

Poster presentations

Healthy lifestyles in Portugal: the urgent need to promote physical activity

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Keywords

levels of physical activity, health promotion, Portugal

Abstract

Objectives

To identify in the Portuguese population, the determinants and physical activity (PA) levels, to define adequate strategies of health promotion. This project belongs to the Pan-EU Survey on Consumer Attitudes to PA, Body Weight and Health, lead by the Institute of European Food Studies, sponsored by DG V, with the cooperation of all EU countries.

Methods

1007 Portuguese citizens, aged ≥ 15 , were interviewed constituting a national representative sample according to sex, age, social class, occupation, education and geographical area. The data's descriptive analysis, was followed by uni and multivariate analysis.

Results

PA was not viewed by the Portuguese as a major health determinant as it ranked only 7th (11%), following food (60%), smoking habits (26%), stress

(21%), environment (21%), alcohol (17%) and body weight (12%). This lack of identification of PA as determinant of health can explain the high proportion of people not engaging in any type of PA (60%) the highest across the EU. Various benefits of being physically active were identified: to maintain good health (21%), to release tension (18%) and to be out of doors (15%). "Not being the sporty type" (26%), professional and study commitments (23%) were the most important barriers to PA. A large variation in attitudes, knowledge and behaviour in relation to PA, was found for gender, age, education, social class, marital status and geographic groups.

Conclusion

Results of this study will help the definition of target groups for PA promotion and can be a base for future interventions in Portugal, where this need is essential and urgent.

Secular trends of obesity in the Italian population

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Keywords

obesity, body mass index, secular trends, dietary fat, Italy

Abstract

The prevalence of obesity is increasing in most countries around the world at an alarming rate, and is described as an epidemic of public health importance. Given the high proportion of relapse of obesity after treatment, primary prevention represents the only effective strategy at population level. Dietary factors as well as lifestyle are recognised to play a major role in the development and maintenance of obesity. Scarce systematic documentation on the prevalence of obesity and its trend over the years is available in Italy. This represents a source of concern as it is known that

its two major risk factors – dietary energy density/fat content, and physical inactivity – have increased in recent years. Food consumption surveys have shown that dietary fat provided only 22% of total energy in 1930's, while later surveys showed that by the 1990's the fat of the diet had raised to about 35% of total energy. Time-budget surveys (ISTAT, 1993) have revealed that television is watched for almost 2 hours per day at the age of 6 yrs and increases with age. There is also good evidence that both occupational and leisure activities have become more sedentary.

Such changes of the risk factors for obesity can be expected to have resulted in an increase in the prevalence of obesity. We were able to use data collected in surveys conducted with standardised techniques in 1930-1940 on a sample of about 2000 men (18-50 years), and to compare the results with the prevalence of obesity recorded in later surveys (from 1960 to 1998). Obesity was defined as BMI ≥ 30 kg/m². The analysis of these data reveal that in the 1930's mean BMI was 22.5 kg/m² for men and 23.4 kg/m² for women and the prevalence of obesity was extremely low (less than 1% in men). Later surveys show that in recent years obesity has increased by several folds: a national survey conducted in 1994, indicated that mean BMI was

26.2 kg/m² for men and 25.1 kg/m² for women and that 7% of the population could be classified as obese, with a peak in the South where 14% of women are classified as obese. The true prevalence might have been somewhat underestimated in this later survey as weight and height had been reported rather than measured. Such high prevalence of obesity, confirmed by other surveys, substantiates the existence of a positive time trend of this condition and highlights the public health dimension that obesity is acquiring in Italy. Advice to the population relative to the fat content of the diet and the desirable level of physical activity should be a high priority of the competent health authorities.

Relationship between fat intake and fat mass in sportswomen submitted to restricted diets

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Keywords

lipid profile, body composition, restricted diets, gymnasts

Abstract

Table 1 Dietary intake lipid profile and body composition in gymnasts and control

	C (n=23)	RG (n=10)	AG (n=10)	SRI
<u>Dietary intake (7-d questionnaire)</u>				
Energy intake (Kcal/d)*	1918±319 ^a	1267±136 ^b	1235±106 ^b	2300-2500
Carbohydrates (%)*	39.55±6.49 ^a	46.61±6.36 ^b	44.07±1.83 ^c	55-60
Fat (%)*	41.40±3.68 ^a	27.63±6.44 ^b	35.95±1.64 ^c	30-35
Protein (%)*	19.05±3.59 ^a	25.76±4.53 ^b	19.98±0.81 ^a	10-15
<u>Lipid Profile</u>				
Saturated fatty acids (SFA) (%)*	12.89±2.95 ^a	9.50±3.58 ^b	13.95±2.20 ^a	<10
Monounsaturated fatty acids (MUFA) (%)*	19.35±2.16 ^a	12.85±3.56 ^b	15.16±1.19 ^c	12-20
Polyunsaturated fatty acids (PUFA) (%)*	5.61±1.64 ^a	3.02±1.78 ^b	3.18±0.55 ^b	<7.5
Cholesterol (mg/d)*	373±105 ^a	270±127 ^b	275±33 ^b	300
Linoleic acid C18:2 (n-6) (g/d)*	11.73±5.08 ^a	3.43±2.76 ^b	4.25±1.20 ^b	
Linolenic acid C18:3 (n-3) (g/d)*	1.20±0.55 ^a	0.44±0.18 ^b	0.49±0.06 ^b	
<u>Body Composition</u>				
Height (cm)*	162.38±5.72 ^a	161.32±3.84 ^a	147.89±7.53 ^b	
BMI (kg/m ²)*	20.47±2.14 ^a	16.27±0.94 ^b	18.97±1.80 ^c	
Fat mass (%)*	27.77±2.12 ^a	19.93±1.76 ^b	15.39±2.41 ^c	

*Significant differences among the three groups (ANOVA). Different letters indicate significant differences between groups (Student's t test, $p < 0.05$).

SRI: Spanish recommended intake.

Athletes competing in sports that require leanness or a specific body weight, such as gymnasts restrict dietary intake in order to achieve and ideal body weight for top performance.

Objective: To find out the relationships between fat intake and fat mass in two groups of

sportswomen (13-17 yr) who are submitted to restricted diets: 10 elite rhythmic gymnasts (RG) (48 h/wk of physical exercise) and 10 elite artistic gymnasts (AG) (48 h/wk of physical exercise). The results were compared with a sedentary control group (C) (<2 h/wk of physical exercise, n=23).

