

## P8 - Posters/Visit to posters

Estilos de vida

Life styles

Viernes 3 de Octubre / Friday 3, October  
17:00:00 a/to 18:00:00

### DIET AND STOMACH CANCER RISK IN WARSAW, POLAND

Jolanta Lissowska<sup>1</sup>, Christine A Swanson<sup>2</sup>, Mitchell Gail<sup>2</sup>, David Pee<sup>3</sup>, Elzbieta Sygnowska<sup>4</sup>, Witold Zatonski<sup>1</sup>, William Blot<sup>5</sup>, Wong-Ho Chow<sup>2</sup>

<sup>1</sup>Department of Cancer Epidemiology and Prevention, Cancer Center & M Sklodowska-Curie Institute of Oncology, Warsaw, Poland. <sup>2</sup>Division of Cancer Epidemiology and Genetics, National Cancer Institute, Bethesda MD, USA. <sup>3</sup>Information Management Services, Rockville MD, USA. <sup>4</sup>Department of Cardiovascular Diseases Epidemiology, S. Cardinal Wyszynski Institute of Cardiology, Warsaw, Poland. <sup>5</sup>International Epidemiology Institute, Rockville MD, USA.

**Introduction:** Poland has one of the highest incidence rates of stomach cancer in the world. Lifestyle factors, especially dietary factors, are thought to be important in modifying the risk of stomach cancer. It was hypothesized that traditional Polish dietary patterns might have contributed to the high incidence rates of stomach cancer in Poland.

**Methods:** We have conducted a population-based case-control study of stomach cancer in Warsaw, Poland. Cases consisted of Warsaw residents newly diagnosed with stomach cancer between 1994 and 1996. Controls were frequency-matched to cases by gender and age. Detailed information on lifetime tobacco use, alcohol consumption, family history of cancer, childhood living conditions, lifetime occupation, and usual diet was obtained.

Diet was assessed using a food frequency questionnaire (FFQ). Usual frequency of intake was assessed for 118 food and beverage items. Intake of individual food items and food groups was categorized into quartiles defined by weekly frequency of consumption among controls. Nutrient content of each food item was estimated using both US and Polish food tables. The measure of association between stomach cancer risk and food or nutrient intake was the odds ratio (OR). All the regression models included terms for age, sex, education level, and cigarette smoking. To address calorie adjustment in the analyses of nutrients, density variables were created. The nutrient density variable (intake/1000kcal) represents the effect of increasing the percentage of nutrient intake while keeping total energy intake constant.

**Results:** In this study, risk of stomach cancer was inversely related to intake of total fruits and dark green-yellow vegetables. High intake of allium vegetables and tubers was associated with a non-significant reduction in risk, and no association was found for cruciferous or pickled/salted vegetables. Risk increased with high intake of grains, especially for the food groups of bread/cereals/ rice/pasta and refined grains. Risk was reduced with high intake of poultry and fish but was elevated with high intake of red meat and sausage, although none of these associations reached statistical significance. Several nutrients common in fruits and vegetables, including vitamin C, vitamin E, and  $\alpha$ - and  $\beta$ -carotenes, were inversely related to risks. Among macronutrients, carbohydrates was linked to an excess risk while fat intake, particularly the polyunsaturated fatty acids, appeared to reduce the risk. No association was found for protein consumption. Fibers, whether from fruits and vegetables or beans, were inversely associated with risk.

**Conclusion:** Our study findings add to the evidence of a protective effect of fruits and vegetables on stomach cancer risk, but do not support the role of sausage and pickled vegetables as risk factors. It appears unlikely that high intake of sausage/preserved meat and pickled vegetables in a typical Polish diet can explain the relatively high incidence rate of stomach cancer in Poland.

338

339

### SURVIVAL OF SWEDISH MEN AND THEIR PARENTS IN RELATION TO CATEGORIES OF BMI AT 18 YEARS OF AGE

Finn Rasmussen\*, Patrik KE Magnusson\*\*

\*Department of Public Health Sciences, Karolinska institute, Stockholm, Sweden. \*\*Department of Genetics and Pathology, Uppsala University, Uppsala, Sweden.

**Aims:** To study survival and all-cause mortality by categories of BMI among 1,450,743 Swedish men and their parents.

**Methods:** Men born 1950-82 were followed from age 18 to the end of 2000. Cumulative survival functions were estimated for individuals who were overweight or obese at baseline in comparison with men of normal weight. Parents' survival was estimated by BMI category of their offspring.

**Results:** Cumulative survival of obese individuals was reduced from age 30 years. The survival of overweight individuals was reduced from age 40 years. Survival of parents with obese offspring was 3-4 years shorter than the survival of parents with normal weight offspring.

**Conclusions:** The WHO categories of overweight and obesity are appropriate for a Swedish population. Novel findings were the strong associations between parents' risk of death and BMI of their offspring.

341

### LEISURE TIME PHYSICAL ACTIVITY AND ENERGY EXPENDITURE IN URBAN POPULATION IN POLAND

Dorota Stasiol\*, Anna Jegier\*\*

\*Preventive Medicine Department, Sports Medicine Department, Medical University, Lodz, Poland. \*\*Preventive Medicine Department, Sports Medicine Department, Medical University, Lodz, Poland.

Sedentary lifestyle is one of the major risk factors of numerous chronic disease including cardiovascular disease. But regular leisure time physical activity may decrease risk of this diseases. Preventive effect can be achieved by participating in effective, providing the greatest health benefits exercise program. According to common recommendations four main considerations need to be taken into account when prescribing exercise programs for general population: type (aerobic exercise), frequency (3 or more times/week), duration (30 or more minutes/training) and intensity (moderate) with energy expenditure 1000 kcal/week or more.

The purpose of this study was to assess leisure time physical activity and energy expenditure in urban population in Poland. This study was conducted among adults in Lodz. Physical activity was assessed by the interviewer-administrated Seven Day Physical Activity Recall Questionnaire (SDPAR). Briefly, participants were asked to estimate the number of hours spent over the last 7 days on sleep, moderate, hard and very hard activity. Light activity was calculated as the remaining time after accounting for time spent on other activities. Activities were classified by their energy requirements and expressed in terms of the ratio of the work metabolic rate to the resting metabolic rate (MET). The activity categories were estimated as follows: sleep= 1MET, light =1.5METs, moderate=4METs, hard=6METs, very hard activity=10METs.

The study was conducted in the group of 1029 persons (488 men and 541 women) aged 25 to 64 years - mean age 45.8 ± 11.7 years. Total weekly energy expenditure was significantly higher in men than in women 22430.2±674.0 kcal/week vs 17399.5±4263.4 kcal/week (p<0.001). The percentage of people who were involved in leisure time physical activity was 39.4%. Adults in Lodz spent 1.3±2.6, 0.2±0.7, 0.0±0.5 hours a week on moderate, hard and very hard types of leisure time physical activities respectively. The proportion of moderate energy expenditure on leisure time activities in mean total weekly energy expenditure (kcal/kg/week) was 1.9%. Hard and very hard leisure time physical activities were not common among subjects 0.3%, 0.1% of mean total weekly energy expenditure. More than 60% of subjects reported 0.0kcal/week energy expenditure on leisure time sport activities. Higher number of women comparing to men, reported no leisure time sport activities 62.3% vs 58.6% (p>0.05). The number of those who had from 1 to 499 kcal/week, 500 to 999 kcal/week, 1000 to 1999 kcal/week, 2000 or more kcal/week energy expenditure on sport only was 13.9%, 9.8%, 9.4%, 6.4% respectively.

