evidence Level 2+).

Recommendations

13. Restricting the frequency of sugared beverages intake may lead to a lower body weight gain over time (Recommendation Degree A).

4.5. Olive oil

EVIDENCE

34. The intake of olive oil does not seem to be associated with a significant body weight gain risk in healthy adults (Evidence Level 2-).

4.6. Nuts

EVIDENCE

35. The addition of nuts to the usual diet is not associated with body weight gain (Evidence Level 2+).

RECOMMENDATIONS

14. A moderate intake of nuts is advantageous in the prevention of chronic diseases, but does not influence the body weight gain risk (Recommendation Degree C).

4.7. Others: meat

EVIDENCE

36. A high intake of meat and processed meat products might increase weight gain and the abdominal circumference (Evidence Level 2+).

RECOMMENDATIONS

15. A restriction of the intake of meat and processed meat products might prevent the body weight gain due to this factor (Recommendation Degree C).

Diet in the obesity treatment

1. *Balanced hypocaloric diet: dietary patterns*

EVIDENCE

37. A caloric content reduction of 500 to 1000 kcal daily might induce a weight loss ranging between 0.5 and 1.0 kg/week, equivalent to an 8% weight loss over an average period of 6 months (Evidence Level 1+).

38. A number of measures exist, such as reducing the size of the consumed portion or reducing the energy density of the diet, which may facilitate adherence to the hypocaloric diet and the weight loss in the obese patient (Evidence Level 3).

RECOMMENDATIONS

16. An energy deficit of between 500 and 1000 kcal/day from the energy needs of the obese adult patient is enough for inducing an 8% weight loss over the first 6 months of treatment (Recommendation Degree A).

17. Restriction of the size of the consumed portions and/or of the energy density of the diet are effective strategic measures for reducing weight in obese patients through dietary management (Recommendation Degree D).

2. *Diet composition*

2.1. Fat modified *versus* carbohydrate modified diets

EVIDENCE

39. As compared to a low fat one, a low carbohydrate diet achieves in the short term (6 months) a higher weight loss (Evidence Level 1++).

40. In the long term (1 year or more), a low carbohydrate diet achieves a weight loss similar to that achieved with a low fat one (Evidence Level 1+).

41. In the long term (1 year or more), a low carbohydrate diet achieves a greater HDL cholesterol increase and a higher triglyceride reduction than a low saturated fat one (Evidence Level 1+).

42. In the long term (1 year or more), a low saturated fat diet achieves a higher LDL cholesterol reduction than a low carbohydrate one (Evidence Level 2+).

43. Low carbohydrate diets cause more adverse effects than low fat ones (Evidence Level 2++).

44. The very long term mortality with low carbohydrate diets may be increased if the fats are of animal origin (Evidence Level 3).

RECOMMENDATIONS

18. Reducing the proportion of carbohydrates and increasing that of fats is not useful for potentiating the effect of a diet on weight loss (Recommendation Degree A).

19. For controlling the LDL cholesterol levels in an obese patient a low fat diet is effective, while the HDL cholesterol and triglyceride levels are better controlled with a low carbohydrate one (Recommendation Degree B).

20. Low carbohydrate diets should not contain a high proportion of animal origin fats (Recommendation Degree D).

2.2. Carbohydrate type modified diets

2.2.1. *FIBRE ENRICHED DIETS*

EVIDENCE

45. There is no sufficient data that may allow any evidence to be established regarding the role of a fibre or whole grain enriched diet on weight loss.

46. Glucomannan supplements added to the diet may have a discrete effect, via a satiatory mechanism, in favouring weight loss (Evidence Level 1+).

47. Non-glucomannan fibre supplements added to the diet may exert a minimal contribution towards weight loss (Evidence Level 2+).

48. The dietary management of obesity with a glucomannan, *Plantago ovata* and β -glucane enriched or supplemented diet reduces the LDL cholesterol levels in the obese patient (Evidence Level 2+).

RECOMMENDATIONS

21. In the dietary management of obesity, dietary fibre (fundamentally glucomannan) supplements may increase the efficacy of the diet towards achieving weight loss (Recommendation Degree C).

22. Obese patients with hypercholesterolemia alterations may benefit from the prescription of dietary

fibre (fundamentally glucomannan) enriched or supplemented diets (Recommendation Degree B).