Methods: the following parameters were evaluated: (Table 1)

Results: All the groups consumed a calorie intake below the SRI (2300-2500 kcal/d). RG and AG consumed hypocaloric diets, significantly lower than C; however RG showed a higher dietary protein intake together with a lower dietary lipid consumption in comparison with the other two groups. The contribution of carbohydrate to the total energy intake was lower in all groups *vs* SRI. Regarding lipid profile, all groups showed PUFA intake within the recommended values RG and AG being lower than C. SFA intake was higher in C and AG than SRI and RG. MUFA values were within the SRI, although both sportswomen consumed lower levels than C, RG intake being

the lowest. Cholesterol and C18:2 and C18:3 essential fatty acid values were significantly lower in both groups of sportswomen than in C. AG showed the lowest height values. BMI was lower in RG and AG than in C, RG showing the lowest values. Fat mass was lower in sportswomen than in C, AG showing the lowest values. CONCLUSIONS: Although the contribution of fat (from MUFA and SFA) to the total energy intake, and BMI levels were higher in AG than in RG, AG presented lower fat mass, at the expense of a very reduced growth (height below percentile 3).

The attitudes of obese and post obese women to food, nutrition and health

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Keywords
nutrition, health, obese

Abstract

In 1996 the Institute of European Food Studies (IEFS) published the results of a survey of consumer attitudes to food, nutrition and health in each member state of the European Union. Their objective was to provide policy makers, at EU and at member state level with a rich source of data on which to begin to base healthy eating promotion messages. They surveyed over 14,000 people across 15 countries; the sample selected took no account of body size. The aim of this study was to survey the attitudes of obese and post obese women about influences on food choice, definitions of healthy eating, sources of healthy eating information, perceived barriers to healthy eating and perceived benefits of healthy eating. We used questions derived from a subset of the IEFS fourteen question survey.

Fifty-seven British women who were currently obese or recently post obese were given a questionnaire asking about their weight and dieting history along with ten healthy eating questions (TOAST survey). All subjects either had, or wanted to reduce their weight. We also looked at the differences between dieting and non-dieting behaviour.

One of the most important findings from the IEFS survey was that on average 70% of EU subjects are of the opinion that they do not need to make changes to the food they eat because they believe their diets are already healthy. TOAST survey subjects showed no such complacency with over 90% saying they were aware that they needed to change to a healthier way of eating. The IEFS comment that their finding does not appear to stem from a lack of awareness of what healthy eating comprises. Likewise, TOAST survey findings showed just as much understanding, with subjects identifying less fat, more fruit and vegetables and balance/variety as important for healthy eating.

TOAST survey results showed that the popular media sources (TV/radio, magazines and newspapers) were widely used for obtaining nutrition messages. These sources, however, are not regarded with as much 'trust' as health professionals, books or government agencies.

Both groups, the IEFS and TOAST survey subjects placed healthy eating high on their list of influences on food choice, with the TOAST survey subjects placing it in their top three, along with taste and quality. One difference between the findings of the

two surveys was the importance of price on the influence of food choice. IEFS subjects placed this as the second most important influence, whereas TOAST survey subjects stated this was one of the least important factors.

TOAST survey looked at any differences on the subjects' list of influences on food choices when they were on a weight loss diet compared with when they were not. Not surprisingly, slimming was rated the most important when they were on a weight loss diet followed by trying to eat healthily and taste. When not on a diet, slimming is eighth place of importance on TOAST survey, not significantly different from the IEFS finding.

Both groups chose the same top four barriers to healthy eating; the IEFS' subjects ranked them as 'irregular work hours', 'giving up favourite foods', 'willpower' and 'busy lifestyle'. TOAST survey

subjects gave willpower as the most difficult barrier, followed by giving up favourite foods, irregular work hours and fourth, busy lifestyle. Not knowing enough about healthy eating was way down the list.

TOAST survey subjects perceive that healthy eating has many benefits, most importantly 'quality of life', 'control of body weight' and 'stay healthy'. This is not significantly different from the findings of the IEFS survey.

As stated by IEFS, it is important that nutrition educators know where their efforts should be focused and that different messages may be needed for different subgroups. By identifying the similarities and differences between the findings of the IEFS survey and the TOAST survey we go some way towards further clarifying the issues.

Carbohydrates for healthy foods. What to recommend and why?

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Keywords

carbohydrates, sugars, oligosaccharides, starch fibre

Abstract

The current view of dietary carbohydrates as simply providing us with energy is outdated. The carbohydrates that contribute to the diet vary in their chemistry and physical form and therefore, in the rate, site and extent to which they are digested and absorbed in the gut. This, in turn, leads to effects on satiety, blood glucose and insulin, protein glycosylation, lipid and bile acid metabolism. Furthermore, some carbohydrates reach the large

intestine where they are fermented and effect many aspects of large bowel function, colonic and hepatocyte metabolism.

In 1995 a group of European experts proposed a new classification of carbohydrates for nutritional purposes based on molecular size and, subsequently, this was adopted by an FAO/WHO expert consultation in Rome in 1997. This classification is outlined in Table 1.

Table 1

Class (DP*)	Sub-Group	Components
Sugars (1-2)	Monosaccharides	Glucose, galactose, fructose
	Disaccharides	Sucrose, lactose, trehalose
	Polyols	Sorbitol, mannitol
Oligosaccharides (3-9)	Malto-oligosaccharides	Maltodextrins
	Other oligosaccharides	Raffinose, stachyose, fructo-oligosaccharides
Polysaccharides (>9)	Starch	
	Non-starch polysaccharides	Cellulose, hemicellulose, pectins, hydrocolloids

DP* = Degree of polymerization

This new framework is needed to allow a greater understanding of the role of the individual carbohydrates in health and to inform the public of their importance. For example, which carbohydrates might give the best glycemic control, which effect lipid metabolism, which effect the intestinal flora and may improve resistance to invading pathogens, and which might protect against colorectal cancer, can only be answered with a detailed knowledge of the individual components of this macronutrient in the diet.

There is an urgent need to apply this new classification of carbohydrates to epidemiological and physiological studies, so that more exact information on food and health can be obtained. Currently there are no published dietary intake data anywhere in the world which give a detailed assessment of even the three major fractions of carbohydrates, the sugars, oligosaccharides and

polysaccharides, let alone the individual components of these fractions. Without this, a comprehensive and justifiable policy on carbohydrates for nutrition and health cannot be formed.

References

1. Carbohydrates in Human Nutrition. Report of a Joint FAO/WHO Expert Consultation. Rome, 14-18 April 1997. FAO Food and Nutrition Paper 66.
2. Cummings, J.H., Roberfroid, M.B. and members of the Paris Carbohydrate Group, H. Andersson, C Barth, A Ferro-Luzzi, Y Ghoos, M Gibney, K Hermansen, WPT James, O Korver, D Lairon, G Pascal and AGS Voragen. A new look at dietary carbohydrate: chemistry, physiology and health. *European Journal of Clinical Nutrition* 1997. 51:417-423.

Quantitative population nutrient targets for sugar

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Abstract

Objectives: To evaluate the evidence supporting population based dietary guidelines (quantitative nutrient goals) for sugar. To assess the available evidence of effectiveness of such goals especially with respect to their intended primary outcome: improved dental caries prevalence. To consider public health policy options for improving caries rates.

Methods: Review of scientific literature and other sources of population data on sugar consumption and dental caries prevalence (1855 – 2000). Review of relevant epidemiological and experimental literature.