This study demonstrates that more than 84% of subjects from Lodz did not achieve the level of physical activity recommended by experts in health promotion and prevention of cardiovascular and other metabolic diseases.

\*This study is supported by KBN GRANT: 6 P05D 08321

340

### VALIDATION OF SCOFF QUESTIONNAIRE AMONG PRE-TEENAGERS

M. Aguiar González-Redondo, F. Caamaño, M.J. López-Otero, B. Takouché, E Smyth

Salud Pública, Universidad de Santiago, Santiago de Compostela (Spain).

**Background:** During the last few years, the incidence of anorexia suffered a dramatic increase. The onset of the disease occurs now at younger ages and among both genders. Experts are calling for identification of high risk individuals. Thanks to its high validity, the Eating Attitudes Test (EAT) is one of the tests most frequently used to diagnose anorexia among teenagers and pre-teenagers. This test consists of 40 questions which may be answered in 6 different ways. Each question scores from 0 to 3. Subjects whose total score is higher than 30 are considered to be at high risk. In spite of its usefulness, this test is not adequate for epidemiologic purposes because of its complexity and length. The SCOFF questionnaire, for its validity, its reduced number of questions (only 5) and the simplicity of answers (yes/no) and scoring system (0 or 1), is better adapted to the epidemiologic diagnosis. However, this questionnaire has not been validated yet in pre-teenagers (11-13 years). The objective of this study is validate SCOFF questionnaire among pre-teenagers.

**Methods:** We carried out a validation study, with cross-sectional design, of the SCOFF questionnaire, using the EAT questionnaire as a gold standard. We carried out this validation among 341 children of 10 schools of Santiago de Compostela (North West Spain) in which we randomly selected one class of children aged 11-13 years. Every child filled out both EAT and SCOFF questionnaires.

**Results:** We obtained complete information on 289 subjects (84.8%). The SCOFF questionnaire maximizes the area under the ROC curve at value 2. Scores below 2 indicate subjects with normal behavior while scores of 2 or higher indicate anorexia. Its sensitivity is 64.1% (95% CI: 56.7- 71.3) and its specificity is 87.2% (95% CI: 85.1 - 89.3). In our population, the positive predictive value is 43.9% (95%CI: 37.4 - 50.4) and the negative predictive value is 94.0% (95%CI: 92.5 - 95.5). The validity of the SCOFF questionnaire for diagnosis of anorexia among pre-teens (11-13 years) is similar to that found among teens and adults. Because of the low proportion of false negatives, 6% (95%CI: 4.5; 7.5), we believe that our results endorse the use of SCOFF in epidemiologic settings, in which the main goal is to identify subjects with high risk of anorexia.

**Conclusions:** The SCOFF questionnaire could be used at school by teachers and educators to identify those subjects with a higher risk of anorexia and forward them to the psychologist of the center.

342

### NIVEL DE ACTIVIDAD FÍSICA Y OBESIDAD EN NIÑOS Y NIÑAS DE 7 A 9 AÑOS DE EDAD

Paula Arnal Jiménez<sup>1</sup>, María Silvia Sanclemente Pérez<sup>2</sup>, María José Rabanaque Hernández<sup>3</sup>, Luis Moreno Aznar<sup>3</sup>, Agustín Ariño Moneva<sup>3</sup>

<sup>1</sup>Hospital Clínico Universitario, Zaragoza-España. <sup>2</sup>Centro de Salud, Jaca-España. <sup>3</sup>Universidad de Zaragoza, Zaragoza-España.

**Antecedentes:** La obesidad constituye actualmente un importante problema de salud pública, especialmente en la infancia, dadas sus importantes consecuencias para la salud. El objetivo de este estudio es analizar la posible asociación entre actividad física y sobrepeso en la infancia, y conocer si el nivel de estudios de los padres influye en el nivel de actividad física realizada por los niños.

**Métodos:** Se trata de un estudio trasversal realizado durante los primeros seis meses del año 2000, en el que se incluyeron 179 niños y niñas, de entre 7 y 9 años de edad, (103 niños y 76 niñas) escolarizados en Zaragoza capital. Se recopiló información sobre antropometría, dieta, ejercicio físico y nivel de estudios de los padres. Los datos antropométricos se obtuvieron mediante exploraciones en el colegio, y la información dietética se obtuvo por medio de un recuerdo de 24 horas y el registro de un día (no festivo). A partir de las medidas antropométricas se calcularon el Índice de Masa Corporal (IMC) y el porcentaje de grasa corporal. Los datos referentes a la actividad física, así como datos relativos al nivel socioeconómico, se obtuvieron por medio de una entrevista con los padres o tutores de los niños. Para el análisis de los datos se dividió a los niños en dos grupos: normopeso y sobrepeso/obesidad.

**Resultados:** El 36,4% de la población estudiada presenta sobrepeso u obesidad, llegando en niños al 32,6% y en niñas al 41,60%, diferencia estadísticamente significativa (p = 0,029). Se consideran obesos el 8,19% de los niños y el 9,72% de las niñas. Los niños realizan más actividad física y horas de deporte que las niñas (p = 0,064 y 0,0039, respectivamente). Los niños con sobrepeso/obesidad realizan menos horas de deporte que los que presentaban normopeso, con una media de 1,68 horas (DE = 1,90) vs 2,02 horas (DE = 2,04), (p = 0,048), dedicando más tiempo a actividades sedentarias, como ver TV (media = 1,54 horas, DE = 0,81) que los normopeso (media = 1,19 horas, DE = 0,78), (p = 0,0090). Los hijos de padres con estudios superiores, licenciaturas o diplomaturas, realizan más horas de deporte y actividad física que aquellos de padres sin estudios o con estudios primarios (media = 4,71 horas, DE = 2,6; vs media = 4,21, DE = 1,89) (p = 0,048) y ven menos horas de TV que los hijos de padres con estudios primarios.

**Conclusiones:** Se observa una alta prevalencia de sobrepeso y obesidad en la muestra estudiada, siendo ésta mayor en las niñas, que por otra parte son más sedentarias que el grupo de los niños. El sobrepeso y la obesidad están relacionadas con la actividad física y las horas dedicadas a actividades sedentarias, como ver TV o jugar al ordenador. El nivel de estudios de los padres influye en el grado de actividad física realizada por los niños.

343

### ESTUDIO DE LA PREVALENCIA DE OBESIDAD Y HÁBITOS ALIMENTICIOS EN NIÑOS ENTRE 7 Y 9 AÑOS

María Silvia Sanclemente Pérez<sup>1</sup>, Paula Arnal Jiménez<sup>2</sup>, María José Rabanaque Hernández<sup>3</sup>, Luis Moreno Aznar<sup>3</sup>, Agustín Ariño Moneva<sup>3</sup>  
<sup>1</sup>Centro de Salud, Jaca-España. <sup>2</sup>Hospital Clínico Universitario, Zaragoza-España. <sup>3</sup>Universidad de Zaragoza, Zaragoza-España.

