

Sources of information on healthy eating in a mediterranean country and the level of trust in them: a national sample in a pan-european survey

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RESUMEN:

Objetivos: Determinar las fuentes de información y el nivel de confianza en las fuentes de información sobre dieta sana en la población española, para facilitar la promoción de hábitos dietéticos sanos.

Pacientes y métodos: Análisis de una muestra representativa española de adultos mayores de 15 años compuesta por 1009 individuos y seleccionada por un procedimiento aleatorio multietápico. Este estudio corresponde a la participación española en un estudio europeo multicéntrico coordinado por el Instituto Europeo de Estudios Nutricionales (IEFS) de Dublín. Se preguntó a cada individuo por las fuentes de las que procedía su información sobre dieta sana y su nivel de confianza en ellas. Se analizaron las cinco fuentes más frecuentemente mencionadas.

Resultados: La fuente de información más citada y de mayor confianza fueron los "profesionales sanitarios". Aproximadamente, el 26% de los encuestados mencionaron a los "profesionales sanitarios" como su fuente de información acerca de la dieta sana. Sin embargo, la "radio/TV" (25,7%) fue casi tan seleccionada como los "profesionales sanitarios". Alrededor del 17,4% de los individuos declaró que no obtenía información sobre dieta sana. Los individuos con nivel de estudios universitarios citó con mayor frecuencia a los "profesionales sanitarios", mientras que los sujetos de nivel socio-económico elevado prefirieron la "radio/TV". El grado de confianza fue mayor para los mensajes obtenidos de los "profesionales sanitarios" (89,9%) y del "Departamento de Sanidad" (78,7%) y menor en el caso de la información obtenida de los "periódicos" (34,2%) y de los "anuncios publicitarios" (17,6%).

Conclusión: Los profesionales sanitarios deben promover las guías dietéticas a través de los canales ade-

cuados para lograr que lleguen a los diferentes grupos de individuos.

SUMMARY:

Objective: To know the sources of information and the level of trust in these sources in a population to facilitate the promotion of healthy dietary habits.

Patients and methods: A national survey was carried out according to an established protocol on a representative sample of 1009 Spanish subjects over 15 years of age selected by a random multistage procedure. This study belongs to the Spanish partnership in a pan-European Survey about sources of information on healthy eating and their level of trust. The analysis was focussed on the evaluation of the 5 most frequently chosen sources.

Results: There was a trend towards a greater use and trust in "Health professionals" than other sources. Thus, about 26% of the respondents mentioning "health professionals" as the source of information on healthy eating. However, "TV/radio" (25.7%) was almost so often selected as "Health professionals". About 17.4% of subjects declared that they obtained no information at all on healthy eating. Subjects with university level of studies exhibited a greater mention of "Health professionals", while individuals belonging to higher socio-economic levels preferred "TV/radio". The degree of trust was higher for messages obtained from "Health professionals" (89.9%) and the "Department of Health" (78.7%) and lower for information obtained from "newspaper" (34.2%) and "advertising" (17.6%).

Conclusion: Nutrition and health educators must promote dietary guidelines through the appropriate channels for communicating messages to different targets groups.

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Palabras clave

España; Fuentes de información; Nutrición; Dieta; Educación sanitaria.

Key words

Spain; Sources of information; Nutrition; Diet; Health education.

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Introduction

The diet-health message for the 90s has become complex. If today's consumers are more informed, they are also more confused. Today, the challenge is to provide consumers essential and clear messages. Nutritional education is one of the answers to this situation by considering their dietary habits (1). The confusion stems not only from the complexity of the message, but also from the fact that the various groups and organisations respond to the challenge from their own perspectives. Furthermore, there are the constraints of the various media (press, radio and television) that deliver the message (2).

Information about food and nutrition is available from a variety of different sources (3). This kind of information is important for educational nutrition and affecting food attitudes, which may have an effect on consumers' health (4). In the European Union, people are constantly exposed to a number of messages about food, nutrition and health, many of which are often contradictory. In many cases, the message of advertisements may mislead or misinform the consumer with irrelevant or incomplete information. They also frequently contribute to the promotion of aesthetic concerns about body image, which guides the food choice of a large percentage of population (5).