Results: Data on sugar consumption estimates are available, in some cases, continuously from 1855 to the present. Estimates on caries prevalence are much more restricted. No reliable direct evidence

Keywords

caries, dietary guidelines, epidemiology, policy, sugar

of the impact of implementing a population nutrient target for sugar was identified. Evidence of effectiveness of population targets for sugar can therefore only be inferred from univariate analyses of natural experiments with known, but unmeasured, confounding variables. Cross sectional epidemiology has proved uninformative. Direct experimental evidence indicates that a population nutrient target can only be effective by accident.

Conclusions: Population nutrient goals for sugar are likely to be ineffective. The evidence cited in their support has been incorrectly interpreted. Other, more effective, methods of reducing caries are available and have not yet been fully implemented.

Public health policy should focus in the universal application of the effective use of fluoride dentrifices rather than impractical and ineffective dietary approaches to caries prevention.

WHO dietary guidelines, reductions in sugars intakes and decreased dental caries rates amongst preschool children

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Keywords

dietary guidelines, effectiveness, dental caries, sugars

Abstract

Background: Dental caries amongst preschool children is a significant public health problem in many countries. The frequent consumption of non milk extrinsic sugars (NMES) is recognised as the key aetiological factor in caries development. International recommendations advocate that NMES intakes should not exceed 10% of total energy intake. Very few studies have evaluated the health outcomes of food policies aimed at reducing NMES consumption.

Objective: To assess the effect of the adoption of dietary guidelines on sugars intakes and one year dental caries increments amongst 3 year old children attending state nursery schools in Recife, Brasil.

Method: Twenty nine nurseries were randomly selected from a list of 50 state nurseries in Recife. Twelve of these nurseries with 245 children attending had dietary guidelines in operation. The other 17 nurseries with 265 children attending did not have any dietary guidelines in place. The children's NMES intakes at nursery and at home were assessed by measuring 6 day weighed intakes at the nursery and a food inventory completed by the children's mothers. Dental caries were examined using standard WHO criteria.

Results: There was a statistically significant difference in the frequency and mean NMES intake between children attending the nurseries adopting and those not using the dietary guidelines. Children at nurseries adopting guidelines consumed 22.9g of NMES per day (SD 6.2) compared with 53.5g per day (SD17.7) for children at the nurseries without any guidelines. In addition, children attending the nurseries without guidelines were 4.87 times more likely to develop caries over a one year period than those children attending nurseries with guidelines. After adjusting for confounding, children who consumed more than 32.6 grams of NMES per day at the nursery, 10% of total energy intake from NMES for 3 year-olds, were 2.99 times more likely to have high caries increment compared to those who consumed up to 32.6 grams (OR = 2.99; 95% CI = 1.82-4.91). There was at least an 82% higher risk of high caries increment among children who consumed more than 32.6 grams of NMES daily.

Conclusions: Dietary guidelines in nurseries are an effective means of reducing NMES intakes amongst preschool children. Children consuming diets with reduced amounts of NMES are much less likely to develop dental caries. There was a clear effect on caries of consuming below 10% of total calories as NMES.

Factors of change: Technological progress and the uncertain future of the Mediterranean Diet

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Keywords

Mediterranean diet, bioactive compounds, vegetables, biotechnologies

Abstract

The Mediterranean Diet is typically composed of cereals, pulses, vegetables and fruit, and its fat is almost exclusively olive oil. The health-promoting features of this diet, originally entirely ascribed to its fat moiety, were later on shown to be related also to its abundance of antioxidant nutrients (vitamin E, C, beta-carotene). However, in later years, it became clear that even these were unable to fully account for the protective role of the Mediterranean Diet. More recently, other bioactive compounds present in the vegetables and fruit (flavonoids) of the Mediterranean Diet were shown to be inversely related cardiovascular disease risk, and are presently thought to play an important health-promoting role. Unfortunately, very little information is available on the concentration of these compounds in the large variety of plant food that composed the Mediterranean Diet. But even while we are still struggling to better understand the peculiar healthy-promoting compositional features of this diet, an evolution of dietary habits has occurred over the years, with a progressive convergence towards the Northern European dietary profile, eroding to a certain extent the specificity of the diet consumed in the Mediterranean region. Besides the forces that have shaped the choices of the consumers towards different foods and preparation, there are other covert changes that are taking place in the compositions of the foods. These stem from the

pressure of modern technological development of agricultural production, food processing and marketing, and general style of life. The foods that were consumed in the years when the beneficial effect of the Mediterranean Diet was first described, were produced in a context of semi-subsistence, with traditional agricultural practices, using types and cultivars that had been selected by simple and slow-evolving breeding techniques, and that were mostly domestically processed. The current circumstances and technological development have modified most of these procedure, and intended as well as not-intended and little known changes are taking place in the intrinsic features of the foods, such as the effects on the flavonoid content of fruit and vegetables induced by the diverse exposure to UV in glass-houses, of the extended storage under shelf-life condition, the increasingly aggressive of industrial food technologies. This paper will review these changes and highlight the possibility that the Mediterranean Diet of the future may bear little resemblance, besides in the external appearance and in the name to what was the pristine Mediterranean Diet.

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The Mediterranean Diet: Italians like it low-fat!

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Keywords

Mediterranean diet, food consumption, olive oil, fat intake, obesity

Abstract

The main feature of the Mediterranean Diet, as revealed in the mid 60s by the Seven Countries Study, could be usefully subsumed in an abundance of plant food - mostly cereals, pulses and fresh vegetables - and a low content of animal foods. There is one additional feature that stands out for its unique position, namely its dietary lipids. While the intrinsic dietary fat (organ lipids) is low, as expected from a high vegetable diet, and the added fats are represented almost exclusively by olive oil, there is a wide difference in the amounts that were consumed in the various Mediterranean countries that can rightly claim being Mediterranean, for life-style if not geographically (such as e.g. Portugal). The difference in total fat consumption ranged from the highest level recorded in Crete (40% total energy) to the lowest recorded in Southern Italy (Montegiorgi, 25% total energy), although in both sites the saturated fatty acids (SFA) were below 10%. This difference has been at the basis of a controversy relative to the desirable level of total dietary fats. The issue acquires

great importance when advice on the desirable dietary profile is delivered. The role that energy dense diets might play in the genesis and/or maintenance of obesity under the increasingly sedentary life-styles of modern populations is well recognised. Survey records of the diets consumed in Italy between the 1930's and the 1980's have been reviewed and reveal that the preference for a low fat diet persisted over the years, cutting across socio-economic strata of society. The earlier content of fat in the diet ranged from as low as 19% energy in the province of Salerno to about 26% in Milano. The province of Bolzano, with 30% energy from fat, was an outlier and such remained over the years. The recent trend towards an increase of fat in the Italian diet might be related to the expanding recourse to industrially processed and ready-made food commodities as opposed to the earlier dominance of domestically prepared foods and meals.