**Objetivo:** Investigar la prevalencia de sobrepeso y obesidad en niños de entre 7 y 9 años de Zaragoza capital, detectar inadecuaciones en los hábitos alimenticios de los escolares y estudiar si existe relación entre ingesta de calorías y nutrientes y obesidad.  
**Métodos:** Estudio transversal observacional en el que se incluyeron 179 niños, de entre 7 y 9 años de edad, pertenecientes a tres colegios de Zaragoza capital. Se realizó una estimación de la ingesta utilizando un recuerdo de 24 horas y un registro también de 24 horas, cumplimentado por padres o responsables del comedor de los colegios. Mediante exploración se midieron peso, altura, pliegues del bíceps, tríceps, subescapular y suprailíaco. A partir de estas medidas antropométricas se calcularon el Índice de Masa Corporal (IMC) y el porcentaje de grasa corporal. Se estudió la asociación entre peso y variables de ingesta, clasificando a los niños en dos grupos: normopeso y sobrepeso - obesidad.

**Resultados:** La prevalencia de sobrepeso obtenida fue del 27,6% (en niños 24,5% y en niñas 31,88%) y la de obesidad del 8,8% (en niños 8,19% y en niñas 9,72%). Si comparamos los datos antropométricos entre niños y niñas, es estadísticamente significativa la diferencia en el porcentaje de grasa corporal, siendo mayor en niñas. Se observa que la ingesta de grasas y de proteínas es elevada, con una media de energía procedente de las grasas del 43,17% y en el caso de las proteínas del 18,39%. Ambos valores son superiores a los recomendados. Sin embargo, el porcentaje de energía procedente de carbohidratos, 38,45%, se encuentra por debajo de las recomendaciones dietéticas actuales. La ingesta de calorías es algo mayor en aquellos niños que pertenecen al grupo de normopeso (media = 2207,98 DE = 400,01), en relación con los del grupo sobrepeso-obesidad (media = 2163,55 DE = 387,003), aunque la diferencia no fue estadísticamente significativa. Tampoco se observaron diferencias significativas de ingesta entre los dos grupos, cuando se analizaron los diferentes componentes de la dieta. Sí resultó significativa, sin embargo, la diferencia en el porcentaje de carbohidratos. Se observa que los hijos de padres con un nivel de estudios de diplomatura o licenciatura tienen un menor IMC. El porcentaje de calorías procedente de los lípidos en estos niños es menor y el de proteínas mayor. El consumo de fibra también es mayor en este grupo.

**Conclusiones:** Existe una alta prevalencia de sobrepeso y obesidad (36,4%) en la población estudiada. Los escolares tienen hábitos alimenticios inadecuados, con una ingesta de lípidos muy elevada y baja ingesta de hidratos de carbono, respecto a las recomendaciones. No se ha encontrado una relación significativa entre sobrepeso u obesidad con la ingesta de grasas.

345

### THE ROLE OF VITAMINS AND MINERALS SUPPLEMENTATION IN NUTRITION OF URBAN AND RURAL POPULATION - POL-MONICA BIS PROJECT

Anna Waczkiewicz\*, Elibieta Sygnowska\*, Walerian Piotrowski\*, Ewa Dojka\*\*

\*Depart. of Epidemiology, CVD Prevention and Health Promotion, National Institute of Cardiology, Warsaw, \*\*Depart. of Epidemiology and Population Studies, Public Health Institute of Jagiellonian University, Cracow.

**Introduction:** Cardiovascular disease and cancer constitute major public health problem in Poland. Basic research suggests that certain vitamins and minerals may play an important role in the prevention of these diseases. Deficiencies of some dietary vitamins and minerals remain common in Poland. However in recent years supplements use have become popular.

**Aim:** To estimate patterns of supplement use among Polish urban and rural population and the relationship between supplement use, dietary habits and cardiovascular risk factors.

**Methods and results:** Supplements use (vitamins A, C, E, calcium, magnesium), nutrient intake and demographic characteristics were examined in the frame Pol-Monica bis WHO Project. In 2001 randomly selected population samples - 1329 men and women from urban (Warsaw city) and 1398 from rural (former Tarnobrzeg voivodeship) population, aged 20-74, took part in this study. The use of vitamins/minerals supplement was reported by 20% men and 28% women from urban and 8% and 17% from rural population respectively. Vitamin C was the most commonly consumed supplement, followed by vitamin E and A. Use of supplements was more frequent among persons with university education, full-time employment and people consuming other medicines. There were not significant differences in cross sectional analysis in cardiovascular risk factors (HDL-, LDL- and total cholesterol, smoking status, body mass index, blood pressure) between supplement users and nonusers. Intakes of dietary calcium and magnesium in all groups and vitamin C in supplement nonusers from rural population were below Recommended Dietary Allowances (50-80% RDA) for the Polish population. The role of supplementation in nutrition was different in cases of minerals and vitamins. Calcium and magnesium were used in the doses not sufficient (6-15% RDA) to eliminate the risk of deficiency, but vitamins were taken in amounts much higher (130-470% RDA). Among 6-19% people, doses of vitamins A and E 10-times exceeded the RDA.

**Conclusion:** There is a need to develop and implement programs aimed at improving the dietary intake and supplement use in Poland.

344

### FOLATE INTAKE IN THE POPULATION OF PORTO - PORTUGAL

Francisco Botelho, Carla Morgado, Carla Lopes

Department of Hygiene and Epidemiology, Porto Medical School, Porto, Portugal.

**Introduction:** Low folate intake increases the risk of chronic diseases, such as ischemic heart disease, colon and breast cancer, and development disorders, such as neural tube defects. Knowledge about folate intake in population, mainly in women of childbearing years, is important to establish preventive measures. Our objective was to estimate the folate intake in the adult population of Porto, and its main intake contributors.

**Methods:** We evaluated 1730 adults living in Porto (Portugal), selected by random digit dialling. Nutritional data was obtained using a semi-quantitative food frequency questionnaire, validated for the Portuguese population. Social, demographics and behavioural data were collect by trained interviewers. Means were compared using ANOVA and chi-square test was used to compare proportions.

**Results:** Mean dietary folate intake was 285 µg/d for women and 312 µg/d for men. Low dietary folate intake was found in the elderly (259 µg/d (p<0,001) in males and 300 µg/d (p=0,023) in females), in subjects with lower physical activity (first quartile 253 µg/d (p<0,001) in males and 290 µg/d (p=0,001) in females) and in those with lower energy intake (first quartile 216 µg/d (p<0,001) in males and 207 µg/d (p<0,001) in females). Also, women with lower education (≤4 years) had lower levels of folate intake (p<0,001). Alcohol consumption, tobacco use and BMI had no significant relation with folate intake. The main contributors to folate intake in our sample were cereals and potatoes (24,6%), vegetables (14,5%), fruits (13,4%) and beans (11,9%). Regular supplements users (3,1%) received on average 122 µg of folate per day from supplements. There was no relation between dietary folate intake and use of supplements. Women of childbearing years (18-45 years) had a mean folate dietary intake of 295 µg/d and only 17,8% reaches the Recommended Dietary Allowances (RDA=400 µg). Regular use of supplements was found in 5,3% of these women, with an average supplementation of 153 µg/d. Overall, only 14,5% of the women and 18,3% of the men had optimal folate intake. These percentages are significantly lower in elderly, in sedentary subjects and in those with lower energy intake.

**Conclusion:** In our population, folate intake was clearly lower than recommended. Programs of folate supplements or food fortification should be implemented, specially bearing in mind women capable of becoming pregnant.