In view of the increasing evidence relating diet and health, there is a growing interest on sources of information about healthy eating. A better knowledge about the sources of information is very important in trying to promote healthy dietary habits.

Different studies concerning dietary practices have found that beliefs and social influences can predict some changes in dietary intake (6). Social networks, health status, food attitudes and demographic variables are used to differentiate those who have made physician-induced changes from other sources of influence/information for change.

Therefore, food and nutrition experts need to take an active role in helping consumers to recognize misinformation (7). For people involved in communicating messages about food and nutrition, it is essential that they may be aware of where people obtain their information about food. This awareness may provide some clues about the type of information people are already getting. In addition, such data, in conjunction with a knowledge of the sources people trust, can help nutrition educators to decide appropriate and relevant channels for communicating messages to different target groups.

To our knowledge there has been no previous published report assessing in a comprehensive way the main sources of information about healthy eating on a representative sample of the Spanish population or other individuals from other European country. The purpose of this study was to assess the channels and sources of information on healthy eating more frequently used by the Spanish adult population and which of them are more trusted.

Methods

A national survey was carried out according to an established protocol on a representative sample of 1009 Spanish subjects over 15 years of age selected by a multistage procedure. This study belongs to a partnership in a pan-European Survey about attitudes to food, nutrition and health (8). The Survey was integrated in a pan-European Project co-ordinated by the Institute of European Food Studies (Dublin). The selection of the sample was aimed to obtain nationally representative samples from each Member State (9). The interviews were conducted as part of Eurobus, an international group of market research organisations. All interviews were completed between October 1995 and February 1996. The selected regions were chosen randomly, and within each area, the random selection of the cities was stratified and balanced, according to the population size within each city. In the geographical distribution within Spain 6 areas were considered and the following pro-

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vinces were selected: Northeast (Lérida, Baleares, Barcelona and Zaragoza), East (Valencia, Castellón and Alicante), South (Jaén, Sevilla, Málaga, Cádiz and Córdoba), Centre (Zamora, Segovia, Ciudad Real, Salamanca, Valladolid and Madrid), Northwest (León, Orense, Asturias and Pontevedra) and North (Cantabria, Navarra, La Rioja, Álava and Vizcaya). Within cities, individuals were chosen by a random routes procedure applying quota of age and sex, according to the census data in 1991. Sample size was calculated with the following assumptions: alpha error = 5%, precision = $\pm 3.1\%$ and 50% of individuals in the category of interest. Participation rate was 88%. Once individuals who did not want to participate were excluded, 1009 Spanish subjects over 15 years of age were interviewed. All subjects were asked where they get their information from, and which sources they trust and mistrust. Each subject was personally contacted at his/her home by a professional interviewer specifically trained for this study belonging to a firm specialized in social surveys. The average duration of each interview was 15 minutes.

The use of sources of information was assessed through a multiple choice question included in the standardized questionnaire developed for the study. The methods for the development of this questionnaire have been detailed elsewhere (9). Respondents were asked to indicate out of a list with 22 options which sources they used more often (Table I). They were allowed to mention at least 2 sources. An open-ended option was also included to allow for other choices. The order of the options was randomly rotated to avoid a biased response. The level of trust in each source was assessed using a 4 point Likert-type scale ranging from "trust fully" to "distrust fully". To enable an overview of the degree of trust in the different sources, results are initially presented as percentages in which "trust fully" and "tend to trust" were combined as "trust". Subjects were also asked to indicate their level of agreement with the statement "I frequently look for information on healthy eating" using a similar 4 point scale which ranged from "strongly agree" to "strongly disagree".

Social class was analyzed according to occupation and was classified into 4 categories (1: Middle-Upper: Professionals, 2: Middle: Part-time workers, 3: Middle-Lower: Non-manual and manual qualified workers, 4: Lower: Unemployed and non qualified workers). Education level was classified into 3 cate-

gories according to the model of the Statistic Bureau of the Regional Government of Madrid: primary, secondary, and university level (10). The results are shown as percentages of the sample mentioning one of the 5 most frequently mentioned sources of information sources (health professionals, programmes on TV/radio, foods packages, Department of health, newspaper/magazines and advertising) with their respective 95% confidence intervals each group (11). The analyses were stratified by sex, age, region, socioeconomic level and education level.