Dietary behaviour in central England and a French Mediterranean region

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Keywords

nutrition survey, dietary habits, Mediterranean, France, United Kingdom

Abstract

Objective: The investigation involves comparison of dietary behaviour between UK and Mediterranean France by characterising the pattern of the current French Mediterranean diet compared to the current British diet.

Methods: The findings of two dietary surveys: one in the UK and one in France are compared. An interviewer-administered questionnaire was used in both countries. Questions on food frequency were used to assess dietary behaviour, which were regrouped in the French survey to correspond with UK groupings. Dietary indices were constructed to describe dietary behaviour in relation to cancer recommendations for intake of: fat, fibre, meat, fruit and vegetables. **Setting:** The UK study was conducted in Leicestershire, Central England and the French study was carried out in Hérault, Southern France.

Subjects: UK: n=418 subjects (57.9% female and 42.1% male; mean age=45.0 years); France: n=635 subjects (50.1% female and 40.9% male; mean age=49.8 years). Age range of both samples: 20-74 years.

Results: There were positive and negative trends in food consumption in each country. UK respondents reported eating more beans and pulses ($p<0.001$), less cheese ($p<0.001$), red meat ($p=0.001$), and processed meats ($p<0.001$) than French respondents. However, on the negative side, they ate less fruit and vegetables ($p<0.001$), fish and poultry ($p<0.001$), cereals ($p<0.001$), and more sweets and chocolates ($p<0.001$), and cakes, pastries, biscuits and puddings ($p<0.0001$). Women had healthier diets in both countries.

Conclusions: Overall the Southern French diet was healthier as French respondents scored significantly better for indices for: fat, dietary fibre, fruit and vegetables ($p<0.001$ in all cases). However the French sample scored poorer for the meat index ($p<0.001$).

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A comparison of coronary risk factors in Cretan and Northern Irish schoolchildren

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Keywords

children, coronary risk-factors, comparisons

Abstract

Mortality rates from coronary heart disease (CHD) in Northern Ireland (NI) are between two and three

times higher than those in Greece. It is not known whether this disparity is also manifest in the

distribution of risk-factors for CHD in children from these countries. The objectives of the current study were to compare the anthropometry, fatness, aerobic fitness and blood lipids in representative cohorts of 12-year old children from Crete and NI.

Data were collected in 1990 (NI) on approximately 250 boys and girls, and in 1998 (Crete) from approximately 370 boys and girls. Both cohorts were part of larger school-based studies investigating the health status of schoolchildren in their respective communities.

Measurements of height, weight, four skinfold thicknesses, and aerobic fitness were made using the 'EUROFIT' protocols under standardised testing conditions in both locations. Fasting (Crete) and

non-fasting (NI) blood samples were taken and analysed for serum lipids in accredited laboratories. Lipid results from Crete were adjusted using a regression equation derived from 50 paired samples analysed both in Crete and in NI. Ninety-five per cent confidence intervals (CI) for the difference of population means were calculated.

Although variations in protocol may contribute, Cretan children (especially boys) appear to be heavier and fatter than Northern Ireland children. They are also less fit. With the exception of a higher total cholesterol in Northern Irish girls, these differences run counter to the pattern of ischaemic heart disease incidence seen in the two countries. A further example of the 'Mediterranean paradox'?

Table 1. A comparison of subject characteristics between Northern Irish and Cretan children.

Variable	NI(n=250)		Crete (n=370)		95% CI
	Mean	SD	Mean	SD	
Boys					
Total Chol (mmol/L)	4.59	0.82	4.60	0.97	-0.15, 0.13
HDL Chol (mmol/L)	1.40	0.32	1.42	0.42	-0.08, 0.04
Ratio Tot/HDL Chol	3.44	0.98	3.40	1.00	-0.12, 0.20
Height (cm)	150	7.9	149	7.5	-0.2, 2.2
Weight (kg)	42.6	9.4	45.4	11.8	-4.8, -1.1**
BMI	18.9	3.3	20.3	4.1	-2.0, -0.8**
Total Skinfolids (mm)	37.9	20.6	59.2	33.5	-25.6, -17.0**
Aerobic Fitness (laps)	59	19	34	17	21.5, 27.3**
Girls					
Total Chol (mmol/L)	4.72	0.77	4.43	0.94	0.15, 0.43**
HDL Chol (mmol/L)	1.37	0.29	1.37	0.40	-0.05, 0.05
Ratio Tot/HDL Chol	3.58	0.87	3.38	0.89	0.06, 0.34*
Height (cm)	151	7.5	150	9.6	-0.3, 2.3
Weight (kg)	44.0	9.0	45.8	10.8	-3.4, -0.2*
BMI	19.2	2.9	20.7	2.2	-2.8, -0.2*
Total Skinfolids (mm)	43.6	15.8	60.3	27.4	-20.1, -13.3**
Aerobic Fitness (laps)	44	13	25	13	17.0, 21.2**

*=P<0.05 **=P<0.001

Differences in overall food and nutrient intake profile between breakfast users and breakfast skippers in a representative sample of 14–18 years old Belgian adolescents

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Keywords

food based dietary guidelines, breakfast, adolescents

Abstract

Rationale: The analyses reported in this paper must be situated within a broad context of a search for elements that may be helpful for developing strategies to implement the translation of nutrient dietary guidelines into food and meal based dietary guidelines

Objective: To study – in a representative random sample from the general population aged 14–18 years – differences in overall food and nutrient profile between people who usually take a good breakfast and people who usually skip breakfast or take only a very poor breakfast.

Material and Methods: In the spring of 1997, 341 girls and boys aged 14–18 years were selected in five schools in the city of Ghent in Belgium. The individuals and the schools were selected in such a way that all educational levels and all different types of schools (public and private schools) were represented. A 7-day estimated food record method was used to quantify food and nutrient intake. The students were hereby guided by experienced dietitians who checked the food diary every 2 days and who took additional information from the parents, if necessary. A score was developed to distinguish 5 different categories regarding breakfast habits on the basis of both quantitative aspects (frequency of breakfast use) and qualitative aspects (based on the presence in the breakfast meal of foods from three main food groups – dairy products, cereals, fruit and vegetables). For this study, the five categories for breakfast habits were dichotomised into a group who “never takes breakfast or takes a low-quality breakfast, i.e. not enough calories and/or not enough variation in foods” (group 1) and a group who “takes good/excellent quality breakfast (nearly) every day” (group 2).

Results: In general, boys had a better overall breakfast score than girls and 14–15 years old students scored slightly better than 17–18 years old adolescents. On the whole, about 15% of these students never take breakfast and around 25% takes a low-quality breakfast; about 50% takes a “moderate to good quality breakfast” while only 10% takes a full value breakfast with at least 25% of daily energy from this meal and with all above mentioned food groups represented.

For macronutrients (in energy percent) no significant differences were found, except for a significant higher alcohol intake in group 1 for both sexes.