346

### NUTRITION QUALITY OF DAILY FOOD RATION OF THE WARSAW INHABITANTS IN YEAR 1993-2001 - WARSAW POL-MONICA BIS PROJECT

Anna Waczkiewicz, Danuta Szczeceniowska

Depart. of Epidemiology, CVD Prevention and Health Promotion, National Institute of Cardiology, Warsaw,

**Introduction:** Dietary factors are known to contribute risk of widely prevalent chronic illnesses in Poland such as cardiovascular diseases, obesity and cancer. In recent years food consumption in Poland has been influenced mostly by the socio-economic situation, mainly high unemployment. The choice of purchased food depends on the financial possibilities of consumer and their awareness of the health importance of nutrition.

**Aim:** To evaluate changes in dietary habits and the realisation degree of the recommended dietary allowances of vitamins and minerals intake in the diet of the Warsaw inhabitants in the 8-year period.

**Methods and Results:** In years 1993 and 2001 dietary habits were assessed in 1485 and 836 randomly selected 35-64 year old men and women. Over the observation period substantial changes in food consumption pattern were noticed: the percentage of energy from fat decreased from 39,9% to 37,8% (p<0,01) in men and from 38,2% to 35,9% (p<0,01) in women, the percentage of energy from saturated fatty acids decreased from 14,0% to 12,4% (p<0,01) in men and from 13,5% to 11,9% (p<0,01) in women, the percentage from carbohydrates increased from 46,0% to 47,5% (p<0,05) and from 47,5% to 49,6% (p<0,01) and dietary fibre intake from 21,5g to 22,8g (p<0,05) and from 15,7g to 17,5g (p<0,01) respectively. In 2001 in comparison with 1993 intakes of vitamins C and B<sub>2</sub>, calcium, magnesium, potassium and iron were significantly (p<0,01) higher in both genders, vitamin B<sub>1</sub> in men and E in women. Despite these positive changes fibre, vitamins B<sub>1</sub> and B<sub>2</sub> and analysed minerals intake in 2001 were still below Recommended Dietary Allowances (RDA). The highest deficiency has been noticed in calcium intake in both genders and iron in women - realisation degree of recommended intake has stayed on 60-67% level.

**Conclusion:** During the analysed period, changes in nutrient intake were substantial and indicate a change in direction towards the recommended preventive diet. The basic fault of the assessed diets was too low intake of vitamins B<sub>1</sub> and B<sub>2</sub>, dietary fibre and minerals.

347

### DIETARY HABITS AS FACTOR REDUCING LUNG CANCER RISK IN POPULATION OF UPPER SILESIA, THE INDUSTRIAL DISTRICT IN POLAND

Malgorzata Juszko-Piekut\*, Zofia Kolosza\*\*, Aleksandra Mozdziejz\*, Jerzy Stojko

\*Department of Bioanalysis and Environmental Studies, Silesian Medical Academy, Katowice, Poland. \*\*Cancer Epidemiology Department, Center of Oncology Gliwice, Poland.

When compared, the deaths from lung cancer in men outnumber the deaths from neoplasms of other organs. Lung cancer morbidity and mortality rates in Upper Silesia are higher than in industrial districts in the Czech Republic and Germany. Late diagnosis and not effective enough therapy of lung cancer advocate the necessity of more advanced studies which may broaden the knowledge about its etiopathogenesis and simultaneously enable to intensify preventive measures.

**Objective:** The role of diet in pulmonary carcinoma is more often discussed. Hence, the objective of the study was to estimate selected food items as factors potentially reducing the lung cancer risk.

**Material and methods:** Male population in Upper Silesia, an industrial district in Poland, was examined in the case-control study. The cases were 461 men with histologically confirmed lung cancer treated in the Institute of Oncology in Gliwice and other hospitals in the district. The controls were 660 men randomly selected from men without cancer. The examined men were 39 years old. Interviews were conducted in the years 1994-1999 and the same questionnaire was used. In the statistic analysis logistic regression was used to calculate relative risk and 95% confidence interval (CI) for all studied food items and for each individual product. Final analysis was conducted by gradual elimination of statistically insignificant factors from the model. Final analysis showed significant factors and their independent influence on the lung cancer risk was estimated. The results of analysis were adjusted for age and cigarette smoking. The study included cooked meat, fish, wholemeal bread, butter, margarine, oil, raw vegetables, pickles and potatoes.

**Results:** The results of univariate logistic analysis used to estimate each food item are highly significant. The risk of lung cancer is multiplied by the absence of these food items in diet. However, such an effect of wholemeal bread and potatoes was not confirmed by final multivariate analysis. Earlier observed relationship could arise from the fact that the men consumed simultaneously the other products. Whereas, highly significant results were obtained for other food items, which may indicate their role as factors reducing lung cancer risk. Vegetables reduce the risk 7 times, oil - 5 times, butter and cooked meat - over 4 times, respectively, pickles - 2 times, fish and margarine - 1,5 times.

**Conclusion:** The presence of products such as cooked meat, fish, butter, margarine, oil, raw vegetables and pickles in diet significantly reduces the risk of lung cancer in male population of an industrial area. The relationship was not observed in wholemeal bread and potatoes.

349

### PRINCIPALES FUENTES ALIMENTARIAS DE ANTIOXIDANTES EN LA COHORTE EPIC - ESPAÑA

Antonio Berenguer Llergo\*, Carlos González Svatetz\*, Reina García Closas\*, en nombre del grupo EPIC - ESPAÑA\*\*

\*Servicio de Epidemiología y Registro del Cáncer, Instituto Catalán de Oncología, L'Hospitalet del Llobregat (Barcelona), España. \*\*Centros de Asturias, Granada, Murcia, Navarra, Guipúzcoa y Barcelona.

**Antecedentes y objetivos:** A pesar de los resultados negativos obtenidos en diversos estudios de intervención con suplementos de antioxidantes, otros estudios han sugerido un papel protector de antioxidantes procedentes de fuentes alimentarias frente a las patologías cardiovasculares y el cáncer, dos de las causas más frecuentes de mortalidad y morbilidad en el mundo occidental. El estudio EPIC - ESPAÑA, cuyo objetivo principal es determinar posibles relaciones entre hábitos alimentarios y diferentes tipos de cáncer, presenta un escenario válido para describir el consumo de antioxidantes en la población española, así como para caracterizar sus principales fuentes alimentarias.

**Métodos:** El estudio EPIC - ESPAÑA incluye una cohorte de 41.440 hombres y mujeres entre 30 y 69 años procedentes de las provincias de Asturias, Granada, Murcia, Navarra y Guipúzcoa, de las que se obtuvo información sobre su dieta habitual y otros factores. La información sobre dieta habitual se obtuvo mediante entrevista, utilizando un cuestionario informatizado de historia de dieta. Se utilizó una tabla de composición de alimentos propia que nos permitió estimar la aportación de cada alimento al consumo de vitamina C, vitamina E, alfa-caroteno, beta-caroteno, licopeno y luteína, así como de otros dos carotenoides no descritos en la literatura como son la beta-criptoxantina y la zeaxantina. La metodología utilizada permitió la identificación de fuentes a nivel de grupos y subgrupos alimentarios.