The χ^2 test for linear trend was used to assess the influence of age, education and socio-econo-

Table I

Options to select the sources of information about healthy eating*

- Advertising
- Department of Health
- Health professional (such as doctor, nurse, nutritionist, pharmacist)
- Leaflets produced by food industry
- Women's or family organisations
- Books
- Articles in newspapers
- Health Food Shop
- Programmes or News items on TV and Radio
- Magazine articles
- School or college or Training
- Relatives or friends or colleagues
- Leaflets in waiting rooms or clinics
- Slimming societies
- Health Insurance companies
- Vegetarian or other food societies
- Supermarkets
- Consumer Organisations
- I do not get any information
- Others
- Don't know

*The Options were randomly rotated in order to avoid response bias

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mic level on the use of each source of information. Also, Pearson's χ^2 test was used to assess the influence of gender on the use of each source of information.

Results

Among the 22 options presented (Table I), the five most frequently mentioned sources of information about healthy eating in Spain were: "Health professionals" (25.9%), followed by "TV/radio" (25.7%), information from "Food packages" (22.7%), information from "Friends and relatives" (21.6%) and from "Advertising" (20.9%), while only 10 % of the sample mentioned "Department of Health" as one of

their main sources of information. By contrast, in the European average "Magazines and newspaper" were more likely to be selected (27%) than in Spain. On the other hand, 16.9% of the Spanish sample reported not getting any information while 5.4% were not sure where they got their information on healthy diet from. There were important variations in the sources of information with age. Older men more often selected "Health professionals" ($p=0.02$ for trend test) but the trend was opposite among females, although it was only borderline significant ($p=0.07$).

There were few variations between genders in the percentage of subjects selecting the different sources (Table II). There was a trend towards a greater use of

Table II

Individuals (%) who selected at least one of the following sources of information (two possibilities of choice were given): Distribution by age and sex (M: Male / F: Female)

AGE (years)/SEX	Health professionals		TV/radio		Food packages		Relatives/ Friends		Advertising	
	M	F	M	F	M	F	M	F	M	F
15-24 n=176	14.8	30.8**	22.9	27.3	26.9	29.7	23.5	35.8	34.6	37.3
25-34 n=173	25.5	31.6	29.3	36.0	20.7	29.5	26.7	28.0	18.8	19.8
35-44 n=139	26.5	30.8	25.4	32.1	28.1	24.7	19.9	13.9	16.1	18.1
45-54 n=158	24.0	25.5	29.2	21.0	24.5	21.4	12.4	17.0	18.5	17.4
55-65 n=176	25.9	24.5	23.4	29.8	20.6	20.3	15.0	24.6	13.9	17.8
>65 n=187	32.0	22.0	16.2	15.5	12.3	11.1	12.8	20.7	21.9**	8.4
p (χ^2 linear trend)	0.02	0.07	0.30	0.02	0.05	<0.001	0.01	0.02	0.02	<0.001
TOTAL	24.1	27.7	24.5	26.9*	22.6	22.9*	19.3	24.0**	21.6	20.2***
(95% CI)	(20.6- 28.2)	(23.8- 31.8)	(20.9- 28.6)	(23.0- 31.0)	(19.1- 26.5)	(19.4- 27.0)	(16.0- 23.0)	(20.3- 28.0)	(18.2- 25.5)	(18.8- 26.4)

χ^2 Pearson: * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$ for the comparison between males and females

χ^2 for linear trend test for the comparison across categories

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"Health professionals" by females (30.8%) than by males (14.8%, $p=0.01$) in the youngest group.

Younger people mentioned more frequently "Food packages", information from the "Advertising" and advice given by "Relatives/friends" with a significant trend for age among women ($p<0.01$ for linear trend test). On the other hand, younger women exhibited a greater concern for looking for information about healthy eating than older ones. In contrast there were no such differences among men.

In higher socio-economic levels, the percentage of subjects citing programmes of "TV/radio" (31%) and information from "Food packages" (25.1%) increased

quite significantly (Table III), but there were no differences due to the socio-economic status regarding the use of "Health professionals".