For micronutrients, the intake (per 1000 Kcal) was consistently higher in group 2 as compared to group 1 for all calculated vitamins, minerals and trace elements, and this was statistically significant for the B vitamins, Vit C, iron, calcium, magnesium and zinc in both girls and boys. This is compatible with the observation that people from group 2 had a significantly higher intake of cereals, dairy products and fruit and vegetables as compared to group 1.

Conclusions: The results of this study strongly suggest that people who take a good or full value breakfast have a higher density of micronutrients in their diet as compared to people who tend to skip breakfast or who give only poor attention to this meal. Further research is desirable to look for discriminators between these two groups in terms of psycho-social or other variables. It is also concluded that breakfast is a potential important element in the context of health promotion activities in the field of nutrition in general and for the implementation of food based dietary guidelines in particular.

Dietary intakes of the children of Crete

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Keywords

children, Nutrient intake, Food consumption

Abstract

Greece has a rising death rate from cardiovascular diseases, which constitutes the primary cause of morbidity and mortality. This trend has been attributed mainly to the dietary habits, smoking habits and sedentary lifestyle of contemporary Greeks, parameters which all have their roots into childhood. The aim of the present study was to assess the dietary intake of young children of Crete, identify any possible problem excesses or deficiencies in nutrient intake.

The data were collected in 1992 from a cohort of 294 six-year-old children, who were followed prospectively in 1995 (aged 9) and 1998 (aged 12). These children are a randomly selected sample from the total 6000 children of Crete registered in the elementary schools of the island in 1992. The dietary data collected included a 3 day weighted food record.

As children were becoming older there was an increasing percentage of them with less than 60% of recommended dietary allowances (RDA) for vitamins and minerals. The deficient intake is more profound for iron, folic acid and vitamin C with 1% to 21% of children taking less than 60% of the RDA for iron, 0% to 6% taking inadequate folate and 12% to 37% with low vitamin C. The percentage of energy from total fat was below 40% for less than

3% of the children. The saturated fat consumption was high contributing more than 15% of the total caloric intake for more than 96% of the children. Only 1% of the children had saturated fat intake less than 10% of total energy intake.

The dietary fibre intake was low for 2-28% of the children with less than 10 g/day, 30-43% of the children were taking 10-15 g/day, 20-50% of the children were taking 15-20 g/day and only 13-30% had over 20 g/day.

These findings indicate a high prevalence of insufficient micronutrient intakes but also high consumption of fat and saturated fat for a large proportion of school children. A large portion of saturated fat is obtained in the morning hours at school and from afternoon snacking. Most of the children replace breakfast with products purchased from the schools' shops, which have low nutritional value but are high in saturated fat, like crisps, chocolates etc. Similar observations have been made during the afternoon snack time.

In conclusion the children of Crete are abandoning the traditional diet and follow a typical "westernized" dietary pattern. It is therefore, urgent to develop effective nutrition education strategies for the population.

Intra-individual variation in activity of blood cell glutathione peroxidases in a population of poor selenium status

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Keywords

selenoprotein, glutathione peroxidase

Abstract

Objective: To investigate the relationship between blood selenium concentration and selenoprotein

function, and assess their validity as functional markers of selenium status in healthy individuals.

Study Design: Fourteen subjects consuming their normal diet were monitored for 7 weeks, during which fasting blood selenium concentrations and glutathione peroxidase activities in plasma, erythrocytes, lymphocytes, granulocytes and platelets were measured.

Results: Mean plasma and red cell selenium concentrations were 80µg/L and 44µg/L (0.408µg/gHb) respectively. A maximum of 18% intra-individual variation was observed for activities of plasma glutathione peroxidase and 26% for erythrocyte cytosolic glutathione peroxidase.

Cytosolic and phospholipid hydroperoxide glutathione peroxidase activities in platelets, lymphocytes and granulocytes varied more over the same sampling regimen with mean variations reaching 58%. The observed differences could not be attributed to variations in selenium intake.

Conclusions: Blood selenium concentrations and glutathione peroxidase activity, may not reflect adequacy of intake relative to metabolic requirement for selenium. Moreover, our observations suggest that cross study comparisons of functional Se status should be interpreted with caution.

Effect of organic and inorganic selenium supplementation on selenoenzyme activity in blood lymphocytes, granulocytes platelets and erythrocytes

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Keywords

selenium, selenoenzyme, glutathione peroxidase

Abstract

Objective: To examine the relationship between selenium intake, blood selenium concentration, and selenoenzyme activity. Blood selenium concentration in the UK has declined by approximately 50% between 1974 and 1991, reflecting a large decrease in dietary selenium (Se) supply, with intakes only half the reference nutrient intake (RNI) of 1µg/Kg body weight. Tissue levels of Se are readily influenced by dietary intake. Therefore selenoprotein activity may be sub-optimal due to low Se status and thus compromise normal cell function.

Study design: To investigate the effect of changing Se intake on selenoenzyme activity we have determined the relative effectiveness of organic selenomethionine and inorganic sodium selenite (50µg Se daily for 28 days) in modulating glutathione peroxidase activities in blood cells from 45 healthy men and women, from a UK population.

Results: Transient and acute changes in lymphocyte, granulocyte and platelet phospholipid hydroperoxide glutathione peroxidase (GPx4) activity occurred by day 7 or 14 of sodium selenite treatment and by day 7 in lymphocytes from selenomethionine treated

subjects compared with controls taking a placebo. In contrast, GPx4 activity in granulocytes and platelets in the selenomethionine group increased gradually over the 28 days. Cytosolic glutathione peroxidase (GPx1) activity in these blood cells from both treatment groups increased gradually over the 28 days. For each cellular selenoenzyme activity a significant inter-individual difference ($p < 0.001$) in extent of response to Se supplementation was observed, but was not related to blood Se concentrations either before or after treatments. Significant inverse correlations were evident between baseline enzyme activities and % change in activity after 28 days supplementation, eg lymphocyte GPx4 $r = -0.695$ ($p < 0.001$), indicating that pre-treatment activity may be sub-optimal as a result of poor Se status.

Conclusions: The different and contrasting effects that Se supplementation had on blood selenoenzyme activities may be indicative of a difference in metabolic need for Se regulated at the level of Se dependent cell function.