**Resultados:** Las principales fuentes alimentarias fueron: 1) Vitamina C: cítricos, frutas no cítricas y verduras frutiformes (representan el 72% del consumo de vitamina C). 2) Vitamina E: lípidos añadidos (aceite de girasol y aceite de oliva), frutas no cítricas y frutos secos (61%). 3) Alfa-carotenos: zanahoria (82%). 4) Beta-carotenos: verduras de hoja verde, zanahorias y verduras frutiformes (especialmente tomate y judías verdes) (74%). 5) Licopeno: tomate y salsa de tomate (96%). 6) Luteína: espinacas, acelgas, lechuga y judías verdes (77%). 7) Beta-criptoxantina: frutas cítricas y zumo de naranja (88%). 8) Zeaxantina: cítricos y verduras de hoja verde (63%). Se evidencian algunas diferencias en las fuentes alimentarias de algunos antioxidantes entre las regiones estudiadas: por ejemplo, en relación a la vitamina E, en las zonas del sur (Murcia y Granada) el aceite de oliva es su principal fuente, mientras que en las del norte (Asturias, Navarra y Guipúzcoa) lo es el consumo de aceite de girasol; en cuanto a la vitamina C, las frutas no cítricas son su fuente más importante en Asturias, mientras que en el resto de regiones lo son las frutas cítricas.

**Conclusiones:** Este estudio muestra, entre otros, el diferente papel de los alimentos, grupos y subgrupos de alimentos en el aporte de los principales antioxidantes en la dieta de la población adulta española.

348

### CIGARETTE SMOKING AND ALCOHOL CONSUMPTION AS LUNG CANCER RISK FACTORS IN MALE POPULATION OF INDUSTRIAL AREAS

Malgorzata Juszko-Piekut\*, Zofia Kolosza\*\*, Aleksandra Mozdziejz\*, Jerzy Stojko

\*Department of Bioanalysis and Environmental Studies, Silesian Medical Academy, Katowice, Poland. \*\*Cancer Epidemiology Department, Center of Oncology, Gliwice, Poland.

In Poland, the number of diagnosed malignant neoplasms constantly increases since the population is at high risk of tobacco-related tumours. Carcinoma of the lung is the most serious of them. It is one of the most common diseases of respiratory system and it is ranked as a civilisation-related disease. An extensive study of the phenomenon, especially in urban, industrial and densely populated area of Upper Silesia, is advisable. Both the autochthons and the immigrants from agricultural areas are inhabitants of the district.

**Objective:** The objective was to determine the influence of cigarette smoking and spirit consumption on the increase in lung cancer in a higher risk group of men over 39 in Upper Silesia. A detailed analysis of the factor was conducted due to the verified negative influence of tobacco smoking.

**Materials and methods:** In the case-control study the cases were 289 autochthons and 172 immigrants with histologically confirmed lung cancer, treated in hospitals in Upper Silesia. The controls were 377 autochthons and 283 immigrants randomly selected from men without cancer. Interviews were conducted and the same questionnaire was used. Relative risk and 95% confidence interval (CI) were calculated using the Mantel-Haenszel method. Relative risk was estimated for each analysed factor with age range as the confounding variable in both studied subpopulations. The following factors were estimated for each group: 1) cigarette smoking including filter and non-filter smoking, years of smoking, number of cigarettes smoked per day, age when smoking began, pack-years. 2) cigarette smoking and alcohol consumption as coexisting factors

**Results:** The analysis of the influence of selected risk factors on carcinoma of the lung among the population of Upper Silesia showed: 1) both cigarette smoking and alcohol consumption are significant risk factors of the lung cancer. 2) non-filter cigarette smoking significantly increases the risk of lung cancer in both subpopulations when compared with filter cigarette smoking. 3) risk of lung cancer increases in direct proportion to the years of cigarette smoking in each analysed group. 4) smoking over 15 cigarettes per day is the lung cancer risk factor, but the risk is significantly rising in autochthons. 5) the lung cancer risk increases in direct proportion to pack-years in both the autochthons and the immigrants. 6) vodka-drinking and cigarette smoking cause additive increase of the lung cancer risk in both subpopulations.

**Conclusion:** 1) The study of the population of the industrial area of Poland confirmed that cigarette smoking is a significantly high risk factor of the lung cancer. However, the risk is rising in the autochthons. 2) Spirit consumption by cigarette smokers causes additive increase of the lung cancer risk.

350

### EDUCATION, MENOPAUSE, HEALTH-RELATED QUALITY OF LIFE AND DEPRESSION IN OVERWEIGHT AND OBESE WOMEN

Ana-Cristina Santos, Henrique Barros

Department of Hygiene and Epidemiology, University of Porto Medical School, Porto, Portugal.

**Introduction:** Social and economic characteristics, and biological factors such as menopause have been associated with health-related quality of life and depression in women. The aim of this study was to evaluate these psychosocial factors in overweight and obese women according to their menopausal status and education level.

**Methods:** Using random digit dialling 536 women were selected among residents of Porto, Portugal. For the purpose of this study we evaluated 182 overweight and 126 obese females. All completed a structured questionnaire comprising data on demographic, social, behavioural and clinical. Women were considered postmenopausal if at least 1 year passed since the last menstrual period (n=208, 67.5%) and premenopausal otherwise (n=100, 32.5%). The mean age of premenopausal women was 43.4±8.0 years and 62.3±8.6 years for postmenopausal. Participants were categorized in three education classes: ale4; 5-11 and age12 years of education. Health-related quality of life and depressive symptoms were evaluated using self-completed Portuguese validated versions of the Short-Form-36 Health Survey (SF-36) and the Beck Depression Inventory (BDI). Means were compared using ANOVA. After adjusting for age and menopausal status, we compared the scores of BDI and SF-36 scales by education level using ANCOVA.

**Results:** Compared to premenopausal women, postmenopausal reported significantly lower scores for physical functioning (54.9 vs. 62.4, p=0.009), emotional problems (40.5 vs. 50.0, p=0.007) and general health (47.3 vs. 56.3, p<0.001) scales. They also reported significantly higher scores of depressive symptoms (12.5 vs. 10.7, p=0.04). After adjusting for age and menopause, education was significantly associated with higher scores of physical functioning (p=0.002), bodily pain (p=0.015), general health (p<0.001) and mental health (p=0.001) scales and with lower scores of depressive symptoms (p=0.007).

**Conclusion:** In overweight and obese women menopause was significantly associated with higher depressive scores and lower health-related quality of life. However, education regardless of age played a major effect on psychosocial factors, even overcoming the effect of menopause.

351

### VARIACIONES ESTACIONALES EN EL CONSUMO DE ALIMENTOS Y SU EFECTO SOBRE LAS RELACIONES DIETA - HIPERTENSION EN EL ESTUDIO SUN (SEGUIMIENTO UNIVERSIDAD DE NAVARRA)

Miguel Ángel Martínez-González\*, Álvaro Alonso\*\*, Carmen de la Fuente\*, María Hernández Ruiz de Egulaz\*, Marta Perepérez Candel\*, Jokin de Irala Estévez\*

\*Unidad de Epidemiología y Salud Pública, Universidad de Navarra, Pamplona, España. \*\*S. Medicina Preventiva y Gestión de la Calidad Hospitalarias, Hospital Virgen del Camino, Pamplona, España.

