**KomPAN®**

**DIETARY HABITS AND NUTRITION BELIEFS QUESTIONNAIRE**

**AND**

**THE MANUAL FOR DEVELOPING OF NUTRITIONAL DATA**

3rd edition

**Technical Report**

**edited by Professor Jan Gawęcki**

Technical editor

Beata Stasiewicz

**Committee of Human Nutrition, Polish Academy of Sciences**

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In the second edition compared to the 1st edition, the following changes were made in Chapter 3, in the section entitled Diet quality indexes (3.5.2.2):

* information about the possibility of using a simplified version of the acronyms of dietary quality indexes (pHDI instead of pHDI-10 and nHDI instead of nHDI-14), according to the terms used in publications:

Osadnik et al. Metabolically Healthy Obese and Metabolic Syndrome of the Lean: the Importance of Diet Quality. Analysis of MAGNETIC cohort. *Nutr. J.*, 2020, 19:19, doi:10.1186/s12937-020-00532-0;

Wadolowska et al. Changes in Sedentary and Active Lifestyle, Diet Quality and Body Composition Nine Months after an Education Program in Polish Students Aged 11–12 Years: Report from the ABC of Healthy Eating Study. *Nutrients,* 2019, 11(2): 331, doi:10.3390/nu11020331;

Kowalkowska et al. Reproducibility of a Short-Form, Multicomponent Dietary Questionnaire to Assess Food Frequency Consumption, Nutrition Knowledge, and Lifestyle (SF-FFQ4PolishChildren) in Polish Children and Adolescents. *Nutrients,* 2019, 11, 2929; doi:10.3390/nu11122929;

* a new proposal has been made to develop dietary data using the overall Diet Quality Index (DQI); this index enables a common interpretation of the consumption of foods with a potentially beneficial and negative influence on health – it combines these opposing diet characteristics and expresses them in numerical values;
* minor stylistic corrections were introduced.

The following changes have been introduced in the 3rd edition compared to the 2nd edition:

* in chapters 1 and 2, a question regarding the gender with which the respondent identifies was added;
* an additional division of the overall "Diet Quality Index" (DQI) into 5 categories has been proposed, which will facilitate the interpretation of this index for researchers and individual users interested in their diet (Chapter 3, section 3.5.2.2. Diet Quality Indexes);
* the title of the questionnaire has been corrected, indicating the respondents to whom it is addressed (*'young people aged 16-18 and adults'* instead of *'people aged 15-65'*); this change is intended to make it easier for some researchers to decide whether to use the questionnaire in people just over 65 years of age; however, it should be emphasized that the validation of the questionnaire was carried out in people aged 16-65 (doi:10.3390/nu11122929), so the decision to use this questionnaire in people >65 years old rests with the researcher; the researcher should take into account that in older people less reliability of nutritional data, the collection of which is based on the respondent's long-term memory, should be expected;
* minor stylistic corrections were introduced.

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**1. KomPAN® Dietary Habits and Nutrition Beliefs Questionnaire for adolescents aged 16-18 years and adults** version 2.1. –interviewer administered questionnaire

Authors: *Marzena Jezewska-Zychowicz\*1, Jan Gawecki\*2, Lidia Wadolowska\*3, Jolanta Czarnocinska\*2, Grzegorz Galinski\*2, Anna Kollajtis-Dolowy\*1, Wojciech Roszkowski\*1, Agata Wawrzyniak\*1, Katarzyna Przybylowicz\*3, Beata Stasiewicz3, Iwona Hawrysz3, Malgorzata A. Slowinska3, Ewa Niedzwiedzka3*

*\*Committee of Human Nutrition, Polish Academy of Sciences*

*1Institute of Human Nutrition Sciences, Warsaw University of Life Sciences - SGGW*

*2Faculty of Food Sciences and Nutrition, University of Life Sciences in Poznan*

*3 Faculty of Food Sciences, University of Warmia and Mazury in Olsztyn*

percentage share of authors:

MJZ 20%, JG 20%, LW 12%, JC 12%, GG 12%, AKD 6%, WR 5%, AW 4%, KP 2%, BS 3%, IH 2%, MAS 1%, EN 1%

Translation into English: *Marta Lonnie*

Correction of the English translation: *Aleksandra Bykowska-Derda, Marzena Jezewska-Zychowicz,*

*Joanna Kowalkowska, Lidia Wadolowska*

Translation into Polish: *Joanna Jensen – OSCAR Translations*

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**KomPAN® Dietary Habits and Nutrition Beliefs Questionnaire for**

**adolescents aged 16-16 years and adults**

version 2.1. interviewer administered questionnaire

Information in boxes are for the interviewer

*Additional instructions for the interviewer in italics*

|  |
| --- |
| *NOTE: Interviewer should maintain a neutral attitude during the interview and should not make any suggestions regarding the answers because some of the questions are used as a confirmation of respondents’ answers validity.*  READ OUT: We are conducting research, and we would like to learn about people’s dietary habits and nutrition beliefs. The data obtained will be anonymous and undisclosed and will be used only for the purpose of this research.  I will now ask you questions, please choose one or more answers according to the instructions given. |

**1.Respondent code** |\_\_ | \_\_ | \_\_ | \_\_ | 2. **Interviewer code** | \_\_ | \_\_ | 3**. Centre code** | \_\_ | \_\_ |

Date of the interview: 4. **Day** | \_\_ | \_\_ | 5**. Month** | \_\_ | \_\_ | 6**. Year** |\_\_ | \_\_ | \_\_ | \_\_ | *enter e.g. 01.12.2014*

*Part A. Dietary habits*

|  |
| --- |
| READ OUT: I will now ask you about your **dietary habits over the LAST YEAR**. |

**7. How many meals do you usually consume daily?**

Please give **one** answer.

**Meal** - any of the regular occasions in a day when a reasonably large amount of food is eaten, e.g. morning, noon, evening.

(1)\_\_ 1 meal

(2)\_\_ 2 meals

(3)\_\_ 3 meals

(4)\_\_ 4 meals

(5)\_\_ 5 meals or more

**8. Do you consume meals at regular times?**

Please give **one** answer.

(1)\_\_ No

(2)\_\_ Yes, but only some of them

(3)\_\_ Yes, all of them

**9. How often do you snack between the meals?**

Please give **one** answer.

**Snacking** – usually a small portion of food eaten occasionally between the meals.

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

|  |
| --- |
| *Question for people who snack between meals* |

**10. What types of food do you usually consume between the meals during the weekdays?**

You can give **more than one** answer.

(10/1)\_\_ Fruit

(10/2)\_\_ Vegetables

(10/3)\_\_ Unsweetened dairy beverages and desserts, e.g. yoghurts, curd/cream cheese, milk

(10/4)\_\_ Sweetened dairy beverages and desserts, e.g. homogenised cheese, sweetened milk beverages, flavoured milk

(10/5)\_\_ Sweet snacks, e.g. confectionary, biscuits, cakes, chocolate bars, cereal bars, wafers

(10/6)\_\_ Savoury snacks, e.g. crackers, pretzels, crisps, potato chips

(10/7)\_\_ Nuts, almonds, seeds

(10/8)\_\_ Other, please list ……………………………………………………………………………………………………….

**11. What type of milk and** **dairy beverages you usually consume?**

Please give **one** answer.

(1)\_\_ Full fat

(2)\_\_ Low fat

(3)\_\_ No fat

(4)\_\_ I don’t consume it foods

**12. How do you usually have your meat prepared?**

You can give **more than one** answer.

(1)\_\_ Boiled

(2)\_\_ Stewed

(3)\_\_ Grilled

(4)\_\_ Roasted

(5)\_\_ Fried

(6)\_\_ I don’t eat meat

**13. What bread spread do you usually use?**

Please give **one** answer.

(1)\_\_ I don’t use any spreads

(2)\_\_ I use various spreads

(3)\_\_ Mayonnaise

(4)\_\_ Margarine

(5)\_\_ Butter

(6)\_\_ Spreadable butter (butter and margarine mix)

(7)\_\_ Lard

**14. What type of fat do you usually use for frying?**

Please give **one** answer.

(1)\_\_ I don’t use any fats for frying

(2)\_\_ I use various types of fats

(3)\_\_ Vegetable oils (including olive oil)

(4)\_\_ Margarine

(5)\_\_ Butter

(6)\_\_ Lard

**15. Do you add any sugar to your hot beverages, e.g. tea, hot chocolate, coffee?**

Please give **one** answer.

If your preferences vary depending on the type of the drink, please give answer related to the drink you drink most often

(1)\_\_ No

(2)\_\_ Yes, I add one teaspoon of sugar (or honey)

(3)\_\_ Yes I add two or more teaspoons of sugar (or honey)

(4)\_\_ Yes, I use sweeteners (low-caloric substitute for sugar)

**16. Do you add salt to your meals and sandwiches once prepared?**

Please give **one** answer.

(1)\_\_ No

(2)\_\_ Yes, but only sometimes

(3)\_\_ Yes, I add salt to most of my meals

**17. What type of water do you usually drink?**

You can give **more than one** answer.

(1)\_\_ I don’t drink water

(2)\_\_ Still water

(3)\_\_ Sparkling water

(4)\_\_ Flavoured water

|  |
| --- |
| READ OUT: Please think back about **ONE typical day** in terms of your diet in the **LAST WEEK** and answer the following questions. |

**18. What day of the week was it?**

(1)\_\_ Monday

(2)\_\_ Tuesday

(3)\_\_ Wednesday

(4)\_\_ Thursday

(5)\_\_ Friday

(6)\_\_ Saturday

(7)\_\_ Sunday

**19. How many meals did you have that day?** *Please give a number* ………….. meals that day

***Meal*** *- any of the regular occasions in a day when a reasonably large amount of food is eaten, e.g. morning, noon, evening.*

**20. How many times did you have fruit or vegetables that day?** Please give a number………………. times that day.

*Please include fruit or vegetables consumed during meal times and when snacking.*

**21. Did you have any fast foods that day, e.g. potato chips, hamburgers, pizza, hot-dogs?**

(1)\_\_ No

(2)\_\_ Yes. How many times? *Please give a number*…………………… times that day

*Part B. Food frequency consumption*

|  |
| --- |
| READ OUT: I will now ask you **questions about the foods** you eat.  We would like to learn, **how often do you consume these foods**?  While answering to the questions, please consider foods eaten over the **LAST YEAR** during **your meals and snacking**, eaten at home and away.  In this part please give only **one** answer to each question.  *Present ‘Show card No. 1’ to the respondent* |

**22. How often do you eat white bread and bakery products, e.g. wheat bread, rye bread, wheat/rye bread, toast bread, bread rolls?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**23. How often to you eat wholemeal (brown) bread/bread rolls?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**24. How often do you have white rice, white pasta, fine-ground groats, e.g. semolina, couscous?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**25. How often do you eat buckwheat, oats, wholegrain pasta or other coarse-ground groats?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**26. How often do you eat fast foods, e.g. potato chips, hamburgers, pizza, hot-dogs?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**27. How often do you eat fried foods (e.g. meat or flour-based foods such as dumplings, pancakes etc.)?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**28. How often do you use butter as a bread spread or as an addition to your meals/ for frying/ for baking etc.?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**29. How often do you use lard as a bread spread, or as an addition to you meals/ for frying/ for baking etc.?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**30. How often do you use vegetable oils or margarines or mixes of butter and margarines as a bread spread, or as an addition to your meals/ for frying/ for baking etc.?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**31. How often do you drink milk (including flavoured milk, hot chocolate, latte)?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**32. How often do you eat fermented milk beverages, e.g. yoghurts, kefir (natural or flavoured)?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**33. How often do you eat fresh cheese curd products, e.g. cottage cheese, homogenised cheese, fromage frais?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**34. How often do you eat cheese (including processed cheese, blue cheese)?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**35. How often do you eat cold meats, smoked sausages, hot-dogs?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**36. How often do you eat red meat, e.g. pork, beef, veal, mutton, lamb, game?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**37. How often do you eat white meat, e.g. chicken, turkey, rabbit?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**38. How often do you eat fish?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**39. How often do you eat eggs?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**40. How often do you eat pulses-based foods, e.g. from beans, peas, soybeans, lentils?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**41. How often do you eat potatoes (excluding chips and crisps)?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**42. How often do you eat fruit?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**43. How often do you eat vegetables?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**44. How often do you eat sweets, e.g. confectionary, biscuits, cakes, chocolate bars, cereal bars, other?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**45. How often do you eat instant soups or ready-made soups, e.g. tinned, jar, concentrates (excluding frozen soup mixes)?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**46. How often do you eat tinned (jar) meats?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**47. How often do you eat tinned (jar) vegetables, e.g. pickles?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**48. How often do you drink fruit juices?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**49. How often do you drink vegetable juices or fruit and vegetable juices?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**50. How often do you drink sweetened hot beverages, such as black tea, coffee, herbal or fruit teas?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**51. How often do you drink sweetened carbonated or still beverages such as Coca-Cola, Pepsi, Sprite, Fanta, lemonade?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**52. How often do you drink energy drinks such as Red Bull, Monster, Rockstar or other?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**53. How often do you drink water, e.g. mineral, tap water?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**54. How often do you have alcoholic beverages?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

