

APPENDIX 1

LIFESTYLE QUESTIONNAIRES AND CRITERIA

Dietary habits and the other lifestyle features were investigated using 1-week recall computerized questionnaires, originally developed in 2005 on a cross-platform relational database application, and subsequently slightly modified by dragging new elements into layouts, screens, and forms. Dietary prescription was performed separately using a proprietary software, Terapia Alimentare Dietosystem® (Milano, Italy).

ADHERENCE TO MEDITERRANEAN DIET SCORE (AMDS)

The traditional Mediterranean diet prescribed is characterized by a high intake of vegetables, legumes, fruits and nuts, cereals, a high intake of olive oil, and a low or no intake of saturated lipids, a moderately high intake of fish, a low-to-moderate intake of dairy products (mostly in the form of cheese or yogurt), and a low intake of meat and poultry. The subjects reported their daily or weekly average intake of several food items that they consumed during the last year. Then, the frequency of consumption was quantified approximately in terms of the number of times a month this food was consumed. Thus, daily consumption was multiplied

by 30 and weekly consumption was multiplied by 4: a value of 0 was assigned to food items rarely or never consumed; [1] daily consumption of non-refined cereals and products (e.g., whole-grain bread, pasta, brown rice, and the like), fruits (4 to 6 servings/day), vegetables (2 to 3 servings/day), olive oil (as the main added lipid), and non-fat or low-fat dairy products (1 to 2 servings/day); [2] weekly consumption of fish, poultry, potatoes, olives, pulses, and nuts (4 to 6 servings/week), as well as more rarely eggs and sweets (1 to 3 servings/week), and monthly consumption of red meat and meat products (4 to 5 servings/month). According to the previous dietary pattern and the reported monthly frequency consumption of these food groups, we calculated each participant's diet score, which assessed adherence to the Mediterranean diet (range 0 to 55).

Adherence to Mediterranean Diet Score criteria can be summarized as follows:

Mediterranean food : (I Pasta and rice; II whole-grain bread, brown rice, legumes; III Fruit; IV Green vegetables; V Fish, poultry, No-fat or low-fat dairy products; VI olive oil) had assigned, each group of food, the following scores: 0 = no consumption; a score of 1 = 1 to 4 times/month; 2 = 5 to 8 times/month; 3 = 9 to 11 times/month; 4 = 12 to 14 times/month; and 5 = more than 14 times/month. "Westernized food": (VII Red meat; VIII Dairy products-butter; IX Potatoes and eggs; X Cakes)

opposite scores were assigned, each group of food, the following scores: 5 = 0-4 monthly consumption; score 4 = 5-8 monthly consumption; 3 = 9-12 monthly consumption; 2 = 13-16 monthly consumption; 1 = 17-20 monthly consumption; 0 = more than 20 monthly consumptions). XI Wine and alcohol (on average daily base): (0-10 g of alcohol from Red Wine for women score 5; 0-20 g of alcohol from Red Wine for men score 5); each increment of 10 g, from the maximal allowed baseline, determines negative scores (20-30= -1 ; 30-40= -2 ; 40-50= -3 ; 50-60= -4 ; >60= -5 for men; 10 less for women and for all non-wine alcohol: 10-20= -1; 20-30= -2; 30-40= -3; 40-50= -4; >50 = -5).

Overall Adherence to Mediterranean Diet Score (AMDS) has a range of 0-55 and currently we consider adequate a score with a cut-off indicating a good adherence above 30/55 (*Liver Int.* 2008;28:1280-7).

Trichopoulou A, Costacou T, Bamia C, Trichopoulos D. Adherence to a Mediterranean diet and survival in a Greek population. N Engl J Med 2003;348:2599e608.

Dai J, Jones DP, Goldberg J, Ziegler TR, et al. Association between adherence to the Mediterranean diet and oxidative stress. Am J Clin Nutr. 2008;88:1364-70.