By contrast, there were marked variations across educational levels. Thus, as the education level of subjects increased, so did the percentage of subjects selecting "Health professionals", "Food packages" and "Relatives/friends". Besides, people belonging to secondary level used "Advertising" more frequently than other educational groups (31.3%).

Regarding the level of trust in the sources of information (Table IV), the two more highly scored sources were "Health professionals" (89.9%) and "Department

Table III

Individuals (%) who selected at least one of the following sources of information (two possibilities of choice were given): Distribution by socio-economic and educational level

(%)	Health professionals	TV/radio	Food packages	Relatives/Friends	Advertising
SOCIO-ECONOMIC LEVEL					
LOWER (n=104)	25.2	15.4	19.1	21.4	17.8
MIDDLE-LOWER (n=296)	28.1	26.4	18.4	21.4	18.2
MIDDLE (n=512)	23.0	26.4	25.4	20.8	22.6
MIDDLE-UPPER (n=97)	35.5	31.0	25.1	27.7	22.4
P (χ^2 linear trend)	0.65	0.03	0.04	0.46	0.14
EDUCATIONAL LEVEL					
PRIMARY (n=663)	23.6	23.9	19.0	18.6	17.7
SECONDARY (n=208)	26.1	28.8	28.8	28.6	31.3
UNIVERSITY (n=136)	37.1	30.1	31.6	26.5	20.5
p (χ^2 linear trend)	0.002	0.07	< 0.001	0.004	0.03
TOTAL (95%CI)	25.9 (18.0-36.0)	25.7 (18.0-36.0)	22.7 (15.4-32.7)	21.7 (14.6-31.6)	20.9 (13.8-30.6)

χ^2 for linear trend test for the comparison across categories

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Table IV

Individuals (%) who stated that they trusted the information on healthy eating from the following sources' Distribution by age, socio-economic and educational level

(%)	Health Professionals	Department of health	Food packages	TV/radio	Newspaper/ Magazine	Advertising
SEX						
Male (n=489)	90.2	77.5	63.6	46.0	35.9	22.2
Female (n=519)	89.7	79.9	58.6	44.1	32.6	13.2
AGE						
15-34 (n=403)	90.8	82.6	70.4	48.4	40.6	18.7
35-54 (n=294)	91.8	80.7	62.6	43.4	37.4	17.8
55+ (n=311)	87.2	71.8	47.5	42.2	22.8	15.9
p (χ^2 linear trend)	0.13	< 0.001	< 0.001	0.09	< 0.001	0.32
SOCIO-ECONOMIC LEVEL						
LOWER (n=104)	91.9	78.4	63.9	42.2	20.6	20.3
MIDDLE-LOWER (n=296)	89.4	77.6	53.2	43.3	27.7	16.9
MIDDLE (n=512)	89.9	79.0	64.9	46.2	35.9	18.4
MIDDLE-UPPER (n=97)	89.9	80.8	60.7	46.7	57.3	12.8
p (χ^2 linear trend)	0.76	0.58	0.19	0.33	< 0.001	0.38
EDUCATIONAL LEVEL						
PRIMARY (n=663)	89.0	77.7	58.2	44.4	28.7	19.5
SECONDARY (n=208)	91.3	79.0	68.1	41.2	37.8	14.6
UNIVERSITY (n=136)	92.5	83.2	64.0	53.9	55.1	12.9
p (χ^2 linear trend)	0.15	0.17	0.04	0.16	< 0.001	0.03
TOTAL (95%CI)	89.9 (82.0-94.8)	78.7 (69.5-86.2)	61.0 (50.0-70.4)	45.0 (35.1-55.2)	34.2 (25.0-44.2)	17.6 (11.3-27.2)

'In the survey, subjects were questioned regarding their level of trust in sources of healthy eating information, to which they could replay "trust fully", "tend to trust", "tend to distrust" or "distrust totally". The values in this table include the proportion (%) of subjects who selected either "trust fully" or "tend to trust".

χ^2 of linear trend test for the comparison across categories. χ^2 Pearson: * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$ for the comparison between males and females.