*Part C. Nutrition beliefs*

|  |
| --- |
| READ OUT: Now I will read you some statements regarding food and nutrition.  Please **provide your view regarding each of the statements**.  *Respondent can give* ***one*** *answer to each statement.* |

|  |  |  |  |
| --- | --- | --- | --- |
| Statement | True  (1) | False  (2) | Unsure (3) |
| 55. It is enough to eat wholegrains/cereals once a day. |  |  |  |
| 56. Only children and adolescents should drink milk. |  |  |  |
| 57. Fruit and/or vegetables should be consumed with every meal. |  |  |  |
| 58. Consumption of mouldy bread can result in food poisoning caused by *Salmonella.* |  |  |  |
| 59. High intakes of salt protect from hypertension. |  |  |  |
| 60. Limiting high-fat foods in everyday diet is protective against cardiovascular diseases. |  |  |  |
| 61. Frequent consumption of oily fish contributes to atherosclerosis. |  |  |  |
| 62. Frequent consumption of grilled meats contributes to the onset of cancer. |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Statement | True  (1) | False  (2) | Unsure (3) |
| 63. Vegetarian diet increases the risk of anaemia. |  |  |  |
| 64. Bio-yoghurts contain beneficial gut bacteria. |  |  |  |
| 65. Vegetable oils and olive oil contain a high amount of cholesterol. |  |  |  |
| 66. Wholemeal bread have more fibre than white bread. |  |  |  |
| 67. Fruit and vegetables are a source of ‘empty calories’. |  |  |  |
| 68. Butter and fortified margarines have high content of vitamin A and D. |  |  |  |
| 69. Cheese is a better source of calcium than cottage cheese. |  |  |  |
| 70. Offal has high amounts of ‘bad’ cholesterol - LDL. |  |  |  |
| 71. In a healthy diet, complex carbohydrates should be replaced with simple sugars. |  |  |  |
| 72. In a balanced diet, proteins should be the main source of energy. |  |  |  |
| 73. Inadequate intakes of vitamin PP can cause skin inflammation and diarrhoea. |  |  |  |
| 74. Sun exposure increases the synthesis of vitamin D in the human body. |  |  |  |
| 75. Phosphorus is a component of neural tissue. |  |  |  |
| 76. The ratio of calcium to phosphorus in a healthy diet should be 1:1. |  |  |  |
| 77. Consumption of fruit with high content of vitamin C increases bioavailability of iron. |  |  |  |
| 78. Starting cooking vegetables in cold water helps to preserve the nutrients. |  |  |  |
| 79. Sweets and animal fats are particularly high nutrient dense foods. |  |  |  |

*Part D. Lifestyle and personal data*

|  |
| --- |
| READ OUT: At the end, I would like to ask you questions referring to your **lifestyle** and some **personal data**.  If you feel that some of the questions are too personal, you can refuse to answer. We would be however grateful for every honest answer given.  In this part please give **one** answer to each question. |

**80. Are you currently following a diet?**

(1)\_\_ No

(2)\_\_ Yes, as advised by my doctor for medical reasons

(3)\_\_ Yes, it was my personal decision

|  |
| --- |
| Question to respondents who are following a diet. |

**81. Please provide the type of a diet** ……………………………………………………………………………………

|  |
| --- |
| Question to respondents who are following a diet. |

**82. How long have you been following this diet?**

Please specify the duration.

*Respondent can give* ***number of weeks*** *or* ***number of months*** *or* ***number of years****.*

Please provide a number of: ………………. weeks, …………… months, …………………. years.

**83. How often do you eat out, e.g. in a bar, restaurant, café, canteen?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

|  |
| --- |
| Question for respondents who drink alcoholic beverages. |

**84. What type of alcohol do you usually drink?**

(1)\_\_ Beer

(2)\_\_ Wine

(3)\_\_ Drinks

(4)\_\_ Vodka

**85. Do you currently smoke cigarettes, e-cigarettes, pipe or other tobacco?**

(1)\_\_ No

(2)\_\_ Yes

**86. Have you smoked cigarettes, e-cigarettes, pipe or tobacco in the past?**

(1)\_\_ No

(2)\_\_ Yes

**87. How many hours do you sleep a day during weekdays?**

(1)\_\_ 6 or less hours/day

(2)\_\_ more than 6, but less than 9 hours/day

(3)\_\_ 9 or more hours/day

**88. How many hours do you sleep a day during the weekend?**

(1)\_\_ 6 or less hours/day

(2)\_\_ more than 6, but less than 9 hours/day

(3)\_\_ 9 or more hours/day

**89. How many hours a day (on average) do you spend watching TV or using a computer (including work)?**

*Present the ‘Show card No. 2’ to the respondent.*

(1)\_\_ Less than 2 hours

(2)\_\_ from 2 to almost 4 hours

(3)\_\_ from 4 to almost 6 hours

(4)\_\_ from 6 to almost 8 hours

(5)\_\_ from 8 to almost 10 hours

(6)\_\_ More than 10 hours

**90. How would you describe your physical activity at work or at school?**

*Present the ‘Show card No. 3’ to the respondent*

(1)\_\_ **Low:** more than 70% of time is sedentary

(2)\_\_ **Moderate:** about 50% of time is sedentary and 50% active

(3)\_\_ **High:** about 70% of time is active or physical labour of high intensity

**91. How would you describe your physical activity during your time off?**

*Present the ‘Show card No. 4’ to the respondent*

(1)\_\_ **Low:** mostly sedentary, watching TV, reading newspapers/books, light house works, walking for 1-2 hours/week

(2)\_\_ **Moderate:** walking, cycling, exercise, gardening or other light physical activity for 2-3 hours/week

(3)\_\_ **High:** cycling, running, gardening and other sport/recreational activities that require physical

activity for longer than 3 hours/week

**92. How would you describe your health status in comparison to other people your age?**

(1)\_\_ Worse than others

(2)\_\_ The same as others

(3)\_\_ Better than others

**93. How would you describe your knowledge about nutrition?**

(1)\_\_ Insufficient

(2)\_\_ Sufficient

(3)\_\_ Good

(4)\_\_ Very good

**94. How would you describe your diet?**

(1)\_\_ Very bad

(2)\_\_ Bad

(3)\_\_ Good

(4)\_\_ Very good

**95. How would you describe your diet during the weekdays when compared to the weekend?**

(1)\_\_ No difference really

(2)\_\_ Differs slightly

(3)\_\_ Very different

**96. How much do you weigh (kg)?** |\_\_ | \_\_ | \_\_ |, \_\_ |kg

**97. What is your height (cm)?** |\_\_ | \_\_ | \_\_ |, \_\_ | cm

**98. What is your waistline (cm)?** |\_\_ | \_\_ | \_\_ |, \_\_ | cm

If you don’t know, please provide your clothing size (waist measurement).

*If feasible, waistline can be measured with measuring tape.*

**99. Sex:**

(1)\_\_ Male

(2)\_\_ Female

**100. The gender you identify with:**

(1)\_\_ The same

(2)\_\_ Other

Date of birth: **101. Day** |\_\_ | \_\_ | **102. Month** |\_\_ | \_\_ | **103. Year** |\_\_ | \_\_ | \_\_ | \_\_ | *enter e.g. 01.12.1970*

**104. What is your place of residence?**

(1)\_\_ Village

(2)\_\_ Town below 20.000 inhabitants

(3)\_\_ Town between 20.000 and 100.000 inhabitants

(4)\_\_ City over 100.000 inhabitants

**105. How many people are there in your household (including you)?** ……………………. people

**106. How many children/adolescents are there in your household?** …………………people under 18 years old

**107. How would you describe your financial situation?**

(1)\_\_ Below average

(2)\_\_ Average

(3)\_\_ Above average

**108. How would you describe your household’s overall situation?**

*Present ‘Show card No. 5’ to the respondent.*

(1)\_\_ We live very modestly – we do not have enough money for basic needs

(2)\_\_ We live modestly – we have to be very careful with our daily budget

(3)\_\_ We live normally - we have enough money for our daily needs, but we need to budget for bigger purchases

(4)\_\_ We live relatively wealthy – we have enough money for our needs without particular budgeting

(5)\_\_ We live very wealthy – we can afford some luxury

|  |
| --- |
| *Question for adult respondents.* |

**109. Do you work?**

(1)\_\_ No, I am retired or receiving a disability living allowance

(2)\_\_ No, I am on maternity leave, I am unemployed or other (housewife/househusband)

(3)\_\_ Yes, but it is only a temporary job

(4)\_\_ Yes, I am permanently employed

(5)\_\_ No, I study

|  |
| --- |
| *Question for adult respondents – please end interview after this question.* |

**110. What is you education?**

(1)\_\_ Primary

(2)\_\_ Lower secondary

(3)\_\_ Upper secondary

(4)\_\_ Higher (e.g. BSc, MSc)

|  |
| --- |
| *Question for respondents under 18 years old.* |

**111. What is mother’s (or legal guardian) education?**

(1)\_\_ Primary

(2)\_\_ Lower secondary

(3)\_\_ Upper secondary

(4)\_\_ Higher (e.g. BSc, MSc)

|  |
| --- |
| *Question for respondents under 18 years old.* |

**112. What is father’s (or legal guardian) education?**

(1)\_\_ Primary

(2)\_\_ Lower secondary

(3)\_\_ Upper secondary

(4)\_\_ Higher (e.g. BSc, MSc)

|  |
| --- |
| READ OUT: Thank you very much for your time. |

**Show card No. 1**

**Food frequency consumption answer categories**

1. Never
2. 1-3 times a month
3. Once a week
4. Few times a week
5. Once a day
6. Few times a day

**Show card No. 2**

**How many hours a day (on average) do you spend watching TV   
or using a computer (including work)?**

1. Less than 2 hours
2. From 2 to almost 4 hours
3. From 4 to almost 6 hours
4. From 6 to almost 8 hours
5. From 8 to almost 10 hours
6. More than 10 hours

**Show card No. 3**

**Physical activity at work**

|  |  |
| --- | --- |
| Low | over 70% of time sedentary |
| Moderate | about 50% of time sedentary and 50% active |
| High | about 70% of time active or physical labour of high intensity |

**Show card No. 4**

**Physical activity during time off**

|  |  |
| --- | --- |
| Low | Mostly sedentary, watching TV, reading newspapers/book, light house works, walking for 1-2 hours a week |
| Moderate | Walking, cycling, exercise, gardening or other light intensity physical activity for 2-3 hours a week |
| High | Cycling, running, gardening or other sport activities that require physical activity for more than 3 hours a week |