Development, validity and reliability of a simple and quick assessment instrument for dietary fat and fibre intake for use in nutrition education

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Keywords

fat index, fibre index, food habits, nutrition education

Abstract

Problem description: general nutrition education often fails because people have a wrong perception of their nutrient intake and for this reason do not consider themselves as a target group of the information. A simple and quick assessment instrument for the intake of the most important nutrients would help the target group of nutrition interventions to have a realistic idea of their nutrient intake and make them accessible for information. There are several methodological problems for the development of those index questionnaires

Objectives: development of reliable and valid index questionnaires for dietary fat and fibre intake (FFIQ's) for use in nutrition education. The FFIQ's consist of a list of questions on food items, the final score corresponds with the actual dietary fibre or fat intake (compared with a standard)

Methods: Three FFIQ's were developed: a short and a semi-long fat questionnaire and a semi-long fibre questionnaire. The development of the FFIQ's was based on the available food consumption studies in Belgium. For the development of the FFIQ's those foods contributing most to the fat/fibre intake and consumed by a large group of the population were included in the index questionnaires. Food items with an equal fat/ fibre content were grouped and included in one question. To calculate the final fat/fibre index scores, coefficients were attached to each portion (household measures or grams) of the food items in each question; those coefficients were based on the Belgian Food Table (Nubel). The final fat index scores were divided into four categories; each category was linked with a specific advice text block (too low, OK, almost OK and too high). The "fat categories" were based on the Belgian recommendations on fat intake for adults. The three categories for fibre were based on the

minimum recommendations for fibre for adults (too low, almost OK, OK).

A test-retest reliability study with two weeks interval was conducted with 189 adult respondents. Reliability was tested with Pearson correlation coefficients. The validity was assessed against a three-day food record with the same respondents. To detect misclassification problems cross tabs and gamma coefficients were used.

A qualitative study (n=40) was conducted to reveal interpretation problems of the food items and frequency measures, problems to fill in the questionnaires and interpretation and perceived reliability of the advice given.

Results: Pearson correlation's (*P<0.01) for the total scores: 0.78* for the short fat index quest., 0.75 *for the semi-long fat index quest. and 0.66* for the semi-long fibre index quest.

The misclassifications for the fibre index questionnaire compared with a three day food record were minimal, gamma=0.7(P<0,00). There were more misclassifications for the fat index questionnaires. Gamma for the short questionnaire=0.3(P<0,002), for the semi-long questionnaire=0.4(P<0.00). After regrouping 2 of the advice categories the gamma coefficient was 0.38(P<0.002) for the short test and 0.51(P<0.00) for the semi-long test.

The qualitative study revealed some problems with the perceived reliability of the coefficients used in the questionnaires and the interpretation of the advice given.

Discussion: The semi-long fat and fibre index questionnaires can be used as valid and reliable instruments for nutrition education. There are more reservations for the short fat questionnaire; this can only be used in a context where immediately more information can be given. The advice was completed with the message to consult a dietician for more specific information.

The Danone nutrition evaluation tool (D@NUT®)

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Keywords

modeling nutritional quality, healthy foodstuffs, balancing diet, nutrients

Abstract

A tool has been developed to assess the health quality of foodstuffs and meals: D@NUT®. Despite the inability of every individual foodstuff to be completely well-balanced since “*dosis solum facit venenum*”, the following definition of a healthy foodstuff has been proposed: it contributes successfully to a well-balanced diet by:

- providing nutrients which are lacking in the diet,
- containing fewer nutrients which are already consumed in excess.

Previous approach such as VoVo Food Guide or Nutrition Food Index use respectively only 3 and 16 nutritional criteria, whereas the Danone tool uses over 50 criteria based on the most recent results in nutrition.

D@NUT® is based on a 2-dimensional quantitative approach. The first dimension reflects the ability of a foodstuff or a meal to reduce the observed imbalances of a population, *i.e.* excess or lack of a nutrient, the basic reference being nutritional recommendations. The second dimension reflects the ability of a foodstuff or a meal to increase those imbalances. In this connection, it was necessary to establish :

- the accepted dietary recommendations,
- the criteria and their grading,
- the system of scoring,

- the weight of the score depending on the population.

These results can be plotted as a map providing an easily understandable representation of foodstuffs, from the most balancing ones such as fruits and vegetables, to the most unbalancing ones such as fats rich in saturated fatty acids.

The advantages of this tool are:

- flexibility and adaptability to all types of
- foodstuffs or groups of foodstuffs,
- meals, diets,
- countries and their recommendations,
- populations with a specific need,
- new knowledge in nutrition;
- sensitivity;
- sound from the scientific point of view;
- ability to be easily understood by consumers and food developers.

This tool can be extremely valuable and useful to industrialists, consumers, scientists and people in charge of evaluating the nutritional quality of foodstuffs and diets.

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Promoting healthier choices in catering outlets

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Keywords

catering, healthier options, promotional strategies, workplace

Abstract

Background and objectives: In 1997, the Health Education Authority (HEA) (now the Health Development Agency) undertook research funded by the UK's Department of Health, into the effectiveness of various strategies in promoting healthier choices in workplace catering outlets. This followed earlier research with caterers in 1993, which showed that a key barrier to improving catering practices was a lack of guidance for industry in how to promote healthier options. Previous HEA research with consumers in 1995, had shown that factors such as the taste and appearance of a dish had more influence on consumers' choice, than the 'healthiness' of a dish.¹ The objectives of this research were to test the effectiveness of strategies to promote healthier options on the basis of tastiness, healthiness, aesthetic appeal or a combination of these, in order to identify strategies to support caterers in promoting healthier options.

Method: The HEA collaborated with specialist workplace contract caterers 'Eurest plc' who provided six similar research sites, in British Telecom staff restaurants in the London area. The fieldwork was carried out by Harris Research Centre, over a period of six weeks, during which each outlet was assigned to one of the following conditions: 'Today's Special' with no special presentation; Today's Healthy Special with no special presentation; Today's Special with special presentation; Today's Healthy Special with presentation; no promotional message but special presentation; no promotional message and no special presentation (control).

The HEA selected 10 healthier option dishes from Eurest's recipe file. All six outlets served the same healthier option and the same parallel menu items, at lunchtime, on the same day of the study.

During two weeks baseline, all outlets served the healthier options as part of their routine menu with no special promotion or presentation. From week three onwards, the dishes were promoted and/or presented according to the condition to which the

outlet was assigned. For 'Today's Special' and 'Today's Healthy Special', A5 posters carrying a descriptor of the dish were placed close to the dish. The descriptors for 'Today's Special' focussed on the tastiness of the dish, while the descriptors for 'Today's Healthy Special' focussed on the health aspects. For the presentation conditions, outlets were issued with specific instructions regarding garnishing.

On a daily basis, the number of portions of each of the main meals sold was recorded, until one sold out. On the last day a self-completion questionnaire was carried out among customers, along with 50 short depth interviews with customers that had chosen the healthier option.

Results: Overall healthier options accounted for around one quarter of all the meals sold. Initial examination of the sales data revealed no clear effect of presentation or the type of promotional message used. However, closer examination of the data, revealed that sales of the healthier option were greater in the smaller outlets offering a choice of 3 dishes, than in the larger outlets offering a choice of 4 dishes. In examining the data it was observed that, during the baseline weeks when no promotional message or special presentation was used, certain healthier options, for example curries, spicy dishes, stir fries and chicken, sold well of their own accord. To explore this further, a regression analysis was carried out which examined the effects of: type of dish; promotional message; presentation; and number of choices on the menu. This showed that the type of dish was a highly significant factor in determining the number of sales. The size of outlet and number of parallel choices on the menu was also significant. Presentation was also shown to have some effect on sales. The customer survey supported this finding, with 28% of customers reporting that they chose whatever looked the most appetising. For some, the A5 promotional posters had influenced their choice of meal.