**Antecedentes y objetivos:** Un problema principal en epidemiología nutricional es la valoración de la exposición. La herramienta más utilizada para valorar esta exposición son los cuestionarios semicuantitativos de frecuencia de consumo de alimentos (CFCA). Existe el temor de que la época del año en que se contesta un CFCA podría representar una fuente indeseable de variabilidad. Nuestro objetivo fue valorar las diferencias en el consumo de nutrientes en una cohorte prospectiva según la estación del año en la que se rellenó el cuestionario. También se valoró si estas diferencias influían en la relación entre la dieta y la prevalencia de hipertensión arterial (HTA).

**Métodos:** La valoración inicial de los participantes de la cohorte dinámica SUN (Seguimiento Universidad de Navarra) incluye un CFCA previamente validado en España. Se comparó la media de consumo de diversos nutrientes ajustados por energía, edad y sexo en cada una de las estaciones del año mediante un ANOVA. Para valorar si las diferencias observadas eran relevantes en el análisis de relaciones dieta-HTA se introdujo la variable estación del año, y posteriormente un término de interacción nutriente-estación del año en un modelo de regresión logística en el que la variable dependiente era tener una tensión arterial sistólica  $\geq 140$  o una tensión arterial diastólica  $\geq 90$ , y como variables independientes se incluían la edad, el sexo, el IMC, la actividad física y cada uno de los nutrientes valorados.

**Resultados:** Este estudio se realizó sobre los primeros 7730 participantes de la cohorte SUN. Se observaron diferencias estadísticamente significativas en el consumo de energía total, hidratos de carbono, grasa total, ácidos grasos saturados, ácidos grasos monoinsaturados, fibra, ácido fólico y carga glucémica según la estación del año en la que se contestaba el cuestionario. No así para el consumo de proteínas, ácidos grasos poliinsaturados, alcohol y vitamina E. En el análisis de la relación dieta-tensión arterial elevada, la variable estación no produjo cambios importantes ( $>10\%$ ) en las estimaciones de asociación. Del mismo modo, los términos de interacción nutriente-estación no fueron significativos en ninguno de los casos, bien introduciendo el nutriente como una variable continua o como cuantiles o quintiles de consumo.

**Conclusión:** Aunque se observan variaciones estadísticamente significativas en la información sobre dieta según la época del año, estas diferencias no parecen ser lo suficientemente importantes como para modificar las relaciones dieta - enfermedad. Sin embargo, esto podría ser relevante en el supuesto de que la incidencia de una enfermedad tenga un carácter estacional.

353

### PHYSICAL ACTIVITY ASSESSMENT AMONG ELDERLY PARTICIPANTS OF A MULTI-CENTRE EUROPEAN STUDY IN ALICANTE (EUREYE STUDY). CAN A SINGLE QUESTION CAPTURE THE WHOLE?

Jesús Vioque, Eva Martín-Aragón, Laura Asensio, Patricia Llópez. En nombre del Grupo: EUREYE study.

Dpto. Salud Pública, Universidad Miguel Hernández, San Juan de Alicante. España.

**Background:** Regular practice of physical activity (PA) has been associated to a lower risk of obesity and chronic-degenerative diseases, and to a better longevity. However, questionnaires to assess PA may present serious limitations as they may be time-consuming or centred on specific parts of PA. As a centre of the EUREYE study, a multi-centre European study to evaluate the role of environmental exposures on the risk of age-related macular degeneration and vision-related quality of life in elderly European population, we were interested in assessing the effect of the PA as well. First, we describe the level of PA among people 65 years and older, and second, we assess the validity of just a single question to categorize elderly people according to their PA level.

**Methods:** In the Spanish EUREYE-Study, we collected information for 603 people out of an initial sample of 1294 people representative of 65 years and older residents (46.6% participation rate). We randomly selected 184 participants to assess their PA using a brief semi-quantitative questionnaire previously validated in a Nordic population (Norman, 2001). Additionally, we included a single question for the participants to classify themselves in one of five PA categories ("Overall, how would you consider about your physical activity, at present?"): sedentary, lightly, moderate, very or extremely active. Based in questionnaires data, we estimated total daily PA for each participant using metabolic equivalents (MET, Kcal/Kg x h). Mean MET values and standard deviation (SD) were estimated according to PA categories of the single question. To test validity, we used one-way ANOVA to compare mean values taking considering age and sex in the analysis.

**Results:** Mean total daily activity was 39.7 MET/day (SD, 8.1), comparable to that observed in other populations of similar age range. Daily activity was lower in men, 37.3 MET/day, than in women, 41.2 MET/day. We observed a decreasing trend in total daily activity beyond 75 years of age. Regarding the PA level, 14.7% of participants declared to be sedentary, 57.6% lightly active and 27.7% moderate or very active. As expected, no participant self-defined as extremely active. Total daily activity increased by PA categories, from 28.1 MET/day among sedentary people and 39.8 among lightly active, up to 45.8 for moderate/very active people, being the differences statistically significant ( $p < 0.05$ ). This trend remained after controlling for age and sex of participants which may support a good performance of this single question to assess overall PA and classify elderly people by their PA.

**Conclusion:** PA may be adequately assessed among elderly people using short questionnaires. In addition, a single question may be a useful and sufficient tool to classify these people by their PA level, particularly to avoid very long questionnaires commonly used in population studies.

352

### MICRONUTRIENTS SUPPLEMENTATION OVER PREGNANCY IN POLISH WOMEN

Agnieszka Penar\*, Elzbieta Sochacka-Tatar\*, Aleksander Galas\*, Irena Kaim\*\*, Wieslaw Jedrychowski\*

\*Chair of Epidemiology and Preventive Medicine, College of Medicine, Jagiellonian University, Krakow. \*\*Chair of Gynecology and Obstetrics, College of Medicine, Jagiellonian University, Krakow.

**Introduction:** Lack of supplementation of some micronutrients in pregnancy period may lead to some health problems such as miscarriage, premature delivery or developmental defect of the child. The purpose of this study was to assess pharmacological supplementation of folic acid, ferrum, magnesium and multivitamins in the cohort of Polish women and to assess the determinants of healthy behaviors in this group.

**Methods:** Study sample consisted of 406 pregnant women aged 18-35, living in Krakow, who were recruited in the first or the second trimester of pregnancy between November 2000 and January 2003. In the 26th week of pregnancy trained interviewers asked pregnant women about all kind of supplementation used during pregnancy, including type of medications, dose and time of using it.

**Results:** We found that only 46,3% of pregnant women have had ferrum supplementation (for 14,5% of all women time of supplementation was longer than 13 weeks), besides, ferrum intake from food in almost 93% of this population did not meet the 70% of required dietary intake. Percentage of women who used other types of supplementation was as follows: magnesium - 54,2%, folic acid - 76,6% and multivitamins - 96,8%. We used logistic regression model to find out most important factors that can determine supplementation. Underweight before pregnancy was showed to be protective against lack of ferrum supplementation. We found the risk of lack of supplementation OR = 0,58 (95% CI: 0,38-0,89) in comparison with women with proper weight. University education has been related with lower risk of no supplementation of folic acid (OR = 0,48; 95%CI: 0,28-0,82) and multivitamins (OR = 0,18; 95% CI: 0,04-0,72) and women who had unfavorable events (i.e. miscarriage) during previous pregnancies have had lower risk of lack of magnesium supplementation (OR = 0,46; 95%CI: 0,25-0,86) than nulliparous ones.

**Conclusions:** The study supports the conclusion that instruction on healthy diet and supplementation in pregnancy should be strengthened and should be considered in the undergraduate and postgraduate medical curriculum.