2.2.2. LOW GLYCAEMIC INDEX DIETS

EVIDENCE

49. Modifications of the glycaemic index or of the glycaemic load of the diet have no lasting effect on weight loss in the dietary management of obesity (Evidence Level 1+).

50. There is no sufficient data for establishing any evidence regarding the role of low glycaemic index or low glycaemic load diets in the maintenance of the weight loss after a hypocaloric diet.

RECOMMENDATIONS

23. A reduction of the glycaemic index or of the glycaemic load cannot be recommended as a specific strategy in the dietary management of obesity (Recommendation Degree A).

2.3. Hyperproteic diets

EVIDENCE

51. As compared to a conventional carbohydrate rich diet, a hyperproteic one may induce in the short term (6 months or less) a higher weight loss (Evidence Level 2+).

52. A hyperproteic diet does not induce in the long term (over 12 months) a greater weight loss than a conventional carbohydrate rich one (Evidence Level 1+).

53. There is at present no sufficient data for establishing the efficacy of hyperproteic diets in the maintenance of the weight loss achieved after an initial weight loss phase with other type of diets.

54. A hyperproteic diet favours the preservation of the lean body mass better than a carbohydrate rich one (Evidence Level 2+).

55. Hyperproteic diets can, in the very long term, increase the risk of cardiovascular and overall mortality, mainly when the protein source is of animal origin (Evidence Level 2+).

RECOMMENDATIONS

24. In the dietary management of obesity is not recommended to introduce changes in the protein proportion of the diet (Recommendation Degree A).

25. For ensuring the maintenance or increase of the lean body mass during administration of a hypocaloric diet, it is effective to increase the protein content of the diet to levels above 1.05 g/kg (Recommendation Degree B).

26. Whenever a hyperproteic diet is prescribed, the animal origin protein fraction should be restricted in

order to prevent an increased risk of mortality in the very long term (Recommendation Degree C).

3. Meal replacement diets

EVIDENCE

56. The use of commercial preparations as substitutes or replacements for one or more meals may facilitate correct adherence to the hypocaloric diet, favouring both weight loss and weight loss maintenance (Evidence Level 1-).

57. This beneficial effect is higher when this strategy is used in the context of structured therapies including physical exercise, dietary education and conduct modification of eating habits (Evidence Level 3).

58. No clinically relevant adverse effects have been reported or described in association to the use of meal replacements in the context of hypocaloric diets (Evidence Level 3).

RECOMMENDATIONS

27. The replacement or substitution of some meals with meal replacement preparations, in the context of hypocaloric diets, may be useful for achieving weight loss and for maintaining weight loss in obese or overweight adults (Recommendation Degree D).

4. Very low calorie diets

EVIDENCE

59. In the very short term (less than 3 months), very low calorie diets (400 to 800 kcal/day) achieve a higher weight loss than conventional low calorie (> 800 kcal/day) diets (Evidence Level 1+).

60. In the long term (over 1 year), these diets do not achieve a higher bodyweight loss than conventional low calorie diets (> 800 kcal/day) (Evidence Level 1+).

61. In the preoperative preparation for bariatric surgery in patients with hepatic steatosis and increased surgical risk, the use of a very low calorie diet before surgery diminishes the surgical risk (Evidence Level 1+).

62. There is at present not sufficient data that might allow establishing whether very low calorie- diets using commercial preparations, when used in the postoperative period of bariatric surgery, might contribute to the patient's achieving an appropriate protein intake.

63. Very low calorie diets entail a greater risk of adverse effects than conventional low calorie ones (Evidence Level 1-).

64. At the present time, the evidence available is insufficient for allowing a statement that very low calorie diets might be associated to a higher lean body mass loss in relation to the fatty body mass, as compared to less restrictive hypocaloric diets.

RECOMMENDATIONS

28. The very low calorie diets might be used in the dietary management of patients with obesity, yet always with a concrete clinical indication and under close and strict medical follow-up (Recommendation Degree D).

29. The very low calorie diets should not be used in patients not fulfilling the established medical indications and requirements (Recommendation Degree A).

30. The use of very low calorie diets might be necessary in the preoperative preparation for bariatric surgery in patients with hepatic steatosis and increased surgical risk, always under close medical control and with due consideration of the possible adverse effects that might be observed (Recommendation Degree B).