**Show card No. 5**

**How would you describe your household’s overall situation?**

1. We live very modestly – we do not have enough money for basic needs
2. We live modestly – we have to be very careful with our daily budget
3. We live normally - we have enough money for our daily needs, but we need to budget for bigger purchases
4. We live relatively wealthy – we have enough money for our needs without particular budgeting
5. We live very wealthy – we can afford some luxury

**2. KomPAN® Dietary Habits and Nutrition Beliefs Questionnaire for adolescents aged 16-18 years and adults** version 2.2. –self-administered questionnaire

Authors: *Marzena Jezewska-Zychowicz\*1, Jan Gawecki\*2, Lidia Wadolowska\*3, Jolanta Czarnocinska\*2, Grzegorz Galinski\*2, Anna Kollajtis-Dolowy\*1, Wojciech Roszkowski\*1, Agata Wawrzyniak\*1, Katarzyna Przybylowicz\*3, Beata Stasiewicz3, Iwona Hawrysz3, Malgorzata A. Slowinska3, Ewa Niedzwiedzka3*

*\*Committee of Human Nutrition, Polish Academy of Sciences*

*1Institute of Human Nutrition Sciences, Warsaw University of Life Sciences - SGGW*

*2Faculty of Food Sciences and Nutrition, University of Life Sciences in Poznan*

*3Faculty of Food Sciences, University of Warmia and Mazury in Olsztyn*

percentage share of authors:

MJZ 20%, JG 20%, LW 12%, JC 12%, GG 12%, AKD 6%, WR 5%, AW 4%, KP 2%, BS 3%, IH 2%, MAS 1%, EN 1%

Translation into English: *Marta Lonnie*

Correction of the English translation: *Aleksandra Bykowska-Derda, Marzena Jezewska-Zychowicz,*

*Joanna Kowalkowska, Lidia Wadolowska*

Translation into Polish: *Joanna Jensen – OSCAR Translations*

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**KomPAN® Dietary Habits and Nutrition Beliefs Questionnaire**

**for adolescents aged 16-18 years and adults**

version 2.2. self-administered questionnaire

Information in boxes are for the respondent

*Additional instructions for the respondent in italics*

|  |
| --- |
| We are conducting research, and we would like to learn about people’s dietary habits and nutrition beliefs.  The data obtained will be anonymous and undisclosed and will be used only for the purpose of this research.  Thank you for your time and reliable answers.  Please read the questions and **mark one or more answers with the X**, according to the instructions, as shown in the example:    **10. What types of food do you usually consume between the meals during the weekdays?**  You can give **more than one** answer.  (10/1)\_X\_ Fruit  (10/2)\_\_ Vegetables  (10/3)\_\_ Unsweetened dairy beverages and desserts, e.g. yoghurts, curd/cream cheese, milk  (10/4)\_\_ Sweetened dairy beverages and desserts, e.g. homogenised cheese, sweetened milk beverages, flavoured milk  (10/5)\_X\_ Sweet snacks, e.g. confectionary, biscuits, cakes, chocolate bars, cereal bars, wafers  (10/6)\_\_ Savoury snacks, e.g. crackers, pretzels, crisps, potato chips  (10/7)\_\_ Nuts, almonds, seeds  (10/8)\_X\_ Other, please list ……………… sandwiches, fruit chips ……………… |

**1.Respondent code** |\_\_ | \_\_ | \_\_ | \_\_ | 2. **Interviewer code** | \_\_ | \_\_ | 3**. Centre code** | \_\_ | \_\_ | Please do not enter

Date of the research: 4. **Day** | \_\_ | \_\_ | 5**. Month** | \_\_ | \_\_ | 6**. Year** |\_\_ | \_\_ | \_\_ | \_\_ | *enter e.g. 01.12.2014*

*Part A. Dietary habits*

|  |
| --- |
| We would like to ask you about your **dietary habits over the LAST YEAR**. |

**7. How many meals do you usually consume daily?**

Please give **one** answer.

**Meal** - any of the regular occasions in a day when a reasonably large amount of food is eaten, e.g. morning, noon, evening.

(1)\_\_ 1 meal

(2)\_\_ 2 meals

(3)\_\_ 3 meals

(4)\_\_ 4 meals

(5)\_\_ 5 meals or more

**8. Do you consume meals at regular times?**

Please give **one** answer.

(1)\_\_ No

(2)\_\_ Yes, but only some of them

(3)\_\_ Yes, all of them

**9. How often do you snack between the meals?**

Please give **one** answer.

**Snacking** – usually a small portion of food eaten occasionally between the meals.

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

|  |
| --- |
| *Question for people who snack between meals* |

**10. What types of food do you usually consume between the meals during the weekdays?**

You can give **more than one** answer.

(10/1)\_\_ Fruit

(10/2)\_\_ Vegetables

(10/3)\_\_ Unsweetened dairy beverages and desserts, e.g. yoghurts, curd/cream cheese, milk

(10/4)\_\_ Sweetened dairy beverages and desserts, e.g. homogenised cheese, sweetened milk beverages, flavoured milk

(10/5)\_\_ Sweet snacks, e.g. confectionary, biscuits, cakes, chocolate bars, cereal bars, wafers

(10/6)\_\_ Savoury snacks, e.g. crackers, pretzels, crisps, potato chips

(10/7)\_\_ Nuts, almonds, seeds

(10/8)\_\_ Other, please list ……………………………………………………………………………………………………….

**11. What type of milk and dairy beverages you usually consume?**

Please give **one** answer.

(1)\_\_ Full fat

(2)\_\_ Low fat

(3)\_\_ No fat

(4)\_\_ I don’t consume it foods

**12. How do you usually have your meat prepared?**

You can give **more than one** answer.

(1)\_\_ Boiled

(2)\_\_ Stewed

(3)\_\_ Grilled

(4)\_\_ Roasted

(5)\_\_ Fried

(6)\_\_ I don’t eat meat

**13. What bread spread do you usually use?**

Please give **one** answer.

(1)\_\_ I don’t use any spreads

(2)\_\_ I use various spreads

(3)\_\_ Mayonnaise

(4)\_\_ Margarine

(5)\_\_ Butter

(6)\_\_ Spreadable butter (butter and margarine mix)

(7)\_\_ Lard

**14. What type of fat do you usually use for frying?**

Please give **one** answer.

(1)\_\_ I don’t use any fats for frying

(2)\_\_ I use various types of fats

(3)\_\_ Vegetable oils (including olive oil)

(4)\_\_ Margarine

(5)\_\_ Butter

(6)\_\_ Lard

**15. Do you add any sugar to your hot beverages, e.g. tea, hot chocolate, coffee?**

Please give **one** answer.

If your preferences vary depending on the type of the drink, please give answer related to the drink you drink most often

(1)\_\_ No

(2)\_\_ Yes, I add one teaspoon of sugar (or honey)

(3)\_\_ Yes I add two or more teaspoons of sugar (or honey)

(4)\_\_ Yes, I use sweeteners (low-caloric substitute for sugar)

**16. Do you add salt to your meals and sandwiches once prepared?**

Please give **one** answer.

(1)\_\_ No

(2)\_\_ Yes, but only sometimes

(3)\_\_ Yes, I add salt to most of my meals

**17. What type of water do you usually drink?**

You can give **more than one** answer.

(1)\_\_ I don’t drink water

(2)\_\_ Still water

(3)\_\_ Sparkling water

(4)\_\_ Flavoured water

|  |
| --- |
| Please think back about **ONE typical day** in terms of your diet in the **LAST WEEK** and answer the following questions. |

**18. What day of the week was it?**

(1)\_\_ Monday

(2)\_\_ Tuesday

(3)\_\_ Wednesday

(4)\_\_ Thursday

(5)\_\_ Friday

(6)\_\_ Saturday

(7)\_\_ Sunday

**19. How many meals did you have that day?** *Please give a number* ………….. meals that day

***Meal*** *- any of the regular occasions in a day when a reasonably large amount of food is eaten, e.g. morning, noon, evening.*

**20. How many times did you have fruit or vegetables that day?** Please give a number………………. times that day.

*Please include fruit or vegetables consumed during meal times and when snacking.*

**21. Did you have any fast foods that day, e.g. potato chips, hamburgers, pizza, hot-dogs?**

(1)\_\_ No

(2)\_\_ Yes. How many times? *Please give a number*…………………… times that day

*Part B. Food frequency consumption*

|  |
| --- |
| We would like to **ask you about the foods** you eat.  We would like to learn, **how often do you consume these types of foods**?  While answering to the questions, please consider foods eaten over **the LAST YEAR during your meals and snacking**, eaten at home and away.  In this part please give only **one** answer to each question. |

**22. How often do you eat white bread and bakery products, e.g. wheat bread, rye bread, wheat/rye bread, toast bread, bread rolls?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**23. How often to you eat wholemeal (brown) bread/bread rolls?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**24. How often do you have white rice, white pasta, fine-ground groats, e.g. semolina, couscous?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**25. How often do you eat buckwheat, oats, wholegrain pasta or other coarse-ground groats?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**26. How often do you eat fast foods, e.g. potato chips, hamburgers, pizza, hot-dogs?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**27. How often do you eat fried foods (e.g. meat or flour-based foods such as dumplings, pancakes etc.)?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**28. How often do you use butter as a bread spread or as an addition to your meals/ for frying/ for baking etc.?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**29. How often do you use lard as a bread spread, or as an addition to you meals/ for frying/ for baking etc.?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**30. How often do you use vegetable oils or margarines or mixes of butter and margarines as a bread spread, or as an addition to your meals/ for frying/ for baking etc.?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**31. How often do you drink milk (including flavoured milk, hot chocolate, latte)?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**32. How often do you eat fermented milk beverages, e.g. yoghurts, kefir (natural or flavoured)?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**33. How often do you eat fresh cheese curd products, e.g. cottage cheese, homogenised cheese, fromage frais?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**34. How often do you eat cheese (including processed cheese, blue cheese)?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**35. How often do you eat cold meats, smoked sausages, hot-dogs?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**36. How often do you eat red meat, e.g. pork, beef, veal, mutton, lamb, game?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**37. How often do you eat white meat, e.g. chicken, turkey, rabbit?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**38. How often do you eat fish?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**39. How often do you eat eggs?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**40. How often do you eat pulses-based foods, e.g. from beans, peas, soybeans, lentils?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**41. How often do you eat potatoes (excluding chips and crisps)?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**42. How often do you eat fruit?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**43. How often do you eat vegetables?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**44. How often do you eat sweets, e.g. confectionary, biscuits, cakes, chocolate bars, cereal bars, other?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**45. How often do you eat instant soups or ready-made soups, e.g. tinned, jar, concentrates (excluding frozen soup mixes)?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**46. How often do you eat tinned (jar) meats?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**47. How often do you eat tinned (jar) vegetables, e.g. pickles?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**48. How often do you drink fruit juices?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**49. How often do you drink vegetable juices or fruit and vegetable juices?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**50. How often do you drink sweetened hot beverages, such as black tea, coffee, herbal or fruit teas?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**51. How often do you drink sweetened carbonated or still beverages such as Coca-Cola, Pepsi, Sprite, Fanta, lemonade?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**52. How often do you drink energy drinks such as Red Bull, Monster, Rockstar or other?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**53. How often do you drink water, e.g. mineral, tap water?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