Catalano D, Trovato GM, Martines GF, Randazzo M, Tonzuso A. Bright liver, body composition and insulin resistance changes with nutritional intervention: a follow-up study. Liver Int. 2008;28:1280-7.

Trovato FM, Catalano D, Martines GF, Pace P, Trovato GM. Mediterranean diet and non-alcoholic fatty liver disease: the need of extended and comprehensive interventions. Clin Nutr. 2015;34:86-8.

WESTERN DIETARY PROFILE

Critical foods of Western Diet. Western Diet pattern score. For each item of the following. A score 1-7, on a weekly basis, is recorded by the patients; a total maximal score of 84 is therefore calculated.

The specific questions were based on specific and articulated questions, addressed to the use in one or more days of the week preceding the interview of the following 12 categories of food: take-away foods; red meats; processed meats; full-fat dairy products; fried potatoes (“ hot chips ” or “ French

fries "); refined cereals; cakes and biscuits; confectionery; soft drinks; crisps ; sauces with cream; other dressings.

Moreover, daily frequency of food intake, defined by the reported number of meals/day with >100 Kcal intake, is recorded on a weekly basis, reporting the meals on a daily timetable and week calendar.

Hu FB, Rimm EB, Stampfer MJ, Ascherio A, Spiegelman D, Willett WC. Prospective study of major dietary patterns and risk of coronary heart disease in men. Am J Clin Nutr. 2000;72:912-21.

Trovato GM, Catalano D, Martines GF, Pirri C, Trovato FM. Western dietary pattern and sedentary life: independent effects of diet and physical exercise intensity on NAFLD . Am J Gastroenterol. 2013;108:1932-3.

Oddy WH, Herbison CE, Jacoby P, Ambrosini GL, O'Sullivan TA, Ayonrinde OT, Olynyk JK, Black LJ, Beilin LJ, Mori TA, Hands BP, Adams LA. The Western dietary pattern is prospectively associated with nonalcoholic fatty liver disease in adolescence. Am J Gastroenterol. 2013;108:778-85.

BAECKE' S HABITUAL PHY SICAL ACTIVITY QUESTIONNAIRE

Practical use of the Baecke questionnaire (with slight modification from the original), in which factor analysis reduced the questionnaire to 3 components of physical activity: sport, leisure excluding sport, occupational. The Total score is, as a maximum, 100, divided into three components. Sleep hours and rhythm, sun exposure and noise exposure are administered separately.

A) »Work » items 1-8 – total score 40 maximum

The score ranges from 1 (low) to 5 (high) » ; it includes 7 items, including the first 1) coding of occupation (1= mainly sedentary; 3 = mainly with physical exercise; 5 = totally with physical exercise)– 2) sitting at work (if the subject does not any work then the interview will skip directly to item 8) – 3) standing at work – 4) walking at work ; consider also at work and in any daily activity, including home, how many flights of stairs climbed up each day (one flight = 20 steps): score 1-5, according to flights 10 (= score 1) to 100 (= score 5). – 5) lifting heavy loads at work – 6) physically tired after work – 7) sweating at work. This item is therefore related work activity and not due to the weather or temperature – comparison of this specific work to other ones (subjective) 8) how heavier is the work – comparatively – score one means very light.

B) »Sport » item 9, with 2-5 sub-items – (score 25 maximum) and 10-12 (score 15 maximum):
overall sport total score 40 maximum

score ranges from 1 (low) to 5 (high) : there are 4 questions with parts – Do you exercise or play sports? (if no, skip to question 10) Type of activity (starting with most frequent) 9a) Hours per week, 9b) Months per year; if suitable, (9c – 9e) repeated for up to 4 sport activities: second sport, third sport, fourth sport) – Time playing sports or exercise – 10) Activity compared to others (subjective) – 11) Sweating during leisure time (that this is a result of sport activity and not due to the weather or temperature)

C) »Leisure » items 13-16 – overall leisure total score 20 maximum

score ranges from 1 (low) to 5 (high) » 4 items: 13) Watch television during leisure – 14) Walking during leisure – 15) Bicycling during leisure – excluding bicycle as a sport – 16) Time spent walking or bicycling for transportation, without do not include time spent walking at work, or walking/bicycling for exercise

Baecke JA, Burema J, Frijters JE. A short questionnaire for the measurement of habitual physical activity in epidemiological studies. Am J Clin Nutr. 1982;36:936-42.