354

### EFFECTS OF SMOKING IN SPIROMETRY IN COLLEGE STUDENTS

Francisco Guillen Grima<sup>1</sup>, James Willincox Annan<sup>2</sup>, Christiane Stock<sup>3</sup>, Ines Aguinaga Ontoso<sup>1</sup>, Alexander Krämer<sup>4</sup>, Inmaculada Serrano Monzo<sup>5</sup>, Concepcion Brun Sandiumetge<sup>1</sup>, Navidad Canga Armayor<sup>5</sup>, Maria Lourdes Sainz Suberbiola<sup>1</sup>. En nombre del Grupo: Cohorte Universitarios de Navarra (NAVUCO).

<sup>1</sup>Dept of Health Sciences, Navarra Public University, Pamplona, Spain. <sup>2</sup>Palmeria Center For Research And Continuing Education, University of Helsinki, Helsinki, Finland. <sup>3</sup>Faculty of Health Sciences, University of Southern Denmark, Esbjerg, Denmark. <sup>4</sup>School of Public Health, University of Bielefeld, Bielefeld, Germany. <sup>5</sup>School of Nursing, University of Navarra, Pamplona, Spain.

**Introduction:** Cigarette smoking has been shown to reduce rates of lung growth and function in young people and cause an accelerated decline in forced expiratory volume in one second (FEV1) in adults. Moreover, smoking appeared to be more strongly associated with respiratory symptoms such as cough, phlegm production, wheezing, chest colds, and shortness of breath. Some studies show that abnormalities of pulmonary function can be detected as early as 1 to 2 years after smoking is started. The magnitude of effects of smoking on change of pulmonary function may be important for prevention of long-term disability related to ventilatory impairments during young adulthood. The present study was undertaken to examine the effect of short term smoking habits on respiratory health based on simple pulmonary function tests in young college students.

**Material and methods:** The study population consisted of 1170 healthy first year Navarra college students recruited for the baseline examination in the Navarra's Universities Cohort study (NAVUCO). Spirometry was performed using calibrated pneumotachograph spirometer (Datascopy 100) and it was performed according to the procedures of the Spanish Society of Respiratory Pathology. The test procedure was explained and demonstrated by trained technician. A minimum of three satisfactory or acceptable forced and/or unforced expiratory flow maneuvers, and the largest of each of these measurements were recorded from each subject according to the standardized methods recommended by the American Thoracic Society and the European Respiratory Society. Subjects age, sex, height and weight were recorded. Smoking status was determined by questionnaire and validated using two methods: Breath CO level and serum cotinine. Breath was performed using Bedfont EC-50 Smokerlyzer model. Serum samples were obtained after centrifugation they were shipped in dry ice and sent by courier to Bielefeld School of Public Health Laboratory, Germany, where serum cotinine was measured by radioimmunoassay.

**Results:** We used the actual mean values adjusted for age, sex and height for reporting the test results, and as a rough index to identify any effects of smoking on lung function. All the observed mean differences of the different spirometric indices (FEV1, FEV5, FEV1/FVC%, FEF25%-75%, PEF, MEF25%, MEF50%, and MEF75%) for the three category of smokers were statistically significant ( $p < 0.05$ ) except for FVC which no significant differences in the group means were observed. The mean values of all the pulmonary function indices were significantly lower in smokers compared with non-smokers although the decrease was very small (ie 190 ml in FEV1 in smokers versus no smokers, etc).

**Conclusions:** Our results provide evidence suggesting that smoking is an important risk factor for impairment of ventilatory lung function and respiratory symptoms and that early effects can be detected by spirometry.



359

### USE OF NUTRITION INFORMATION ON FOOD LABELS BY PARTICIPANTS OF A NUTRITIONAL SURVEY IN SPAIN

Jesus Vioque, Baltasar Balsalobre, Joan Quiles  
*Dpto Salud Publica, Universidad Miguel Hernandez, San Juan de Alicante, Spain.*

**Background:** The growing public interest in the relationship between diet and health and increasing public health problems in Europe were among the determining factors which led the European Commission to propose harmonized legislation on nutrition labelling. Although mandatory nutrition labelling is required in Spain, information about the use of food labels by general population is still scarce. The purpose of this study was to measure the reported use of nutrition information on food labels by participants of a Nutritional Survey and to determine if label users differed from non-users in terms of socio-demographic factors, lifestyles and self-reported health status.

**Methods:** Data are from a Nutritional Survey of 1786 adult residents of Valencia Region in Spain (74.4% participation rate). In addition to the use of nutrition information on food labels, the questionnaire assessed main demographic characteristics (gender, age, marital status, education and income level), smoking, regular practice of sports, body mass index and self-reported health status. We used multiple logistic regression to examine the association of food label use (no/yes) with mentioned variables. We estimated adjusted odds ratios (OR) with 95% confidence intervals (CI).

**Results:** Nutrition label use was significantly higher among women (57.9% versus 46.5%), residents 25-49 years old, and residents with a good self-reported health status and with a high practice of sports. We observed some evidence for a different pattern of label use by sex and therefore we present separate analysis for men and women. When controlled for age, the strongest predictor of label use among men was the regular practice of sports. Compared with men not practicing sports, those reporting more than 1 h/day almost tripled label use, OR = 2.68 (95%CI: 1.68 - 4.26). Among women, the strongest predictor of nutrition label use was the self-reported health status. Women who reported a good health status presented a higher label use than those with very good/excellent health status (reference), OR= 1.41 (95%CI: 1.02-1.94). By contrast, women who reported poor or very poor health status presented the lowest use of nutrition label, OR=0.80 (95% CI: 0.44 - 1.43). The highest use of food label was observed among both middle aged men and women, however, a lower label use was reported by women 50 years and older but not by men beyond this age. Label use was not significantly associated with marital status, education, income level, smoking and body mass index.

**Conclusions:** Women appear to use food labels more often than do males. Label use was more frequently reported by middle aged men and women, and by men who practice sports and women with a good health status. These patterns of nutrition label use may be helpful in planning new policies in food labelling and consumer education.

361

### VALIDATION OF A 7 DAY DIET DIARY USING URINARY AND BLOOD BIOMARKERS: VARNA DIET AND STROKE STUDY

Krassimira Stoeva<sup>1</sup>, John Powles<sup>2</sup>, Elliot Berry<sup>3</sup>, Veselka Duleva<sup>4</sup>, Klara Dokova<sup>1</sup>, Nevijana Feschieva<sup>1</sup>, Shirley Runswick<sup>5</sup>, Maria O'Connell<sup>6</sup>, Sheila Bingham<sup>5</sup>. Varna Diet and Stroke Study

<sup>1</sup>Dept of Social Medicine, Medical University, Varna, Bulgaria. <sup>2</sup>Dept of Public Health and Primary Care, University of Cambridge, Cambridge, UK. <sup>3</sup>Department of Medicine, Hadassah Hebrew University Hospital, Jerusalem, Israel. <sup>4</sup>National Centre for Hygiene, Medical Ecology and Nutrition, Sofia, Bulgaria. <sup>5</sup>MRC Dunn Nutrition Centre, Cambridge, UK. <sup>6</sup>MRC Human Nutrition Research, Cambridge, UK.