**54. How often do you have alcoholic beverages?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

*Part C. Nutrition beliefs*

|  |
| --- |
| Below are statements regarding food and nutrition.  Please **provide your view regarding each of the statements**.  In this part you give **one** answer to each statement. |

|  |  |  |  |
| --- | --- | --- | --- |
| Statement | True  (1) | False  (2) | Unsure (3) |
| 55. It is enough to eat wholegrains/cereals once a day. |  |  |  |
| 56. Only children and adolescents should drink milk. |  |  |  |
| 57. Fruit and/or vegetables should be consumed with every meal. |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Statement | True  (1) | False  (2) | Unsure (3) |
| 58. Consumption of mouldy bread can result in food poisoning caused by *Salmonella.* |  |  |  |
| 59. High intakes of salt protect from hypertension. |  |  |  |
| 60. Limiting high-fat foods in everyday diet is protective against cardiovascular diseases. |  |  |  |
| 61. Frequent consumption of oily fish contributes to atherosclerosis. |  |  |  |
| 62. Frequent consumption of grilled meats contributes to the onset of cancer. |  |  |  |
| 63. Vegetarian diet increases the risk of anaemia. |  |  |  |
| 64. Bio-yoghurts contain beneficial gut bacteria. |  |  |  |
| 65. Vegetable oils and olive oil contain a high amount of cholesterol. |  |  |  |
| 66. Wholemeal bread have more fibre than white bread. |  |  |  |
| 67. Fruit and vegetables are a source of ‘empty calories’. |  |  |  |
| 68. Butter and fortified margarines have high content of vitamin A and D. |  |  |  |
| 69. Cheese is a better source of calcium than cottage cheese. |  |  |  |
| 70. Offal has high amounts of ‘bad’ cholesterol - LDL. |  |  |  |
| 71. In a healthy diet, complex carbohydrates should be replaced with simple sugars. |  |  |  |
| 72. In a balanced diet, proteins should be the main source of energy. |  |  |  |
| 73. Inadequate intakes of vitamin PP can cause skin inflammation and diarrhoea. |  |  |  |
| 74. Sun exposure increases the synthesis of vitamin D in the human body. |  |  |  |
| 75. Phosphorus is a component of neural tissue. |  |  |  |
| 76. The ratio of calcium to phosphorus in a healthy diet should be 1:1. |  |  |  |
| 77. Consumption of fruit with high content of vitamin C increases bioavailability of iron. |  |  |  |
| 78. Starting cooking vegetables in cold water helps to preserve the nutrients. |  |  |  |
| 79. Sweets and animal fats are particularly high nutrient dense foods. |  |  |  |

*Part D. Lifestyle and personal data*

|  |
| --- |
| At the end, we would like to ask you questions referring to **your lifestyle** and **some personal data**.  If you feel that some of the questions are too personal, you can refuse to answer. We would be however grateful for every honest answer given.  In this part please give **one** answer to each question. |

**80. Are you currently following a diet?**

(1)\_\_ No

(2)\_\_ Yes, as advised by my doctor for medical reasons

(3)\_\_ Yes, it was my personal decision

|  |
| --- |
| Question to respondents who are following a diet. |

**81. Please provide the type of a diet** ……………………………………………………………………………………

|  |
| --- |
| Question to respondents who are following a diet. |

**82. How long have you been following this diet?**

Please specify the duration

*You can give* ***number of weeks*** *or* ***number of months*** *or* ***number of years****.*

Please provide a number of: ………………. weeks, …………… months, …………………. years.

**83. How often do you eat out, e.g. in a bar, restaurant, café, canteen?**

(1)\_\_ Never

(2)\_\_ 1-3 times a month

(3)\_\_ Once a week

(4)\_\_ Few times a week

(5)\_\_ Once a day

(6)\_\_ Few times a day

|  |
| --- |
| Question for respondents who drink alcoholic beverages. |

**84. What type of alcohol do you usually drink?**

(1)\_\_ Beer

(2)\_\_ Wine

(3)\_\_ Drinks

(4)\_\_ Vodka

**85. Do you currently smoke cigarettes, e-cigarettes, pipe or other tobacco?**

(1)\_\_ No

(2)\_\_ Yes

**86. Have you smoked cigarettes, e-cigarettes, pipe or tobacco in the past?**

(1)\_\_ No

(2)\_\_ Yes

**87. How many hours do you sleep a day during weekdays?**

(1)\_\_ 6 or less hours/day

(2)\_\_ more than 6, but less than 9 hours/day

(3)\_\_ 9 or more hours/day

**88. How many hours do you sleep a day during the weekend?**

(1)\_\_ 6 or less hours/day

(2)\_\_ more than 6, but less than 9 hours/day

(3)\_\_ 9 or more hours/day

**89. How many hours a day (on average) do you spend watching TV or using a computer (including work)?**

(1)\_\_ Less than 2 hours

(2)\_\_ from 2 to almost 4 hours

(3)\_\_ from 4 to almost 6 hours

(4)\_\_ from 6 to almost 8 hours

(5)\_\_ from 8 to almost 10 hours

(6)\_\_ More than 10 hours

**90. How would you describe your physical activity at work or at school?**

(1)\_\_ **Low:** more than 70% of time is sedentary

(2)\_\_ **Moderate:** about 50% of time is sedentary and 50% active

(3)\_\_ **High:** about 70% of time is active or physical labour of high intensity

**91. How would you describe your physical activity during your time off?**

(1)\_\_ **Low:** mostly sedentary, watching TV, reading newspapers/books, light house works, walking for 1-2 hours/week

(2)\_\_ **Moderate:** walking, cycling, exercise, gardening or other light physical activity for 2-3 hours/week

(3)\_\_ **High:** cycling, running, gardening and other sport/recreational activities that require physical

activity for longer than 3 hours/week

**92. How would you describe your health status in comparison to other people your age?**

(1)\_\_ Worse than others

(2)\_\_ The same as others

(3)\_\_ Better than others

**93. How would you describe your knowledge about nutrition?**

(1)\_\_ Insufficient

(2)\_\_ Sufficient

(3)\_\_ Good

(4)\_\_ Very good

**94. How would you describe your diet?**

(1)\_\_ Very bad

(2)\_\_ Bad

(3)\_\_ Good

(4)\_\_ Very good

**95. How would you describe your diet during the weekdays when compared to the weekend?**

(1)\_\_ No difference really

(2)\_\_ Differs slightly

(3)\_\_ Very different

**96. How much do you weigh (kg)?** |\_\_ | \_\_ | \_\_ |, \_\_ |kg

**97. What is your height (cm)?** |\_\_ | \_\_ | \_\_ |, \_\_ | cm

**98. What is your waistline (cm)?** |\_\_ | \_\_ | \_\_ |, \_\_ | cm

If you don’t know, please provide your clothing size (waist measurement).

*If feasible, waistline can be measured with measuring tape.*

**99. Sex:**

(1)\_\_ Male

(2)\_\_ Female

**100. The gender you identify with:**

(1)\_\_ The same

(2)\_\_ Other

Date of birth: **101. Day** |\_\_ | \_\_ | **102. Month** |\_\_ | \_\_ | **103. Year** |\_\_ | \_\_ | \_\_ | \_\_ | *enter e.g. 01.12.1970*

**104. What is your place of residence?**

(1)\_\_ Village

(2)\_\_ Town below 20.000 inhabitants

(3)\_\_ Town between 20.000 and 100.000 inhabitants

(4)\_\_ City over 100.000 inhabitants

**105. How many people are there in your household (including you)?** ……………………. people

**106. How many children/adolescents are there in your household?** …………………people under 18 years old

**107. How would you describe your financial situation?**

(1)\_\_ Below average

(2)\_\_ Average

(3)\_\_ Above average

**108. How would you describe your household’s overall situation?**

(1)\_\_ We live very modestly – we do not have enough money for basic needs

(2)\_\_ We live modestly – we have to be very careful with our daily budget

(3)\_\_ We live normally - we have enough money for our daily needs, but we need to budget for bigger purchases

(4)\_\_ We live relatively wealthy – we have enough money for our needs without particular budgeting

(5)\_\_ We live very wealthy – we can afford some luxury

|  |
| --- |
| *Question for adult respondents.* |

**109. Do you work?**

(1)\_\_ No, I am retired or receiving a disability living allowance

(2)\_\_ No, I am on maternity leave, I am unemployed or other (housewife/househusband)

(3)\_\_ Yes, but it is only a temporary job

(4)\_\_ Yes, I am permanently employed

(5)\_\_ No, I study

|  |
| --- |
| *Question for adult respondents.* |

**110. What is you education?**

(1)\_\_ Primary

(2)\_\_ Lower secondary

(3)\_\_ Upper secondary

(4)\_\_ Higher (e.g. BSc, MSc)

|  |
| --- |
| *Question for respondents under 18 years old.* |

**111. What is mother’s (or legal guardian) education?**

(1)\_\_ Primary

(2)\_\_ Lower secondary

(3)\_\_ Upper secondary

(4)\_\_ Higher (e.g. BSc, MSc)

|  |
| --- |
| *Question for respondents under 18 years old.* |

**112. What is father’s (or legal guardian) education?**

(1)\_\_ Primary

(2)\_\_ Lower secondary

(3)\_\_ Upper secondary

(4)\_\_ Higher (e.g. BSc, MSc)

|  |
| --- |
| Thank you very much for your time. |

**3. The manual for developing of nutritional data from the KomPAN® questionnaire**

Authors: *Lidia Wadolowska\*, Beata Stasiewicz*

*\*Committee of Human Nutrition, Polish Academy of Sciences*

*Faculty of Food Sciences, University of Warmia and Mazury in Olsztyn*

percentage share of authors: LW 50%, BS 50%

Translation into English: *Aleksandra Bykowska-Derda*

Correction of the English translation: *Lidia Wadolowska, Beata Stasiewicz*

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**3.1. Introduction**

KomPAN® questionnaire is an improved and expanded version of QEB questionnaire. KomPAN® has been developed in two versions, each with a different way of distribution – v.2.1 version administered by a well-trained researcher-interviewer (*i.e*. interviewer administered questionnaire), and v.2.2 version self-administered by the respondents. **Both versions of KomPAN® questionnaire v2.1 and v2.2 are consisting of the same questions, in the same order, and the way of developing nutritional data is the same.**

The purpose of this manual is to:

* support the less experienced researchers,
* consolidate the work of many researchers and development of nationwide standardization.

The experienced interviewers will have their own ways of analysing the data and will be able to provide new knowledge in this topic.

More information can be found in the "Methodological Guide to Nutrition Research" („Przewodnik metodyczny badań sposobu żywienia”) by A. Gronowska-Senger in the chapter 4 titled "Principles for calculating and interpreting results" ("Zasady obliczania i interpretacji wyników") (Wadolowska 2013), as well as textbooks about statistical analysis.

Currently, the investigations concern the internal reliability (repeatability) of the KomPAN® questionnaire are provided. The results of this investigation are available at The Committee on the Science of Nutrition of the Polish Academy of Sciences (Komitet Nauki o Zywieniu Czlowieka Polskiej Akademii Nauk) website.

In multi-center studies, the internal reliability (repeatability) of the KomPAN® questionnaire was checked, and the results were published:

Kowalkowska et al. 2018. Reproducibility of a Questionnaire for Dietary Habits, Lifestyle and Nutrition Knowledge Assessment (KomPAN) in Polish Adolescents and Adults. Nutrients, 1; 10 (12): 1845, doi: 10.3390 / nu10121845.

**3.2. General information**

KomPAN® questionnaire consists of four parts, which have questions grouped by following topics:

1. Dietary habits,
2. Frequency of food consumption,
3. Nutrition beliefs,
4. Lifestyle and personal data.

The researcher can use any questions included in the questionnaire accordingly to the purpose of the research and own interests. It is recommended, however, using the entire set of questions from all parts of questionnaire. The researchers with reduced possibilities may use "the minimal set of questions", which will ensure the basic scope of assessment of dietary habits and the frequency of food consumption. The questions are presented below.

|  |
| --- |
| **The minimal program of dietary data collection with the KomPAN® questionnaire:**  Part A: the question concerning the number of meals during the day: (no. 7),  Part A: the confirmation questions (no. 18-21),  Part B: the questions concerning frequency of food consumption which are components of:   * Healthy Diet Index (23, 25, 31‐33, 37, 38, 40, 42, 43), * Unhealthy Diet Index (22, 24, 26‐29, 34‐36, 44, 46, 51, 52, 54), * Overall Diet Quality Index (compilation of the Healthy Diet Index and Unhealthy Diet Index,   Part D: questions concerning lifestyle and respondent's personal data (all). |

The complete set of questions from part A and B allows comprehensively characterize dietary habits and food frequency consumption of each respondent.