31. The use of very low calorie diets with commercial preparations might be necessary in the immediate postoperative period after bariatric surgery, so as to contribute to the patients' achieving an adequate protein intake (Recommendation Degree D).

5. "Mediterranean" diet

EVIDENCE

65. There is at present no sufficient scientific evidence available that might prove that the "Mediterranean" diet, under isocaloric conditions, might achieve a higher body weight loss than other diet types in the dietary management of obesity.

Funding and conflicts of interest

This consensus document has been funded thanks to the contribution of Nutrition & Santé/biManán in accordance with the conditions established in the collaboration agreement signed jointly by the FESNAD and the SEEDO.

The authors do not have to declare any conflict of interest when preparing this work.

Acknowledgements

The authors would like to express their gratitude to the Spanish Food Safety and Nutrition Agency (AESAN) of the Ministry for Health, Social Policy and Equality for their cooperation during the preparation of this document.

FESNAD-SEEDO consensus group

Drafting Committee

Coordinator Editor: Manuel Gargallo Fernández (SEEDO).

Deputy Editors: Julio Basulto Marset (AEDN); Irene Bretón Lesmes (SEEN); Joan Quiles Izquierdo (SENC).

Coordination: Jordi Salas-Salvadó (FESNAD); Xavier Formiguera Sala (SEEDO).

Reviewers: Juan Manuel Ballesteros Arribas (AESAN); Miguel Ángel Martínez-González (Clinical University of Navarra); José María Ordovás Muñoz (Tufts University, Boston EEUU); Miguel Ángel Rubio Herrera (University Clinical Hospital of Madrid).

Board of Directors of the FESNAD

Chairman: Mr Jordi Salas-Salvadó (SENPE).

Vice Chairman: Mrs. María Dolores Romero de Ávila (ALCYTA).

Treasurer: Mr Antonio Villarino Marín (SEDCA).

Secretary: Mr. Giuseppe Russolillo (AEDN).

Members: Mrs. Rosaura Farré Rovira (SEN), Mr. Manuel Gargallo Fernández (SEEDO); Mr. Carlos Iglesias Rosado (SENBA); Mrs. Herminia Lorenzo Benítez (ADENYD); Mr. José Manuel Moreno Villares (SEGHNP); Mr. Joan Quiles Izquierdo (SENC); Mrs. Pilar Riobó Serván (SEEN).

Chairpersons of the Affiliated Associations

Mrs. Herminia Lorenzo Benítez (ADENYD); Mr. Giuseppe Russolillo (AEDN); Mrs. María Dolores Romero de Ávila (ALCYTA); Mr. Antonio Villarino Marín (SEDCA); Mr. Xavier Formiguera Sala (SEEDO); Mr. Javier Salvador Rodríguez (SEEN); Mr. Luis Peña Quintana (SEGHNP); Mrs. Rosaura Farré Rovira (SEN); Mr. Miguel Ángel Gassull Duró (SENBA); Mr. Javier Aranceta Bartrina (SENC); Mr. Abelardo García de Lorenzo (SENPE).

FESNAD (Federación Española de Sociedades de Nutrición, Alimentación y Dietética)

ADENYD (Asociación Española de Diplomados en Enfermería de Nutrición y Dietética).

AEDN (Asociación Española de Dietistas y Nutricionistas).

ALCYTA (Asociación Española de Doctores y Licenciados en Ciencia y Tecnología de los Alimentos).

SEDCA (Sociedad Española de Dietética y Ciencias de la Alimentación).

SEEN (Sociedad Española de Endocrinología y Nutrición).

SEEDO (Sociedad Española para el Estudio de la Obesidad).

SEGHNP (Sociedad Española de Gastroenterología, Hepatología y Nutrición Pediátrica).

SEN (Sociedad Española de Nutrición).

SENBA (Sociedad Española de Nutrición Básica y Aplicada).

SENC (Sociedad Española de Nutrición Comunitaria).