A brief statement on preferred clothes for each of the three activities was asked in our modified form, regarding the choice of oversized clothes. This is an explicit question, asking if larger-for-size clothing size are deliberately and usually adopted (at least one size larger), and asking if smaller-for-size clothes are preferentially chosen (at least one size smaller).

Trovato FM, Martines GF, Brischetto D, Catalano D, Musumeci G, Trovato GM. Fatty liver disease and lifestyle in youngsters: diet, food intake frequency, exercise, sleep shortage and fashion. Liver Int. 2016 Mar;36(3):427-33.

SUN EXPOSURE SCORE QUESTIONNAIRE

This score is derived originally from information derived from the reported weekly numbers of outdoors sun exposure, irrespective of clothing, and, after 2011, by the direct answers to the questionnaire detailed below.

There were three choices for the amount of time spent outdoors each day (0≤5min, 1 = 5–30 min, and 2 = ≥30 min) and four choices for clothing or skin exposure while outdoors (1 = face and hands only; 2 =

face, hands and arms; 3 = face, hands and legs; and 4 = “bathing suit”). A score to estimate their mean weekly sun exposure was calculated: The product of the amount of time spent outdoors and the amount of skin exposed was calculated for each day to create a daily Sun Exposure Score (min = 0, max = 8). All seven days’ Sun Exposure Scores were summed to equal the weekly Sun Exposure Score (min = 0, max = 56). Similarly, the weekly Time in Sun Score and weekly Skin Exposure Score were each calculated by summing the seven daily scores (respectively, min = 0, max = 14 and min = 7, max = 28).

Hanwell HE, Vieth R, Cole DE, Scillitani A, Modoni S, Frusciante V, Ritrovato G, Chiodini I, Minisola S, Carnevale V. Sun exposure questionnaire predicts circulating 25-hydroxyvitamin D concentrations in Caucasian hospital workers in southern Italy. J Steroid Biochem Mol Biol. 2010;121:334-7.

SLEEP HABITS

Subjects self-report on a monthly base the number of sleep hours, reported also separately for work and week-end - holidays; a monthly average was therefore calculated; on the overall group of subjects the 25th lower percentile defined individuals with sleep deprivation, with separate cut-offs for each decades (21-30, 31-40, 41-50, ≥51 years).

Hitze B, Bosy-Westphal A, Bielfeldt F, Settler U, Plachta-Danielzik S, Pfeuffer M, Schrezenmeir J, Mönig H, Müller MJ. Determinants and impact of sleep duration in children and adolescents: data of the Kiel Obesity Prevention Study. Eur J Clin Nutr. 2009;63:739-46.

Trovato FM, Martines GF, Brischetto D, Catalano D, Musumeci G, Trovato GM. Fatty liver disease and lifestyle in youngsters: diet, food intake frequency, exercise, sleep shortage and fashion. Liver Int. 2016;36:427-33.

NOISE EXPOSURE

Habitual noise exposure was assessed submitting to patients a 10-item Likert questionnaire with the perceived noise annoyance and excessive noise exposure in each the 10 following environments or subsets: Home, work, studying and reading, leisure time (exercise and sport activity), leisure time

(theater, cinema, disco-club), road and transport, during the day, during the night, at sleep-time, and, last, in one of the preceding subsets, the decibel current noise meter application measures, using for the final score the ratio of the measured decibels/10).

Trovato G, Brischetto D, Martines GF. Teens' obesity, noise and sleep deprivation: a perverse liaison. Let's move beyond "movida". Obesity (Silver Spring). 2014; 22:1209.