Part C contains statements about food and nutrition with a very variable level of difficulty. The use of all 25 questions from part C enables to differentiate respondents with unsatisfactory, satisfactory and good nutrition knowledge. It is not recommended to use only chosen statements from this part. The researchers, especially interested in the nutrition knowledge assessment, will find a wide set of questions in "Test assessment of the nutrition knowledge GAROTA" (“Test do sprawdzania i oceny wiedzy żywieniowej GAROTA”) (Gawecki et al 2012).

Part D concerns the lifestyle of respondents and their sociodemographic data. The data from this part can be used to characterize the respondents and adjust the nutritional variables in statistical analysis.

**3.3. Data coding**

It is necessary to code the respondents. The easiest way to code them is to assign them the numbers in the following order:

* by the number of carried out interviews (version v. 1.1 administered by the interviewer)
* by the number of filled out questionnaires (version v. 1.2 self-administered by the respondents).

*Example 1*

*Respondent's code who was interviewed fortieth, will have the code 0040.*

It is recommended to code (order numbers):

* the interviewer – this information can be used later on to review if the interviewer had any influence on the results,
* the center, where the interview was performed - it is useful information if the interviews are performed at multiple centers.

To make the data entry effective, it is needed to design a template in calculations sheet (for example Excel) or statistical program (examples: SPSS, Statistica) and to develop the coding system. This is especially required for the long text information (called etiquettes). The text information is coded by order numbers.

In questionnaire, where the questions have only one choice of the answer, the answers have assigned following code numbers: (1), (2), (3) etc. The template should include the code numbers instead the long text information.

In the case of questions with a possibility to mark one or more answers, each answer should constitute one new variable (creating new column in Excel sheet or Statistica software) with two choices of answers (NO=1, YES=2). Such construction has for example question number 10.

*Example 2*

*In the question number 10 the respondent showed three categories of food consumed between meals.*

***10. What types of food do you usually consume between the meals during the weekdays?***

*You can give* ***more than one*** *answer.*

*(10/1)X\_\_ Fruit*

*(10/2)\_\_ Vegetables*

*(10/3)\_\_ Unsweetened drinks and dairy products, e.g. yoghurts, curd/cream cheese, milk*

*(10/4)\_\_ Sweetened drinks and dairy puddings, e.g. fromage frais cheese, sweetened milk drinks*

*(10/5)X\_\_ Sweet snacks, e.g. confectionary, biscuits, cakes, chocolate bars, cereal bars, wafers*

*(10/6)\_\_ Salty snacks, e.g. crackers, pretzels, crisps, potato chips/French fries*

*(10/7)\_\_ Nuts, almonds, seeds*

*(10/8)\_X\_ Other, please list ….......sandwiches, fruit crisps........................................*

*The answers should be coded by assigning number 1 to the answer NO and number 2 to the answer YES as following:*

*(10/1): code=2*

*(10/2): code=1*

*(10/3): code=1*

*(10/4): code =1*

*(10/5): code=2*

*(10/6): code= 1*

*(10/7): code=1*

*(10/8): code=2*

Questions with the possibility of adding text information (half open) can be used to widen the answer sheet by the researcher, especially if the same answers repeat among the respondents or the research was done on the group which consumes similar food, for example vegetarians or athletes.

*Example 3*

*In the question 10 the answer 10/8 may be transformed into two answers:*

* 10/9 "sandwiches"
* 10/10 "fruit crisps".

**3.4. Data verification**

After coding the data, all variables (information) should be thoroughly checked in logical and systematic way in order to remove the mistakes. More information on this topic can be found in the chapter "The rules of calculation and interpretation the results" (Wadolowska 2013) and statistics handbooks.

The questions 18-21 from part A of the KomPAN® questionnaire (Dietary Habits) are "the check-up questions" and are meant to verify the answers given by the respondent concerning the usual number of meals eaten a day and usual frequency of consumption of selected products, which are usually overestimated (fruits, vegetables) or underestimated (fast food). This is why it is always needed to:

* ask the question 18 and 19 if the question number 7 is used (number of meals during the day),
* ask the question 18 and 20 if the questions number 42 and 43 are used (fruits, vegetables),
* ask the question 18 and 21 if the question number 26 is used (fast food).

Attention: During the interview, the interviewer cannot remind the respondent what were the answers to the linked questions (essential and verifying), because the idea of verifying the answers reliability will lose its purpose.

**3.4.1. Verification of meal numbers**

The table 1 presents verification scheme for the answer to question 7 concerning the number of meals usually consumed during the day (given by the respondent).

Table 1. Evaluation of the answers reliability concerning the numbers of meals usually consumed during the day (question no. 7)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Question no. 19** (verifying): The number of meals in the typical day during last week | | | | |
| **Question no. 7**: Usual number of meals usually consumed during the day | 1 | 2 | 3 | 4 | 5 or more |
| 1 |  |  |  |  |  |
| 2 |  |  |  |  |  |
| 3 |  |  |  |  |  |
| 4 |  |  |  |  |  |
| 5 or more |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Explanations: |  | Answers are compatible |  | Answers are relatively compatible |  | Answers are not compatible |

Compatibility of the answers to the questions no. 7 and no. 19 (verifying) can be interpreted as follows:

* the respondent has well established dietary habits,
* the respondent gave a reliable dietary interview and the information on dietary habits collected in part A can be interpreted with great confidence.

Recommended decision of the researcher: the respondent should remain in the database with great certainty and should be included in the analysis of the results.

The relative compatibility of the answers to the questions no. 7 and no. 19 can be interpreted as following:

* the respondent does not have well established dietary habits or the last week was less typical for his usual dietary habits,
* the respondent gave a relatively reliable dietary interview and the information on dietary habits collected in part A can be interpreted with the limited confidence.

The researcher can make three alternative decisions:

1. leave the respondent in database and include in the result analysis with the respondents who provided compatible answers,
2. leave the respondent in database and make a separate result analysis for respondents with "relatively compatible" answers and "compatible" answers,
3. exclude the respondent from the database.

The recommended researcher's decision is option 2: leave the respondent in database and make a separate result analysis.

No compatibility in answering questions no. 7 and no. 19 can be interpreted as follows:

* the respondent does not have established dietary habits and his dietary habits are characterised by the high variability (day-to-day) or the last week was not typical for the respondent,
* the respondent gave an unreliable dietary interview and the dietary information collected in part A can be interpreted with small confidence.

The researcher can make two alternative decisions:

1. leave the respondent in the database, but the data analysis performed separately for the "no compatible", "relatively compatible" and "compatible" answers,
2. remove the respondent from the database.

In the case of lack of compatibility, there is no decision, which may be clearly recommended to the researcher as the one the best. Every decision about the exclusion the respondent from the database should be thoroughly discussed with other experienced researchers and individually made for each respondent (case).

**3.4.2. Verification of the frequency consumption of fruit, vegetable and fast foods**

To evaluate the reliability of the answers to questions no. 42 and 43 concerning usual frequency of fruit and vegetable consumption, it is needed to calculate the total usual frequency of fruit and vegetable consumption expressed as times/day, according to the following scheme:

|  |
| --- |
| Total usual frequency of fruit and vegetable consumption (times/day) =  0xcat(1)F + 0.06xcat(2)F + 0.14xcat(3)F + 0.5xcat(4)F + 1xcat(5)F + 2xcat(6)F + 0xcat(1)V + 0.06xcat(2)V + 0.14xcat(3)V + 0.5xcat(4)V + 1xcat(5)V + 2xcat(6)V |

Legend: cat(no.) F – following categories of fruit frequency consumption

cat(no.) V – following categories of vegetable frequency consumption

The table 2 represents verification scheme for the answer to question 42 and 43 concerning usual frequency of fruit and vegetable consumption.

Table 2. The evaluation of answers reliability concerning the usual frequency consumption of fruit and vegetables (questions no. 42 and 43)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Question no. 20 (verifying)**: The frequency of fruit and vegetables consumption on a typical day last week | | |
| **Questions no. 42 and 43**: Usual frequency consumption of fruit and vegetables (times/day) | Not once | Once | Twice or more |
| 0-0.50 |  |  |  |
| 0.51-1.50 |  |  |  |
| 1.51-4.00 |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Explanations: |  | Answers are compatible |  | Answers are relatively compatible |  | Answers are not compatible |

Compatibility of the answers to the questions no. 42 and 43 with no. 20 (verifying) can be interpreted as follows:

* the respondent has well established dietary habits,
* the respondent gave a reliable dietary interview and information concerning food frequency consumption collected in the part B can be interpreted with great confidence, especially regarding foods with a beneficial effect on health.

Recommended decision of the researcher: the respondent should remain in the database with great certainty and should be included in the analysis of the results.

The relative compatibility of the answers to the questions no. 42, 43 and no. 20 can be interpreted as follows:

* the respondent does not have well established dietary habits or the last week was less typical for his usual dietary habits,
* the respondent gave a relatively reliable dietary interview and the information on the frequency of food consumption collected in part B can be interpreted with the limited confidence, especially regarding foods with the beneficial effect on health.

The researcher can make three alternative decisions:

1. leave the respondent in database and include in the results analysis with the respondents who provided compatible answers,
2. leave the respondent in database and make a separate results analysis for respondents with "relatively compatible" answers and "compatible" answers,
3. exclude the respondent from the database.

The recommended researcher's decision is option 2: leave the respondent in database and make a separate results analysis for respondents with relatively compatible answers and compatible answers.

No compatibility in answering questions no. 42, 43 and 20 can be interpreted as follows:

* the respondent does not have established dietary habits and his dietary habits are characterised by the high variability (day-to-day) or the last week was not typical for the respondent,
* the respondent gave unreliable dietary interview and the information on the frequency of food consumption collected in part B can be interpreted with small confidence, especially regarding foods with the beneficial effect on health.

The researcher can make two alternative decisions:

1. leave the respondent in the database, but the data analysis performed separately for the "no compatible", "relatively compatible" and "compatible" answers,
2. remove the respondent from the database.

In the case of lack of compatibility, there is no decision, which may be clearly recommended to the researcher as the one work scheme. Every decision about the exclusion the respondent from the database should be thoroughly discussed with other experienced researchers and individually made for each respondent (case).

*Example 4*

*The respondent answered the question no. 42 concerning usual fruit frequency consumption gave the answer (5) – "Once a day", and to the question 43 concerning usual frequency of vegetables consumption gave answer (6) – "Few times a day".*

*In the verifying question no. 20, the respondent gave the answer "2 times/day".*

*Result: The total sum of usual frequency of consumption of fruit and vegetables (times/day) =**1+2=****3 times/day*** *(included in the range: 1.51-4.00) and according to the scheme in table 2, it is consistent with the answer to the verifying question* ***(2 times/day)****.*

***Interpretation****: The respondent answered reliably defined usual frequency of consumption of fruit and vegetables.*

The table 3 presents the verification scheme of answers given by the respondent to the question no. 26 concerning the usual frequency of consumption of fast foods.

Table 3. The evaluation of answers reliability concerning the usual frequency of consumption of fast food (questions no. 26)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Question no. 21** (verifying): The frequency of consumption of fast foods in the typical day during last week | | |
| **Question no. 26**: Usual frequency of consumption of fast foods | Not once | Once | Twice or more |
| Never |  |  |  |
| 1-3 times a month |  |  |
| Once a week |  |  |
| Few times a week |  |  |
| Once a day |  |  |  |
| Few times a day |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Explanations: |  | Answers are compatible |  | Answers are relatively compatible |  | Answers are not compatible |

Compatibility of the answers to the question no. 26 with no. 21 (verifying) can be interpreted as follows:

* the respondent has well established dietary habits,
* the respondent gave a reliable dietary interview and information concerning food frequency consumption collected in the part B can be interpreted with great confidence, especially regarding foods with a not beneficial effect on health.

Recommended decision of the researcher: the respondent should remain in the database with great certainty and should be included in the analysis of the results.