Conclusions: Caterers wishing to offer healthier options may find it most effective to make small changes to their existing best selling dishes such as curries, chicken dishes, etc. particularly in smaller outlets where there is little scope for adding new dishes to the menu. In larger outlets, with more choices on offer, promotional materials placed close to the dish may encourage sales. Attractive presentation of healthier options is also a key factor in influencing customer choice.

Nutrition and school meals – putting dietary guidelines into practice

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Abstract

Objective: The investigation involves comparing the nutritional adequacy of food provided in 80 English primary schools with current UK guidelines.

Background: The first nutritional standards for school meals in England were laid down in 1941 and continued with amendments, until 1980. After this, nutritional standards were abolished and Local Education Authorities developed their own policies and guidelines instead.

In 1992 the Caroline Walker Trust published a report of an expert working group “Nutritional Guidelines for School Meals”.¹ More recently, the British Government has indicated it’s intention to re-introduce nutritional standards for school meals. Whilst the final framework for nutritional standards is awaited, the Caroline Walker Guidelines are widely accepted as the most up-to-date nutrient based dietary guidelines for school meals in the UK.

Methods: Using the Microdiet dietary analysis package, nutritional analysis was carried out on a 20-day menu cycle used by 80 local primary schools. Standard school meal portion sizes were used and specific recipes were also analysed. The menu cycle represented the meals that 5-11 year old pupils would receive over 1 calendar month and is repeated throughout the whole academic year. The results were compared with the following nutrient based UK dietary guidelines for school meals: protein, fibre, calcium, vitamin C, folate, carbohydrate, iron, fat, sugar and energy intake. For the purpose of this

Reference

1. Health Education Authority. The National Catering Initiative : Offering the consumer a choice. London : Health Education Authority, 1996

Keywords

school meals, dietary guidelines, menu cycle, recommended value

analysis the recommended values for 7-10 year old pupils were used.

Results: The average school menu exceeded the recommended value (RV) for: protein (219% of RV), fibre (111% of RV), calcium (125% of RV), vitamin C (240% of RV) and folate (140% of RV). However, there were some areas of concern: energy content (89% of RV), carbohydrate (88% of RV) and iron (66% of RV). Total sugar content was higher than desirable (17% of food energy) but the average fat value (35% of food energy) was just within the guidelines.

Conclusions: The 20-day menu cycle met 6 out of 10 of the nutrient-based guidelines. Of particular concern is the low iron content of meals provided in light of widespread concern about iron deficiency anaemia.

This work supports the need for re-introduction of nutritional standards for school meals in the UK.

Future Work:

Encourage practical implementation of nutritional guidelines and standards for school meals using food based dietary guidelines.

- Further research on the food choices made by children

Reference

- Sharp I. Nutritional Guidelines for School Meals, Report of an Expert Working Group. London: Caroline Walker Trust, 1992

Cretan Schools Nutrition Education Program: Understanding food based dietary guidelines

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Keywords

Children, health education, nutrients, physical activity

Abstract

Objectives To examine the effects of a six years nutrition education program implemented in primary and secondary schools of Crete on health attitudes, dietary habits and behaviour and physical activity.

Methods Data were collected in 1992 and 1998. The experimental population consisted of 4171 pupils registered in the first grade of primary schools in two counties of the island of Crete, Iraklio and Rethymno.

A representative sample of 603 children from the intervention schools and 443 from the control schools registered in the first grade in 1992, as well as their parents, were examined prior to the program's start using several health related indices. The intervention group consisted of 24 schools while the control group consisted of 16 schools in two counties of the island of Crete, Iraklio and Rethymno.

An important element of the study is that the students could understand the dietary guidelines and how they can be adapted to every day life. Specifically, the children learn to judge their diets based on the frequency and quantity of the foods they consumed from all food groups on every day basis. They learned to translate basic nutrients into foods. Finally, the children exercise their ability to design their daily meals by selecting foods from all food categories and in a way that they achieve the recommended dietary allowance for basic nutrients.

Parents completed a food frequency questionnaire regarding their children's weekly consumption of various foods in order to quantify food and nutrient intake

24h food record was obtained from both the control and the intervention group of children to assess dietary behavior. A multiple-choice questionnaire was used to assess student's knowledge at the beginning and the end of the 3year and 6year intervention period. The questionnaire focused among others on diet and food products. Children's physical activity during leisure time was assessed using a questionnaire based structured activity interview.

Results Regarding health knowledge scores, intervention group pupils improved significantly compared to the control group ($p < 0.000$), while no differences were observed between parents in the two groups. The daily energy intake as well as the intake of monounsaturated, polyunsaturated and saturated fatty acid and protein were increased significantly more in the control group pupils compared to the intervention group.

Regarding physical activity, intervention group pupils increased their leisure time physical activity from 1h per week, at the age of six to about 5.5h per week at the age of 12.

Conclusions The observed changes in children's nutrient intakes point to some positive dietary behavioural changes. This should be attributed mainly to the parental involvement in the program who play a primary role and serve to reinforce the development of specific eating habits in children but also to the expanded duration of the nutrition education program. Furthermore, nutritional intake is a matter of choice and understanding food based dietary guidelines can lead to the adoption of healthier diets on lifelong period

Senior health mentors as promoters of healthy diet

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Keywords

Health promotion, older people, healthy nutrition

Abstract

The aims of the study were: a) to improve the diet of older people, in order to prevent cardiovascular diseases, b) to record, modify – according to the principles of healthy nutrition that are accepted now days – and spread out traditional Greek recipes, c) to actively involve older people as volunteers in the promotion of healthy diet, d) to evaluate older people's capabilities in operating as health educators and influence other older people's attitudes and behaviour.

Based on literature findings¹⁻³ a pilot study was designed to be implemented in Open Health Care Centres for Older People (KAPI) in two municipalities in greater Athens area, in collaboration with Ageing Well UK⁴, which has an extensive experience in the subject.

The project was implemented during a twelve-month period, in two phases. During the first phase, thirty older volunteers participated in a training programme, in order to become senior health mentors (SHMs). This phase was evaluated by questionnaires completed by the SHMs before and after the training. SHMs then visited other KAPIs, presented and discussed basic principles of healthy diet. Older people who attended the presentation by SHMs evaluated it by completing a questionnaire.

Findings showed that both SHMs, and older people in general, value knowledge and showed interest in both spreading out information and being attentive in such innovative projects. In addition SHMs

reported a positive change in their lifestyle, particularly in their nutrition habits.

Following the evaluation of the study the educational material - which were designed for and used in it -, were published and distributed to all (over 300) KAPIs in Greece, as well as in any other relevant service. A seminar was also organised during the 6th Pan-Hellenic Conference on Gerontology and Geriatrics for health professionals, where the method and the results of the study were presented.