**Introduction:** Dietary correlates of high vascular risk in Bulgaria remain largely uninvestigated. We aimed to assess the validity of estimates of dietary intakes from a 7-day diet diary by comparing them with: 1. estimated energy requirements 2. urinary nitrogen excretion (to assess energy under-reporting); 3. plasma vitamin C concentration; 4. urinary nitrogen (for estimating protein intake), sodium and potassium excretion.

**Methods:** 188 subjects (97 urban, 91 rural) aged 45-74 years were quota sampled from the lists of cooperating general practitioners to give approximately equal numbers in each age-sex-location group. Urban subjects were from the city of Varna and rural subjects from a village 57 km to the south-west. Data was collected over 1 week periods in winter (January-March) and summer (June-September), 2000. The first day of the diet diary (D1) was entered during interview with the subjects and record keeping by subjects was checked during visits on days 3, 4, 6 and 8. 24hr urine collections, monitored for completeness by the administration of 3 tablets of 80mg of para-amino benzoic acid (PABA), were made on D1 and D7. Blood was collected on the morning of D8. The associations between the biomarkers and the reported intakes were assessed separately for each of the intake-biomarker pairs, by study cycle and sex-location group. Energy intake estimated from diet records was expressed as a ratio to BMR (estimated from age, sex and weight using published equations (FAO/UNU/WHO, 1985) and compared to Goldberg cut-off point (1.35). The statistical analysis included comparison of means, estimating correlation coefficients and performing univariate and multivariate regression models. In the urine-based analyses, only subjects with satisfactory PABA recoveries were included (n = 107, winter and n = 93, summer).

**Results:** 48.1% of all subjects in winter and 63% in summer had an energy intake to BMR ratio of <1.35 and were classified as underreporting their energy intake. 80% of these had BMI greater than 25. The correlation of estimated dietary protein with estimates based on nitrogen excretion was 0.54 (winter) and 0.51 (summer), controlled for BMI and age. Correlations between estimated Na and K consumption and urinary excretion lay in the range 0.42 (Na, winter) to 0.31 (K, summer). For Vitamin C, correlations were lower when intakes were high (summer - r = -0.22) than when they were low (winter r = 0.38, controlled for smoking). Estimated validity tended to be higher in winter compared to summer, in females (in winter) and in rural subjects.

**Conclusion:** The performance of a 7-day diet diary, when used with intensive personal contact by fieldworkers, appears to have been comparable in these Bulgarian populations with published results for other populations.

360

### INFLUENCE OF PSYCHOSOCIAL FACTORS ON SELF REPORTED BODY WEIGHT

Elisabete Ramos, Ana-Cristina Santos, Carla Lopes, Henrique Barros  
*Hygiene and Epidemiology, University of Porto Medical School, Porto, Portugal.*

**Introduction:** Perceived body image respond to social and cultural beliefs, and is related with psychological factors. The difference between self-reported and actual measured weight could be a surrogate for such body image. This study aimed to evaluate health-related quality of life and depression according to the magnitude of self-reported body weight error.

**Methods:** We evaluated 785 adult community dwellers (536 females and 344 males) selected by random digit dialling. Participants were questioned on demographic, social, behavioural and clinical characteristics. Health-related quality of life and depressive symptoms were evaluated using self-completed Portuguese validated versions of the Medical Outcomes Study 36-item Short Form Health Survey (SF-36) and the Beck Depression Inventory (BDI). After self-reported information on weight and height the actual measurements were obtained, and the differences calculated. Data were analysed separately for men and women. Age and education adjusted values were compared using linear regression.

**Results:** Mean (standard deviation) differences between measured and reported weight were 1.0 (2.5) kg for females and 0.8 (2.7) kg for males. Participants were classified according to the computed differences in three categories, as less than 2.0 kg error (n=492, 62.7%); under-reporters of more than 2.0 kg (n=231, 29.4%); and over-reporters of more than 2.0 kg (n=62, 7.9%). Males that under-reported their weight more than 2.0kg, scored lower on BDI compared to those who reported weight with a difference less than 2.0kg, but this difference was not statistically significant (6.0±5.5 vs.7.4±7.2, p=0.176). For all SF-36 dimensions, those who under-reported scored less but no significantly difference was found, being the major difference for emotional problems (35.8 vs. 42.4, p=0.062). In females, no significant differences were found. Adjustment for age and education had no effect on crude estimates, and similar results were obtained when six weight difference categories were considered.

**Conclusion:** Psychosocial factors, such as depression and health related quality of life seem not to play any major role in the understanding of the differences between self-reported and measured weight, a common problem in population based epidemiological surveys.

362

### TRASTORNOS ALIMENTARIOS EN ADOLESCENTES. INFLUENCIA DE LAS ACTITUDES ALIMENTARIAS DE LOS PADRES

Aina Yáñez Juan\*, Maria Amor Peix Sambola\*\*, Neus Atserias Gimeno\*\*\*, Natividad Esteva Nuto\*\*, Anna López De Aguilera Ibisate\*\*, Eudald Sellares Casas\*\*

*\*Unidad de Epidemiología Clínica, Hospital General de Vic, Vic. \*\*Servicio de Pediatría, Hospital General de Vic, Vic. \*\*\*Servicio de Psiquiatría y Psicología, Hospital General de Vic, Vic.*

**Introducción:** El objetivo de este estudio fue determinar la influencia de las actitudes alimentarias de los padres sobre los trastornos alimentarios en los adolescentes.

**Métodos:** Estudio transversal realizado con una muestra aleatoria de 123 aulas de adolescentes de entre 12 y 16 años de edad (1º, 2º, 3º y 4º de ESO) correspondientes a 3602 adolescentes. Se utilizó un cuestionario autoadministrado que contenía el Eating Attitude Test (EAT-26) para evaluar el riesgo de trastorno alimentario. Todos los alumnos fueron pesados y medidos. Se realizó un análisis multivariado mediante un modelo de regresión logística para analizar la asociación entre EAT-26 de los padres y el de los adolescentes.

**Resultados:** 3.077 adolescentes respondieron al test y recibieron dos cuestionarios que contenían el EAT-26, peso y talla para el que respondieron el padre y la madre. 1632 padres devolvieron el cuestionario completo y 1258 de estos presentaron datos válidos para este análisis. Un 10,5% (72/685) de las chicas y un 1% (6/573) de los chicos mostraron puntuaciones por encima del punto de corte recomendado (20 puntos) en el EAT-26. En los chicos el índice de masa corporal (IMC) se asoció significativamente con EAT-26>20. En las chicas se observó que el EAT-26 por encima de 20 se asoció significativamente con: mayor edad y IMC mas elevado de las adolescentes, madres con alto riesgo de trastorno alimentario y obesidad o sobrepeso del padre (p < 0,05). En el análisis de regresión logística se observó que EAT-26>20 en las chicas se continuó asociando con: IMC por encima del 90 percentil (OR = 3,9 IC95% 2,0-7,5), madres con alto riesgo de trastorno alimentario (OR = 2,72 IC95% 1,3-5,6), edad >13 años (OR = 2,3 IC95% 1,3-3,8) y obesidad o sobrepeso del padre (OR = 1,9 IC95% 1,2-3,2).

**Conclusiones:** La conducta alimentaria de la madre podría ser un factor de riesgo en el desarrollo de anorexia o bulimia en las adolescentes. El IMC del padre también podría influenciar en las actitudes alimentarias de las adolescentes.