The relative compatibility of the answers to the questions no. 26 and no. 21 can be interpreted as follows:

* the respondent does not have well established dietary habits or the last week was less typical for his usual dietary habits,
* the respondent gave a relatively reliable dietary interview and the information on the frequency of food consumption collected in part B can be interpreted with the limited confidence, especially regarding foods with a not beneficial effect on health.

The researcher can make three alternative decisions:

1. leave the respondent in database and include in the results analysis with the respondents who provided compatible answers,
2. leave the respondent in database and make a separate results analysis for respondents with "relatively compatible" answers and "compatible" answers,
3. exclude the respondent from the database.

The recommended researcher's decision is option 2: leave the respondent in database and make a separate results analysis for respondents with relatively compatible answers and compatible answers.

No compatibility in answering questions no. 26 and 21 can be interpreted as the following:

* the respondent does not have established dietary habits and his nutrition is characterised by the high variability (day-to-day) or the last week was not typical for the respondent,
* the respondent gave unreliable dietary interview and the information on the frequency of food consumption collected in part B can be interpreted with small confidence, especially regarding foods with a not beneficial effect on health.

The researcher can make two alternative decisions:

1. leave the respondent in the database, but the data analysis performed separately for the "no compatible", "relatively compatible" and "compatible" answers,
2. remove the respondent from the database.

In the case of lack of compatibility, there is no decision, which may be clearly recommended to the researcher as the one work scheme. Every decision about the exclusion the respondent from the database should be thoroughly discussed with other experienced researchers and individually made for each respondent (case).

**3.4.3. Reliability of the respondent – initial evaluation**

Initial evaluation of respondent's reliability should proceed the system evaluation, performed according to particular rules described in the chapter 3.4.4.

The initial evaluation of respondent's reliability comes down to general and logical analysis of the answers given by the respondent. During the interview the interviewer- researcher has a possibility to observe the behaviour of the respondent and evaluate her involvement in the answering the questions. This evaluation is subjective, however, it can be conclusive in the case, when there are existing other problems, such as lack of multiple answers. Lack of answers to multiple questions is the main criterion of initial evaluation respondent's reliability in the case of self-administered questionnaire.

The recommended decisions concerning initial evaluation of respondent's reliability are shown in the table 4.

Table 4. The recommended decisions concerning initial evaluation of respondent's reliability

|  |  |  |
| --- | --- | --- |
| Criteria of the initial analysis of respondent’s reliability | The decision concerning the respondent | Decision justification |
| In the part A:   * missing the answers to the verifying questions (no. 18-21) | Remove the respondent from database | * Impossible to verify the reliability of the respondent |
| In the part B-alternative:   * missing the answers to the questions needed to calculate the diet indexes (no. 23, 25, 31-33, 37, 38, 40, 42, 43, 22, 24, 26-29, 34-36, 44, 46, 51, 52, 54 * missing many answers | Remove the respondent from database | * Impossible to characterise the nutrition of the respondent |
| In the part C:   * in at least 15 statements (60%) on the topic food and nutrition (no. 55-79) the respondent answered “hard to tell” | Alternative:   * leave the respondent in the database and interpret the results with the limited confidence (recommended decision) * exclude the respondent from the analysis concerning knowledge on food and nutrition | * Respondent is unsure of his nutrition knowledge and /or not enough involved |
| In the part D:  Personal data missing, for example:   * dates of birth (no. 100-102) * dates of the interview (no. 4-6) * gender (no. 99) * place of living (no.103) * education (no. 109-111) | Remove the respondent from database | * Impossible to classify the respondent into the population group |
| In the part D:   * missing much more answers then the ones shown above | Alternative:   * exclude the respondent from database – recommended decision, * leave the respondent in database and interpret the results with limited confidence | * Significant restriction in respondent characterisation |
| During the interview given by the interviewer:   * visible reluctance of the respondent to give the answer, * the respondent gives the answer without a time to reflection.   Comment:  the conclusive criteria if there are other problems, for example missing many answers. | Remove the respondent from database | * Respondent little involved and/or not cooperating, what is undermining the reliability of the answers in the questionnaire |

**3.4.4. System evaluation of reliability of respondent**

After verifying the answers provided by the respondent in reference to three dietary characteristics, *i.e*. the usual number of meals consumed a day (question no.7), and usual frequency consumption of fruit and vegetables (no. 42 and 43), and fast foods (no. 26), it is needed to make the final decision concerning the reliability of the respondent. The recommendations are presented in table 5.

Table 5. Recommended decisions concerning the evaluation of respondent's reliability on the basis of evaluation of reliability of three dietary characteristics\* (questions no. 7, 26, 42, 43)

|  |  |
| --- | --- |
| The results of answers compatibility | Decision concerning the respondent |
| Answer compatibility for all 3 characteristics of nutrition | Leave the respondent in the database. |
| No compatibility between all 3 characteristics of nutrition | Exclude the respondent in the database. |
| Other cases | Alternatively:   * leave the respondent in the database and interpret the results with the limited confidence, * leave the respondent in the database, but the data analysis perform separately for respondents with variable level of answer compatibility. |

\*The characteristics of nutrition include: number of meals (question no. 7), frequency consumption of fruit and vegetables (questions no. 42 and 43), and fast foods (question no. 26)

**3.5. Data conversion**

**3.5.1. Part A. Dietary habits**

Data in this part have qualitative characteristics. Most of the questions have set a of answers consisting of the many categories, which can be converted into a smaller number of new, more integrated categories (table 6).

Table 6. Example of new category grouping in question no. 9

|  |  |  |
| --- | --- | --- |
| Frequency consumption categories | New categories of frequency consumption (I) | New categories of frequency consumption (II) |
| Never | Less often than once a week | Less often than once a day |
| 1-3 times a month |
| Once a week | At least once a week |
| Few times a week |
| Once a day | At least once a day |
| Few times a day |

The questions, in which the interpreter is able to mark more than one answer (for example no. 10) can be used to make a hierarchal list. The percentage of respondents calculated for each category should be lined-up in decreasing/increasing order showing the most and least typical dietary habits. In the questions with multiple answers to choose from, the percentage of the respondents in all the categories does not sum up to 100% (can be higher).

*Example 5*

*Table 7. The hierarchal list of food consumed between meals in the decreasing order based on the answers given by the respondents*

|  |  |
| --- | --- |
| *Food consumed between meals* | *% of respondents\** |
| *Fruit* | *95* |
| *Sweet snacks, e.g. confectionary, biscuits, cakes, chocolate bars, cereal bars, wafers* | *77* |
| *Salty snacks, e.g. crackers, pretzels, crisps, potato chips/French fries* | *54* |
| *Sweetened drinks and dairy puddings, e.g. fromage frais cheese, sweetened milk drinks, flavoured milk* | *35* |
| *Other products* | *28* |
| *Unsweetened drinks and dairy products, e.g. yoghurts, curd/cream cheese, milk* | *22* |
| *Nuts, almonds, seeds* | *16* |
| *Vegetables* | *9* |

*\* The respondents could give multiple answers*

**3.5.2. Part B. Frequency of food consumption**

**3.5.2.1. Basic rules of data conversion**

Data in this part have a form of qualitative data, and the questions are "questions-range" with increasing frequency of food consumption from "never" to "few times a day". Six original categories of frequency of food consumption can be converted:

* into other categories by connecting them together, analogically as the case in table 6,
* into the "semiquantitative" data, which logically reflect the increasing characteristics (table 6) by using:
  + scoring, *i.e*. assigning to the categories of frequency of food consumption the integers,
  + converting into real numbers and expressing the frequency of food consumption by times/day.

The converted categories can be analysed the same way as the real numerical data, however, such data will not have a normal distribution. This requires using nonparametric tests or logarithm the data in the statistical analysis (Wadolowska 2013).

To standardise the way of analysis and interpreting the results, it is recommended to use scores and/or indicators of daily frequency expressed as times/day according to the example in table 8.

Table 8. Recommended scoring system for frequency of food consumption in KomPAN® questionnaire

|  |  |  |
| --- | --- | --- |
| Frequency of food consumption categories | Scoring for the frequency categories | Daily frequency (times/day) |
| Never | 1 | 0 |
| 1-3 times a month | 2 | 0.06 |
| Once a week | 3 | 0.14 |
| Few times a week | 4 | 0.5 |
| Once a day | 5 | 1 |
| Few times a day | 6 | 2 |

**3.5.2.2. Diet quality indexes**

In order to comprehensively evaluate the diet quality, on the basis of literature review (Brennan et al. 2010, Hu 2002, Kant and Graubard 2005, Kant 2010, Waijers et al. 2007, Wirfalt et al 2013, Wirt and Collins 2009), three indexes have been proposed:

* "Pro-Healthy Diet Index" (pHDI-10, *Prohealthy-Diet-Index-10* or pHDI, *Prohealthy-Diet-Index*) – this index involves 10 food groups with a potentially beneficial influence on health,
* "Non-Healthy Diet Index" (nHDI-14, *Non-Healthy-Diet-Index-14* or nHDI, *Non-Healthy-Diet-Index*) – this index involves 14 food groups with a potentially negative influence on health,
* "Diet-Quality Index" (DQI) – this index involves 24 food groups, including 10 food groups with a potentially beneficial influence on health and 14 food groups with a potentially negative influence on health.

It should be noted that the diet quality indexes (diet quality scores) are the predefined dietary patterns (hypothesis-driven dietary patterns), so they describe a set of common dietary characteristics selected on the basis of available scientific evidence. Dietary quality scores can be calculated and interpreted alternatively or concurrently with dietary patterns that have been identified using advanced statistical methods (data-driven dietary patterns).

The indexes have been calculated by summing of frequency of food consumption (times/day) of indicated 10 (pHDI) or 14 food groups (nHDI) or 24 food groups (DQI) (tables 9, 10, 11). The experienced researchers can modify the structure of indexes according to their own knowledge and science-based evidence.

Table 9. List of components of "Pro-Healthy Diet Index" (pHDI) with a potentially beneficial influence on health in the KomPAN® questionnaire

|  |  |
| --- | --- |
| Question no. | "Pro-Healthy Diet Index" (pHDI) and its components in KomPAN® questionnaire |
| 23 | wholemeal (brown) bread/bread rolls |
| 25 | buckwheat, oats, wholegrain pasta or other coarse-ground groats |
| 31 | milk (including flavoured milk, hot chocolate, latte) |
| 32 | fermented milk drinks, e.g. yoghurts, kefir (natural or flavoured) |
| 33 | fresh cheese curd products, e.g. cottage cheese, cream cheese, cheese-based puddings |
| 37 | white meat, e.g. chicken, turkey, rabbit |
| 38 | fish |
| 40 | legumes-based foods, e.g. beans, peas, soybeans, lentils |
| 42 | fruit |
| 43 | vegetables |
| **pHDI-10 = the sum of frequency of 10 food groups consumption (times/day; pHDI** **range 0-20)** | |

Table 10. List of components of "Non-Healthy Diet Index" (nHDI) with a potentially negative influence on health in the KomPAN® questionnaire

|  |  |
| --- | --- |
| Question no. | "Non-Healthy Diet Index" (nHDI) and its components in KomPAN® questionnaire |
| 22 | white bread and bakery products, e.g. wheat bread, rye bread, wheat-rye bread, toast bread, bread rolls |
| 24 | white rice, white pasta, fine-ground groats, e.g. semolina, couscous |
| 26 | fast foods, e.g. potato chips/French fries, hamburgers, pizza, hot-dogs |
| 27 | fried foods (e.g. meat or flour-based foods such as dumplings, pancakes etc.) |
| 28 | butter as a bread spread or as an addition to your meals/ for frying/ for baking etc. |
| 29 | lard as a bread spread, or as an addition to you meals/ for frying/ for baking etc. |
| 34 | cheese (including processed cheese, blue cheese) |
| 35 | cured meat, smoked sausages, hot-dogs |
| 36 | red meat, e.g. pork, beef, veal, lamb, game |
| 44 | sweets, e.g. confectionary, biscuits, cakes, chocolate bars, cereal bars, other |
| 46 | tinned (jar) meats |
| 51 | sweetened carbonated or still drinks such as Coca-Cola, Pepsi, Sprite, Fanta, lemonade |
| 52 | energy drinks such as Red Bull, Monster, Rockstar or other |
| 54 | alcoholic beverages |
| **nHDI-14 = the sum of frequency of 14 food groups consumption (times/day; nHDI range 0-28)** | |

In order to standardise the range of both indexes (pHDI and nHDI) and simplifying its interpretation, it is recommended to calculate the sum of frequency of food consumption (times/day) and its expression in scale from 0 to 100 points.