Acknowledgement: This study was partly funded by EC DG V.]

References

1. Kafatos A, Diacatou A, Voukiklaris G, Nikolakakis N, et al: Heart disease risk-factor status and dietary changes in the Cretan population over the past 30 years: the Seven Countries Study. *Am J Clin Nutr.* 1997, 65: 1882-6.
2. Rose MA: Evaluation of a peer-education programme on heart disease prevention with older adults. *Public Health Nurs.* 1992, 9(4): 242-247.
3. Shannon BM, Smiciklas-Wright H, Davis BW, Lewis C: A peer educator approach to nutrition for the elderly. *Gerontologist.* 1983, 23(2): 123-126.
4. Brown V (1997): Ageing Well Core Training for Senior Health Mentors. Age Concern Training, UK.

Nutrition and Alzheimer's disease: the implementation of a European project in Greece

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Keywords

Health nutrition, Alzheimer's

Abstract

A weight loss of 4-5% in one year in about 30-40% of patients with mild to moderate Alzheimer's Disease living at home, has been reported 1-3

In the early stages of the disease, the patient has difficulty in eating correctly as he is not able to plan meals and to shop, as he used to do before the disease started. In the more severe stages of the disease, eating behaviour disorders and difficulties in eating alone will appear due to apraxia impairments. As a result the patient presents with deficiencies in vitamins and minerals, which leads to protein and caloric malnutrition.

If malnutrition is neglected, it will cause disease complications, such as infections, sarcopenia, bedsores, which increases the cost and the burden borne by the families.

Considering the malnutrition risk of patients with Alzheimer's Disease and the fact that in many cases malnutrition can be detected and corrected, a Health Promotion programme of the European Community was planned and implemented.

It aims to sensitize health professionals and carers of patients with Alzheimer's Disease to the need for preventing weight loss and to inform them about assessing malnutrition and eating behaviour.

In Greece the project has been implemented by the Hellenic Association of Gerontology and Geriatrics. The relevant material produced for the project was translated and distributed to all interested. The project was publicized with the organisation of conferences, informative visits to Open Care Centres for Older People (KAPIs), informing the public through the mass media and meetings organized systematically with families with Alzheimer's Disease patients.

References

1. Sandman PO, Adolfson R, Nygren C et al: Nutritional status and dietary intake in institutionalised patients with Alzheimer's disease and multiinfarct dementia. *J Am Geriatr Soc* 1987; 35: 31-8.
2. Du W, DiLuca C, Growdon JH: Weight loss in Alzheimer's disease. *J Geriatr Psychiatr Neurol* 1993; 6: 34-7..
3. Vellas B, Riviere S, Fitten J: Weight Loss and Eating Behaviour in Alzheimer's Patients. *Research and Practice in Alzheimer's Disease*. European Commission, 1998.

Clinical nutrition teaching at the University of Crete

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Keywords

Clinical nutrition course, medical education

Abstract

Introduction: The role of diet in primary and secondary prevention, as well as in treatment of various diseases is considered to be significant. However, the prevalence of malnutrition in

hospitalized patients remains high and this is partly attributed to the lack of nutrition awareness among doctors and medical students. The medical school of the University of Crete in Greece has instituted a

clinical nutrition course in 1989, which is given to the 3rd-year medical students.

Clinical nutrition course: The theoretical part of the course consists of a series of lectures covering different aspects of clinical nutrition. For the practical part of the course, students are divided into several groups to study selected patients. Using clinical and laboratory methods for the assessment of the patient's nutritional status, the students are required to present their evaluations as case reports. At the end of the presentations, each student is

asked to evaluate the course and comment on any aspects of it that could be improved.

Evaluation and conclusions: We report our 10-year experience with the application of the course based on the active participation of the students and their affirmative answers to the questionnaire regarding the course. It is suggested that such clinical nutrition courses may have an important role in the teaching and application of nutrition in the medical practice and should be also instituted in other European medical schools.

Nutrition, drug utilisation and health education among indigent patients. The role of the pharmacists

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Keywords

Indigent, prescription, medication, nutrition, pharmacist, education

Abstract

Objective: The aim of this study is to focus on patients' nutrition, pharmacotherapy and the role of community and hospital pharmacists in the nutrition education. This is part of a previous project, which make a systematic registration, in the population group of Social Care indigent patients in comparison with data from a population of patients, who were covered by Social Security Funds.

Method: We recorded the pharmaceutical needs, the data of the prescriptions, the knowledge about the use of drugs, the nutrition patterns and the cost of medication. Also we examined the results of a health intervention among Social Care indigent patients.

The study was done in the Pharmacy department of Chania General Hospital and in three Community Pharmacies at Chania – Crete, Greece in collaboration with Preventive Medicine and Nutrition Clinic, University of Crete, School of Medicine. The time of the study was three years, from 01-01-1995 until 31-12-1997 and now it's continuing.

Population: 551 indigent patients insured by Social Care compared to 551 patients insured by Social Security Funds. The patients registered under Social Care were typically poor, low-income individuals and families, unmarried mothers with their children

and Greek emigrants coming back home from other countries (Albania, Russia, Georgia, Ukraine etc.).

Results: The socio-demographic profiles of the indigent group reveal an unemployment rate of 95% and an illiteracy rate of 21%. The profiles of the Social Care children reveal an illiteracy rate of 9.7% versus 0% of the Social Security children (ages 6-18). High school attended 13.1% versus 25.9% (ages 12-18).

Significant differences between the two groups were found in the knowledge of instructions about the use of medication (47% versus 77%), the knowledge about the duration of their treatment (21% versus 43%), the expression of questions to the pharmacist (39% versus 68%), the knowledge of dietary instructions (17% versus 41%) and in smoking more than 20 cigarettes per day (15% versus 3%).

Regarding the health behaviours patterns among the elderly patients, significant differences ($P < 0.05$) were found in the consumption of; sausages (38.6% versus 15.6%), much salt (29.8% versus 12.0%), more than one glass per day of alcoholics (13.8% versus 4.3%) and in smoking cigarettes (48.8% versus 12.8%).

Educational intervention: There were small but positive effects on patients' knowledge as to the use

of medications and on their willingness to seek information from the pharmacist. It was a significant improvement about their knowledge as to the proper use of medications and their nutritional patterns and also there was a significant decrease in the cost of the pharmacotherapy. There were also positive effects in terms of reported reductions in the consumption of 'excessive salt' (subjectively assessed), sugar, fatty foods, alcohol and in smoking more than 20 cigarettes per day.

Conclusion: The health educational intervention must be continuous. The results indicated that the patients need education in the area of the use of drugs and nutrition. Also, it is very important the personal contact between patient and pharmacists that this procedure involves. The role of the pharmacist is fundamental, because the patients today have a very easy access to community and hospital pharmacies and the pharmacists have the education and the knowledge to make this intervention.