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Table V

Percentages of individuals who agree with the statement: "I frequently look for information on healthy eating?": Distribution by sex, age, socio-economic and educational level (M: Male / F: Female)

AGE	Agree (%)	
	M	F
15-34 (n=403)	40.3	49.4
35-54 (n=294)	41.7	52.0
55+ (n=311)	37.6	33.6
p(c2 linear trend)	0.67	0.003
SOCIO-ECONOMIC LEVEL		
Lower (n=104)	29.5	29.6
Middle-Lower (n=296)	36.9	35.2
Middle (n=512)	41.2	53.2**
Middle-Upper (n=97)	50.2	43
p(c2 linear trend)	0.02	< 0.001
EDUCATIONAL LEVEL		
Primary (n=663)	34.6	42.8
Secondary (n=208)	44.7	45.2
University (n=136)	52.4	58.7
p(c2 linear trend)	0.002	0.04
TOTAL (95%CI)	40 (35.7-44.4)	44.9** (40.5-49.5)

Strongly agree or tend to agree. The proportion of subjects who replied "don't know" are not shown in this table.

χ^2 Pearson: * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$

of Health" (78.7%); however it was evident that there were few people who mentioned this last source.

Interviewed individuals showed a high confidence on "Health professionals" and "Department of Health", although further analyses revealed differences among age groups. On the one hand, the youngest responders trusted more "Department of health" (82.6%), "Food packages" (70.4%) and "Newspaper and magazines"; on the other hand, the oldest did not trust "Food packages" (47.5%), "Newspaper and magazines" (22.8%) and "Advertising" (15.9%). As the socio-economic and education level of subjects increased, so did the reliance on subjects selecting "Newspaper and magazines". Those who belonged to higher educational levels showed a lower reliance on "Advertising" (12.9%). Finally, individuals with university levels and those with higher socio-economic status were the largest group who agreed with the statement "I frequently look for information on healthy eating" (Table V), showing a significant trend for both sexes. About 42.5% of respondents frequently looked for information about their diet. Younger (15-34 years) people (44.8%), those with lower socio-economic levels (29.5%) and those with primary education level (39.2%) were the groups less concerned about information on healthy diet (Table V).

Discussion

Over the last few years a number of studies have been carried out in order to find out whether people look for information about healthy eating, where they get their information from and which sources they trust and mistrust (12,13,14,15). Information about food and nutrition is widely available in Spain through different sources, but it is obvious that sometimes nutrition messages are not always nutritionally-sound (16). This fact may influence those individuals tending to be less trustful in popular media such as "TV/radio", "Newspapers" or "Magazines" than "Health professionals" (17).

This survey revealed that there was almost the same level of use for two sources of information on healthy diet among Spaniards: "Health professionals" (25.9%) and "TV/radio" (25.7%), but the percentage of subjects mentioning other sources of information was very similar to both of them. The level of trust in "Health professionals" appeared to be much greater than usage, with a level of trust of about 90% of subjects (trusted fully or tended to trust) (18). This fact might be explained by two reasons: on one hand, per-

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haps there may be some barriers to dietary change due to the fact that people, find difficult to identify healthy dietary habits; on the other hand, it may be due to the lack of specific channels to make dietary changes in daily routine (18). It is worth noting that a high percentage of individuals (44.3%) used either "Health professionals" or "TV/radio" and not both at the same time. Nowadays a lot of messages which are broadcasted through programmes on TV and radio may mislead or confuse the consumer with irrelevant or incomplete information, so it is appropriate to control the messages, myths and falsehood propagated by media, TV in particular (19,20), besides if health professionals take a more active participation in TV and radio, popular media might be useful in re-enforcing the appropriate messages and, at the same time would lead to make people more trustful in popular media. In this way, the percentage of subjects using "Health professionals" and "TV/radio" would increase (20).

In spite of being offered a high variety of different sources to choose, there was about 17% of individuals who stated that they did not obtain any information on healthy eating. Those subjects who reported that they get no information on nutrition tended to be younger males and those who belonged to lower socio-economic and educational levels. This group of subjects appeared not to be interested in obtaining nutrition information, so nutrition educators can identify this group as a potential target to encourage them to become more interested in food, nutrition and health (21).