"Pro-Healthy Diet Index" (pHDI, in points) = (100/20) x the sum of frequency of 10 food groups consumption (times/day)

"Non-Healthy Diet Index" (nHDI, in points) = (100/28) x the sum of frequency of 14 food groups consumption (times/day)

The overall Diet Quality Index was calculated as the sum of all positive components of the pHDI and all negative components of the nHDI. In the calculations, weight scores (so-called weights) were used, thus allows the share of 10 components of the pHDI is the same as the share of 14 components of the nHDI (table 11). The range of the DQI is from 100 to 100 points.

"Diet Quality Index" (DQI, in points) = (100/20) x the sum of frequency of 10 food groups consumption (times/day) + (-100/28) × the sum of frequency of 14 food groups consumption (times/day)

Table 11. List of components of "Diet Quality Index" (DQI) with a potentially beneficial and negative influence on health in the KomPAN® questionnaire

|  |  |  |
| --- | --- | --- |
| Question no. | „Diet Quality Index” (DQI) and its components in KomPAN® questionnaire | Weight scores |
|  | **Positive components** |  |
| 23 | wholemeal (brown) bread/bread rolls | 100/20 |
| 25 | buckwheat, oats, wholegrain pasta or other coarse-ground groats | 100/20 |
| 31 | milk (including flavoured milk, hot chocolate, latte) | 100/20 |
| 32 | fermented milk drinks, e.g. yoghurts, kefir (natural or flavoured) | 100/20 |
| 33 | fresh cheese curd products, e.g. cottage cheese, cream cheese, cheese-based puddings | 100/20 |
| 37 | white meat, e.g. chicken, turkey, rabbit | 100/20 |
| 38 | fish | 100/20 |
| 40 | legumes-based foods, e.g. beans, peas, soybeans, lentils | 100/20 |
| 42 | fruit | 100/20 |
| 43 | vegetables | 100/20 |
|  | **Negative components** |  |
| 22 | white bread and bakery products, e.g. wheat bread, rye bread, wheat-rye bread, toast bread, bread rolls | -100/28 |
| 24 | white rice, white pasta, fine-ground groats, e.g. semolina, couscous | -100/28 |
| 26 | fast foods, e.g. potato chips/French fries, hamburgers, pizza, hot-dogs | -100/28 |
| 27 | fried foods (e.g. meat or flour-based foods such as dumplings, pancakes etc.) | -100/28 |
| 28 | butter as a bread spread or as an addition to your meals/ for frying/ for baking etc. | -100/28 |
| 29 | lard as a bread spread, or as an addition to you meals/ for frying/ for baking etc. | -100/28 |
| 34 | cheese (including processed cheese, blue cheese) | -100/28 |
| 35 | cured meat, smoked sausages, hot-dogs | -100/28 |
| 36 | red meat, e.g. pork, beef, veal, lamb, game | -100/28 |
| 44 | sweets, e.g. confectionary, biscuits, cakes, chocolate bars, cereal bars, other | -100/28 |
| 46 | tinned (jar) meats | -100/28 |
| 51 | sweetened carbonated or still drinks such as Coca-Cola, Pepsi, Sprite, Fanta, lemonade | -100/28 |
| 52 | energy drinks such as Red Bull, Monster, Rockstar or other | -100/28 |
| 54 | alcoholic beverages | -100/28 |
| **DQI = the sum of products of frequency of 24 food groups consumption (times/day)**  **and weight scores (points; DQI range: -100 – 100)** | | |

The interpretation of the pHDI, nHDI and DQI is intuitive:

* the higher value of the pHDI or DQI indicates the higher quality of diet, and the higher intensity of beneficial dietary characteristics for health,
* the higher value of the nHDI indicates the worse quality of diet, and the higher intensity of harmful dietary characteristics for health.

The idea of interpreting of the pHDI and nHDI is the same for indexes expressed as cumulative times/day or in points. The proposed example of indexes interpretation is presented in tables 12 and 13a-c.

Table 12. The proposed way of interpreting the "Pro-Healthy Diet Index" (pHDI) and "Non-Healthy Diet Index" (nHDI) for KomPAN® questionnaire

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Intensity of dietary characteristics  (diet adherence to the index) | Range (times/day) | | Range (in points) | |
| "Pro-Healthy Diet Index" pHDI | "Non-Healthy Diet Index" nHDI | "Pro-Healthy Diet Index" pHDI | "Non-Healthy Diet Index" nHDI |
| Low | 0-6.66 | 0-9.33 | 0-33 | 0-33 |
| Medium | 6.67-13.33 | 9.34-18.66 | 34-66 | 34-66 |
| High | 13.34-20 | 18.67-28 | 67-100 | 67-100 |

Table 13a. The proposed way of scientific interpretation the "Diet Quality Index" (DQI) for KomPAN® questionnaire divided into 3 categories

|  |  |  |
| --- | --- | --- |
| Range of DQI  (in points) | Intensity of dietary characteristics | Interpretation |
| -100 – -26 | High intensity of non-healthy dietary characteristics | The frequency of consumption of foods with a potentially negative influence on health is higher than the frequency of consumption of foods with a potentially beneficial influence on health. Thus, a harmful effect of diet on health is predicted. |
| -25 – 25 | Low intensity of non-healthy and prohealthy dietary characteristics | The frequency of consumption of foods with a potentially negative influence on health is similar to the frequency of consumption of foods with a potentially beneficial influence on health. Thus, a neutral effect of diet on health is predicted. |
| 26 – 100 | High intensity of prohealthy dietary characteristics | The frequency of consumption of foods with a potentially beneficial influence on health is higher than the frequency of consumption of foods with a potentially negative influence on health. Thus, a beneficial effect of diet on health is predicted. |

Table 13b. The proposed way of scientific interpretation the "Diet Quality Index" (DQI) for KomPAN® questionnaire divided into 5 categories

|  |  |  |
| --- | --- | --- |
| Range of DQI  (in points) | Intensity of dietary characteristics | Interpretation |
| -100 – -80 | High intensity of non-healthy dietary characteristics | The frequency of consumption of foods with a potentially negative influence on health is much higher than the frequency of consumption of foods with a potentially beneficial influence on health. Thus, a harmful effect of diet on health is predicted. |
| -79 – -26 | Moderate intensity of non-healthy dietary characteristics | The frequency of consumption of foods with a potentially negative influence on health is higher than the frequency of consumption of foods with a potentially beneficial influence on health. Thus, a slightly harmful effect of diet on health is predicted. |
| -25 – 25 | Low intensity of non-healthy and prohealthy dietary characteristics | The frequency of consumption of foods with a potentially negative influence on health is similar to the frequency of consumption of foods with a potentially beneficial influence on health. Thus, a neutral effect of diet on health is predicted. |
| 26 – 79 | Moderate intensity of prohealthy dietary characteristics | The frequency of consumption of foods with a potentially beneficial influence on health is higher than the frequency of consumption of foods with a potentially negative influence on health. Thus, a slightly beneficial effect of diet on health is predicted. |
| 80 – 100 | High intensity of prohealthy dietary characteristics | The frequency of consumption of foods with a potentially beneficial influence on health is much higher than the frequency of consumption of foods with a potentially negative influence on health. Thus, a beneficial effect of diet on health is predicted. |

Table 13c. The proposed way of popularized interpretation the "Diet Quality Index" (DQI) for KomPAN® questionnaire divided into 5 categories, intended for individual users

|  |  |  |
| --- | --- | --- |
| Range of DQI  (in points) | Simplified interpretation for the individual user | Extended interpretation for the individual user |
| -100 – -80 | It's bad! It is necessary to improve your diet! | You eat very often foods that are bad for your health.  and  You eat very rarely foods that are good for your health. |
| -79 – -26 | It's not good! Improve your diet! | You eat too often foods that are bad for your health.  and  You eat too rarely foods that are good for your health. |
| -25 – 25 | Your diet is neither bad nor good. Make it better! | You rarely eat foods that are bad for your health.  and  You eat too rarely foods that are good for your health. |
| 26 – 79 | It's good! But it's worth improving your diet! | You often eat foods that are good for your health.  and  You rarely eat foods that are bad for your health. |
| 80 – 100 | It's great! Keep it up! | You eat very often foods that are good for your health.  and  You eat very rarely foods that are bad for your health. |

*Example 6*

*In the questions concerning frequency of food consumption, the respondent showed the answers, which are shown in the tables 14, 15 and 16, and the calculations and interpretation of the results are presented below the tables.*

*Table 14. The frequency of food consumption with a potentially beneficial influence on health indicated by the respondent in the KomPAN® questionnaire*

|  |  |  |  |
| --- | --- | --- | --- |
| *Question no.* | *"Pro-Healthy Diet Index" and its components* | *Chosen category of food frequency consumption* | *Daily frequency (times/day)* |
| *23* | *wholemeal (brown) bread/bread rolls* | *Once a week* | *0.14* |
| *25* | *buckwheat, oats, wholegrain pasta or other coarse-ground groats* | *Never* | *0* |
| *31* | *milk (including flavoured milk, hot chocolate, latte* | *Few times a week* | *0.5* |
| *32* | *fermented milk drinks, e.g. yoghurts, kefir (natural or flavoured)* | *1-3 times a month* | *0.06* |
| *33* | *fresh cheese curd products, e.g. cottage cheese, cream cheese, cheese-based puddings* | *1-3 times a month* | *0.06* |
| *37* | *white meat, e.g. chicken, turkey, rabbit* | *Few times a week* | *0.5* |
| *38* | *fish* | *Once a week* | *0.14* |
| *40* | *legumes-based foods, e.g. beans, peas, soybeans, lentils* | *Never* | *0* |
| *42* | *fruit* | *Few times a day* | *2* |
| *43* | *vegetables* | *Once a day* | *1* |
| ***The sum of frequency of 10 food groups consumption*** *(times/day)* | | | ***4.4*** |

*"Pro-healthy Diet Index" = (100/20)x the sum of frequency of 10 food groups consumption (times/day)*

*"Pro-Healthy Diet Index" = (100/20)x 4.4 = 22 points (the amount is in range of 0-33 points)*

*or "Pro-Healthy Diet Index" = 4.4 times/day (the amount is in range of 0-6.66 times/day)*

*Result: Diet with low intensity of pro-healthy characteristics.*

***Interpretation****: The respondent's diet is in low adherence to a healthy dietary pattern. Thus, it is recommended to significantly increase the frequency of consumption of food with a potentially beneficial influence on health.*