References

1. Finucane MM, Stevens GA, Cowan MJ, Danaei G, Lin JK, Paciorek CJ et al. National, regional, and global trends in body-mass index since 1980: systematic analysis of health examination surveys and epidemiological studies with 960 country-years and 9.1 million participants. *Lancet* 2011; 377: 557-567.
2. Berghöfer A, Pischon, Reinhold T, Apovian CM, Sharma AM, Willich SN. Obesity prevalence from a European perspective: a systematic review. *BMC Publ Health* 2008; 8: 200-10.
3. OCDE. Obesity and the Economics of Prevention Fit not Fat. OCDE. 2010. [monografía en Internet]. [citado: 15 may 2011]. Disponible en: http://www.oecd.org/document/31/0,3746,en_2649_33929_45999775_1_1_1_1,00.html
4. AESAN, Agencia Española de Seguridad Alimentaria y Nutrición. Encuesta Nacional de Ingesta Dietética Española. 2011. Disponible en: http://www.aesan.msc.es/AESAN/web/notas_prensa/presentacion_enide.shtml [fecha de acceso: 15 de mayo de 2011].
5. De Lago M. Spanish move away from Mediterranean diet. *BMJ* 2011; 342: d1509.
6. Varela-Moreiras G, Avila JM, Cuadrado C, del Pozo S, Ruiz E, Moreiras O. Evaluation of food consumption and dietary patterns in Spain by the Food Consumption Survey: updated information. *Eur J Clin Nutr* 2010; 64 (Suppl. 3): S37-43.
7. Slimani N, Deharveng G, Southgate DA, Biessy C, Chajès V, van Bakel MM et al. Contribution of highly industrially processed foods to the nutrient intakes and patterns of middle-aged populations in the European Prospective Investigation into Cancer and Nutrition study. *Eur J Clin Nutr* 2009; 63 (Suppl. 4): S206-25.
8. Varo JJ, Martínez-González MA, De Irala-Estévez J, Kearney J, Gibney M, Martínez JA. Distribution and determinants of sedentary lifestyles in the European Union. *Int J Epidemiol* 2003; 32: 138-46.
9. European Food Safety Authority. EFSA Comprehensive European Food Consumption Database. 2011. [monografía en Internet]. [citado: 15 may 2011]. Disponible en: <http://www.efsa.europa.eu/en/datexfoodcdb/datexfooddb.htm>
10. Instituto Nacional de Estadística. Encuesta Europea de Salud en España, año 2009. [monografía en Internet]. [citado: 15 may 2011]. Disponible en: <http://www.ine.es/jaxi/menu.do?type=pcaxis&path=%2Ft15/p420&file=inebase&L=0>
11. World Health Organization. Recomendaciones mundiales sobre actividad física para la salud. Geneva: WHO Library Cataloguing-in-Publication Data; 2010.
12. World Health Organization. Obesity: preventing and managing the global epidemic. Report of a WHO consultation. *World Health Organ Tech Rep Ser* 2000; 894: 1-253.
13. World Health Organization. Global status report on noncommunicable diseases. Geneva: WHO Library Cataloguing-in-Publication Data; 2011.
14. Garrow JS. Obesity and related diseases. Edinburgh: Churchill Livingstone; 1988.
15. Gargallo M, Ballesteros MD. Dietas Heterodoxas. *Revista Española de Obesidad* 2008; 6: 75-87.
16. Ministerio de Sanidad y Consumo. Agencia Española de Seguridad Alimentaria y Nutrición. Dietas Milagro. 2007. [monografía en Internet]. [citado: 15 may 2011]. Disponible en: http://www.aesan.msc.es/AESAN/web/destacados/dietas_milagro.shtml
17. Programa de las Naciones Unidas para el Desarrollo. Indicadores Internacionales sobre Desarrollo Humano. 2010. [monografía en Internet]. [citado: 15 may 2011]. Disponible en: <http://hdr.undp.org/es/estadisticas/>
18. Grupo de trabajo sobre GPC. Elaboración de Guías de Práctica Clínica en el Sistema Nacional de Salud. Manual Metodológico. Madrid: Plan Nacional para el SNS del MSC. Instituto Aragonés de Ciencias de la Salud-I+CS; 2007. Guías de Práctica Clínica en el SNS: I+CS N° 2006/OI.
19. Tsigos C, Hainer V, Basdevant A, Finer N, Fried M, Mathus-Vliegen E, et al. Management of obesity in adults: European clinical practice guidelines. *Obes Facts* 2008; 1: 106-16.
20. Scottish Intercollegiate Guidelines Network. A guideline developers' handbook (Publication n° 50). Edinburgh: SIGN; 2001 [monografía en Internet]. [actualizado 1 en 2008; citado 15 en 2011]. Disponible en: <http://www.sign.ac.uk/guidelines/full-text/50/index.html>