With respect to gender, there were differences between males and females. Thus, females in general were more likely to seek information on healthy eating and those who were between 15 and 44 years of age mentioned more frequently "Health professionals" than males, perhaps because of their having children and their early care. Besides, males are reported to not give the same level of reliance and consideration to a "nutritionist" who provides healthy eating messages than to a doctor, so they would not visit the health professional unless they need to do so (22).

"Department of Health" was one of the options from which subjects were asked to select their sources, but the percentage of individuals selecting this source was very low (10%). There may be several reasons to explain this low level of usage, perhaps it can be explained because people do not know that Departments of Health provide nutrition information or may be because these Departments have not enough budget, and

the access to popular media to communicate their nutrition messages is quite restricted (23).

In relation to age groups, there were some variations in the sources of information considered to be useful. Youngest subjects mentioned more frequently "advertising" and "relatives/friends", most probably due to their age and life-style related characteristics (24,25), while the oldest ones were more likely to obtain their nutrition information from oral sources and not from "food packages" or "advertising". This fact could be explained by some reasons such as visual problems or a lack of specific information from this kind of sources (26,27,28).

People most likely to report that they did not look for information on healthy eating were male, older than 55 years of age, those with less education levels, and from the lower socio-economic level too. The youngest females and women with high educational level were those more likely to seek for information on nutrition. This finding is consistent with the reporting of women being more responsible on going on a healthy diet (29).

Another useful source of information in the near future will be Internet, which provides many opportunities to learn, educate, and communicate new ideas. The Internet and its electronics relatives (World Wide Web and newsgroups) can become valuable tools for nutritional scientists, extending beyond traditional sources of information (newspapers and magazines) to support research and educational efforts, but use of this new technology must be tempered with knowledge of their limitations as well as potentials (30).

This study has shown that the different sources of information are used and trusted differently by Spanish subjects, suggesting that nutrition education may be not uniform for everybody, and consequently should be based on specific target groups (31). What people buy and eat depends not only on individual, but also on social, cultural, economic and environmental influences. These factors are interrelated and food choice is a complex process, which explains why information supply on its own is insufficient as a strategy to promote healthy eating (32). Therefore, educators and public health departments must look for appropriate channels for promoting specific healthy eating programmes and communicating nutrition information.

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REFERENCES

1. Usinger-Lesquereux J. Community-based nutrition education. *J Nutr* 1994; 124:S1820-S1822.
2. Goldberg JP. Nutrition and health communication: the message and the media over half a century. *Nutr Rev* 1992;50:71-77.
3. Fisac Martínez de Arévalo C, Sanz Díaz A. Influencia de la información acerca de los aditivos alimentarios sobre el comportamiento nutricional de una muestra de estudiantes. *Alim Nutr Salud* 1996;3:2-8.
4. Eiser JR, Eiser C, Patterson DJ, et al. Effects of information about specific nutrient content on ratings of goodness and pleasantness of common foods. *Appetite* 1984;5:349-359.
5. Wardle J, Solomons W. Naughty. A laboratory study of health information and food preferences in a community sample. *Health Psychology* 1994; 13:180-183.
6. Mc Intosh WA, Fletcher RD, Kubena KS, et al. Factors associated with sources of influence/information in reducing red meat by elderly subjects; *Appetite* 1995;24:219-230.
7. Ashley JM, Jarvis WT. Position of the American Dietetic Association: food and nutrition misinformation. *J Am Diet Assoc* 1995;95:705-707.
8. Institute of European Food Studies. A pan EU Survey of Consumer Attitudes to Food, Nutrition and Health. Dublin: 1996: 1-29.
9. Kearney M, Kearney JM, Gibney MJ. Methods used to conduct the survey on consumer attitudes to food, nutrition and health on nationally representative samples of adults of each member state from the European Union. *Eur J Clin Nutr* 1997;51:S3-S7.
10. Comunidad de Madrid. Consejería de Economía; Censos de población y vivienda de 1991 de la Comunidad de Madrid. Tomo I: Características demográficas básicas y fecundidad de la población. Madrid: Consejería de Economía, 1993.
11. Fleiss JL. John Wiley & Sons (eds). *Statistical Methods for Rates and Proportions*. New York, 1981.
12. Margetts BM, Martínez JA, Saba A, et al. Definition of "healthy eating", a pan EU Survey of consumer attitudes to food, nutrition and health. *Eur J Clin Nutr* 1997;51:S23-S29.
13. Martínez-González MA, López-Azpiazu I, Kearney J, et al. Definition of healthy eating in the Spanish adult population: a national sample in a pan-European survey. *Public Health* 1998; 112:95-101.
14. Almeida MDV, Graca P, Lappalainen R, et al. Sources used and trusted by nationally-representative adults in the European Union for information on healthy eating. *Eur J Clin Nutr* 1997;51:S16-S22.
15. Pines WL. Trends in health care consumer communications. *J Pharm Marketing Managing*. 1992;7:87-98.
16. Ortega RM, Andres P, Jimenez LM, et al. Mensajes sanitario-nutricionales transmitidos por la publicidad de televisión. Tendencias y errores. *Nutr Hosp* 1995;10:331-339.
17. López-Azpiazu I, Martínez-González MA, Gibney M, et al. Factores con mayor influencia sobre la elección de los alimentos en la población española; *Rev Esp Nutr Com* 1997;3:113-121.
18. Gray JA. Evidence based public health. What level of competence is requires?. *J Public Health Med* 1997; 19:65-68.
19. Puska P, McAlister A, Neumensiv H, et al. A television format for national health promotion: Finland's "keys to health". *Public Health Reports* 1987;102:263-267.
20. Verri AP, Verticale MS, Vallero E, et al. La televisione e i disturbi del comportamento alimentare. Un 'indagine in eta adolescenziale. *Minerva Pediatrica* 1987;49:235-243.
21. Schwatz EN, Borra ST. What do consumers really think about dietary fat?. *J Am Diet Assoc* 1997;97:S73-S75.
22. Kessler DA. Addressing the problems of misleading advertising. *An Int Med* 1992;116:950-951.
23. Vermeersch JA, Swenerton H. Consumer responses to nutrition claims in food advertisements. *J Nutr Educ* 1979;11:22-26.
24. Hickman BW, Gates GE, Dowdy RP. Nutrition claims in advertising: a study of four women's magazines. *J Nutr Educ* 1993;25:227-235.
25. Zeitlin M, Formacion CS. Oelgeschlager, Gunn and Hain (eds). *Nutrition intervention in developing countries. Study II. Nutrition education*. Cambridge, 1981.
26. Fryer ML. Health education through interactive radio: a child to child project in Bolivia. *Health Educ Quarterly*. 1991;18:65-67.

TRABAJOS ORIGINALES

27. Ivanovic R, Olivares M, Ivanovic D. Sources of nutrition information of Chilean schoolers, metropolitan region, Chile, survey 1986-1987. *Arch Latinoam Nutr* 1991;61:527-538.

28. Ryan VC, Gates AD. Nutrient intake status, knowledge, source of information and self-perceived health status among older adults in South Carolina. *J Nutr Elderly* 1988;8:41-48.

29. Grotkowski ML, Sims LS. Nutritional knowledge, attitudes and

dietary practices of the elderly. *J Am Nutr Elderly* 1978;72:499-506.

30. Fullmer S, Geiger CJ, Parent M. Consumers' knowledge, understanding, and attitudes toward health claims on food labels. *J Am Diet Assoc* 1991;91:166-171.

31. Vaandrager HW, Koelen MA. Consumer involvement in nutritional issues: the role of information. *Am J Clin Nutr*; 1997;65:S1980-S1984.

32. Kipp DE, Radcliff JD, Hogue JA. The Internet and the nutritional sci-

entist. *Am J Clin Nutr* 1996;64:659-662.

33. Rudat K, Buttriss J. (ed). MORI research-attitudes to food, health and nutrition messages among consumers and health professionals. Making Sense of Food. Getting the message across. Nutrition and communication. London: National Dairy Council, 1993.

34. Schapira DV, Kumer NB, Lyman CH, et al. The value of current nutrition information. *Prev Med* 1990; 9:45-53.