*Table 15. The frequency of food consumption with a potentially negative influence on health indicated by the respondent in the KomPAN® questionnaire*

|  |  |  |  |
| --- | --- | --- | --- |
| *Question no.* | *"Non-Healthy Diet Index" and its components* | *Chosen category of food frequency consumption* | *Daily frequency (times/day)* |
| *22* | *white bread and bakery products, e.g. wheat bread, rye bread, wheat-rye bread, toast bread, bread rolls* | *Few times a day* | *2* |
| *24* | *white rice, white pasta, fine-ground groats, e.g. semolina, couscous* | *Few times a week* | *0.5* |
| *26* | *fast foods, e.g. potato chips/French fries, hamburgers, pizza, hot-dogs* | *Once a week* | *0.14* |
| *27* | *fried foods (e.g. meat or flour-based foods such as dumplings, pancakes etc.)* | *Once a day* | *1* |
| *28* | *butter as a bread spread or as an addition to your meals/ for frying/ for baking etc.* | *Few times a day* | *2* |
| *29* | *lard as a bread spread, or as an addition to you meals/ for frying/ for baking etc.* | *1-3 times a month* | *0.06* |
| *34* | *cheese (including processed cheese, blue cheese)* | *Few times a week* | *0.5* |
| *35* | *cured meat, smoked sausages, hot-dogs* | *Once a day* | *1* |
| *36* | *red meat, e.g. pork, beef, veal, lamb, game* | *Few times a week* | *0.5* |
| *44* | *sweets, e.g. confectionary, biscuits, cakes, chocolate bars, cereal bars, other* | *Few times a day* | *2* |
| *46* | *tinned (jar) meats* | *1-3 times a month* | *0.06* |
| *51* | *sweetened carbonated or still drinks such as Coca-Cola, Pepsi, Sprite, Fanta, lemonade* | *Few times a week* | *0.5* |
| *52* | *energy drinks such as Red Bull, Monster, Rockstar or other* | *Never* | *0* |
| *54* | *alcoholic beverages* | *Few times a week* | *0.5* |
| ***The sum of frequency of 14 food groups*** *consumption (times/day)* | | | ***10.76*** |

*"Non-healthy Diet Index" = (100/28) x the sum of frequency of 14 food groups consumption (times/day)*

*"Non-Healthy Diet Index" = (100/28) x 10.76 = 38.4 points (the amount is in range of 34-66 points)*

*or "Non-Healthy Diet Index" = 10.76 times/day (the amount is in range of 9.34-18.66 times/day)*

*Result: Diet with medium intensity of non-healthy characteristics.*

***Interpretation:*** *The respondent's diet is in moderate adherence to an unhealthy dietary pattern. Thus, it is recommended to significantly decrease the frequency of consumption of food with a potentially negative influence on health.*

*Table 16. The frequency of food consumption with a potentially beneficial and with a potentially negative influence on health indicated by the respondent in the KomPAN® questionnaire*

|  |  |  |  |
| --- | --- | --- | --- |
| *Question no.* | *"Diet Quality Index" and its components* | *Chosen category of food frequency consumption* | *Daily frequency (times/day)* |
|  | ***Positive components*** |  |  |
| *23* | *wholemeal (brown) bread/bread rolls* | *Once a week* | *0.14* |
| *25* | *buckwheat, oats, wholegrain pasta or other coarse-ground groats* | *Never* | *0* |
| *31* | *milk (including flavoured milk, hot chocolate, latte)* | *Few times a week* | *0.5* |
| *32* | *fermented milk drinks, e.g. yoghurts, kefir (natural or flavoured)* | *1-3 times a month* | *0.06* |
| *33* | *fresh cheese curd products, e.g. cottage cheese, cream cheese, cheese-based puddings* | *1-3 times a month* | *0.06* |
| *37* | *white meat, e.g. chicken, turkey, rabbit* | *Few times a week* | *0.5* |
| *38* | *fish* | *Once a week* | *0.14* |
| *40* | *legumes-based foods, e.g. beans, peas, soybeans, lentils* | *Never* | *0* |
| *42* | *fruit* | *Few times a day* | *2* |
| *43* | *vegetables* | *Once a day* | *1* |
| ***The sum of frequency of 10 food groups consumption*** *–* ***positive components*** *(times/day)* | | | ***4.4*** |
|  | ***Negative components*** |  |  |
| *22* | *white bread and bakery products, e.g. wheat bread, rye bread, wheat-rye bread, toast bread, bread rolls* | *Few times a day* | *2* |
| *24* | *white rice, white pasta, fine-ground groats, e.g. semolina, couscous* | *Few times a week* | *0.5* |
| *26* | *fast foods, e.g. potato chips/French fries, hamburgers, pizza, hot-dogs* | *Once a week* | *0.14* |
| *27* | *fried foods (e.g. meat or flour-based foods such as dumplings, pancakes etc.)* | *Once a day* | *1* |
| *28* | *butter as a bread spread or as an addition to your meals/ for frying/ for baking etc.* | *Few times a day* | *2* |
| *29* | *lard as a bread spread, or as an addition to you meals/ for frying/ for baking etc.* | *1-3 times a month* | *0.06* |
| *34* | *cheese (including processed cheese, blue cheese)* | *Few times a week* | *0.5* |
| *35* | *cured meat, smoked sausages, hot-dogs* | *Once a day* | *1* |
| *36* | *red meat, e.g. pork, beef, veal, lamb, game* | *Few times a week* | *0.5* |
| *44* | *sweets, e.g. confectionary, biscuits, cakes, chocolate bars, cereal bars, other* | *Few times a day* | *2* |
| *46* | *tinned (jar) meats* | *1-3 times a month* | *0.06* |
| *51* | *sweetened carbonated or still drinks such as Coca-Cola, Pepsi, Sprite, Fanta, lemonade* | *Few times a week* | *0.5* |
| *52* | *energy drinks such as Red Bull, Monster, Rockstar or other* | *Never* | *0* |
| *54* | *alcoholic beverages* | *Few times a week* | *0.5* |
| ***The sum of frequency of 14 food groups******consumption*** *–* ***negative components*** *(times/day)* | | | ***-10.76*** |

*"Diet Quality Index" = (100/20) x the sum of frequency of 10 food groups consumption (times/day) + (-100/28) × the sum of frequency of 14 food groups consumption (times/day) (DQI range: -100 - 100 points)*

*"Diet Quality Index" = (100/20) × 4,4 + (-100/28) × 10,76 = -16,4 (this value is in the range from -25 to 25 points)*

*Result: Diet with low intensity of pro-healthy and non-healthy characteristics.*

***Interpretation:*** *The neutral diet characteristics of health effects are predicted. In order to improve the overall quality of the respondent's diet, it is recommended to decrease the frequency of consumption of food with a potentially negative health influence and increase the frequency of consumption of food with a potentially beneficial influence on health (Fig. 1).*

Obraz zawierający tekst, zrzut ekranu, Czcionka, linia

Opis wygenerowany automatycznie

Fig. 1. Example, graphical presentation of an individual user's DQI result (DQI=-16.4)

**3.5.3. Part C. Nutrition beliefs**

It is recommended to analyse all the statements from part C for each respondent. It is not advised to interpret single statements from this set, because the statements have very variable level of difficulty.

The answers given by the respondent in part C require classification for correct and wrong as well as recoding. The correct answers for the set of statements concerning food and nutrition knowledge is included in table 17.

Table 17. Correct answers for the set of statements concerning food and nutrition knowledge (statements 55-79)

|  |  |  |
| --- | --- | --- |
| Statement | Correct answer | Points |
| 55. It is enough to eat wholegrains/cereals once a day. | False | 1 |
| 56. Only children and adolescents should drink milk. | False | 1 |
| 57. Fruit and/or vegetables should be consumed with every meal. | True | 1 |
| 58. Consumption of mouldy bread can result in food poisoning caused by *Salmonella.* | False | 1 |
| 59. High intakes of salt protect from hypertension. | False | 1 |
| 60. Limiting high-fat foods in everyday diet is protective against cardiovascular diseases. | True | 1 |
| 61. Frequent consumption of oily fish contributes to atherosclerosis. | False | 1 |
| 62. Frequent consumption of grilled meats contributes to the onset of cancer. | True | 1 |
| 63. Vegetarian diet increases the risk of anaemia. | True | 1 |
| 64. Bio-yoghurts contain beneficial gut bacteria. | True | 1 |
| 65. Vegetable oils and olive oil contain a high amount of cholesterol. | False | 1 |
| 66. Wholemeal bread have more fibre than white bread. | True | 1 |
| 67. Fruit and vegetables are a source of ‘empty calories’. | False | 1 |
| 68. Butter and fortified margarines have high content of vitamin A and D. | True | 1 |
| 69. Cheese is a better source of calcium than cottage cheese. | True | 1 |
| 70. Offal has high amounts of ‘bad’ cholesterol - LDL. | False | 1 |
| 71. In a healthy diet, complex carbohydrates should be replaced with simple sugars. | False | 1 |
| 72. In a balanced diet, proteins should be the main source of energy. | False | 1 |
| 73. Inadequate intakes of vitamin PP can cause skin inflammation and diarrhoea. | True | 1 |
| 74. Sun exposure increases the synthesis of vitamin D in the human body. | True | 1 |
| 75. Phosphorus is a component of neural tissue. | True | 1 |
| 76. The ratio of calcium to phosphorus in a healthy diet should be 1:1. | True | 1 |
| 77. Consumption of fruit with high content of vitamin C increases bioavailability of iron. | True | 1 |
| 78. Starting cooking vegetables in cold water helps to preserve the nutrients. | False | 1 |
| 79. Sweets and animal fats are particularly high nutrient dense foods. | False | 1 |

Tables 18 and 19 present suggestions of statement recoding and respondent grouping. The created groups of respondents can be used in the further result analysis, for example to compare the dietary characteristics between respondents with different level of knowledge concerning food and nutrition.

**Suggestion I**:

All the statements, for every correct answer ("True" or "False") etiquette "Correct" should be assigned and for each wrong answer ("True" or "False") etiquette "Wrong". It is possible to mark them with codes, to facilitate the development of formulas during the result analysis. It is comfortable to use different codes, example (11) and (22) to avoid mistakes and differentiate it from the original codes assigned in the questionnaire, i.e. (1) and (2). The answer "Unsure" does not need recoding.

Recoded data can be used for grouping and distinction of the respondents, who for example, answered for over half correctly (>12), gave over a half wrong answers or "Unsure" answers.

Table 18. Example of recoding (I) of the answers for the set of statements concerning food and nutrition (statements 55-79) and proposed respondents grouping

|  |  |  |
| --- | --- | --- |
| Recoding (I) | | Respondents grouping (I) |
| Text etiquette | Code\* | 1. Respondents, who were "Correct" over 50% (>12) 2. Respondents, who were "Wrong" over 50% (>12) 3. Respondents, who were "Unsure" over 50% (>12) 4. Remaining respondents |
| "Correct" | (11) |
| "Wrong" | (22) |
| "Unsure" | (3) |

\* it is not necessary to assign the code, but it can be helpful in writing calculation formulas

**Suggestion II**:

All the statements should have 1 point assigned for every correct answer ("True" or "False") and 0 points for the wrong answer or "Unsure" and then summarise the points. In this approach the evaluated and interpreted are only the correct answers. Its benefit is a good power of differentiation of the respondents into groups with a different level of nutrition knowledge.

Table 19. Example of recoding (II) of the answers for the set of statements concerning food and nutrition (statements 55-79) and proposed respondents grouping

|  |  |  |  |
| --- | --- | --- | --- |
| Recoding (II) | | Respondents grouping (II) | |
| Text etiquette | Points | Nutrition knowledge level | Total points |
| "Correct" | 1 | Insufficient | 0-8 |
| "Wrong" | 0 | Sufficient | 9-16 |
| "Unsure" | 0 | Good | 17-25 |

*Example 7*

*In the statements concerning food and nutrition the respondent marked the answers shown in the table 20.*

*Table 20. Answers to the statements concerning food and nutrition (statements 55-79) marked by the respondent*

|  |  |  |
| --- | --- | --- |
| *Statement* | *Answer* | *Points* |
| *55. It is enough to eat wholegrains/cereals once a day.* | *False* | *1* |
| *56. Only children and adolescents should drink milk.* | *True* | *0* |
| *57. Fruit and/or vegetables should be consumed with every meal.* | *True* | *1* |
| *58. Consumption of mouldy bread can result in food poisoning caused by Salmonella.* | *True* | *0* |
| *59. High intakes of salt protect from hypertension.* | *False* | *1* |
| *60. Limiting high-fat foods in everyday diet is protective against cardiovascular diseases.* | *Unsure* | *0* |
| *61. Frequent consumption of oily fish contributes to atherosclerosis.* | *False* | *1* |
| *62. Frequent consumption of grilled meats contributes to the onset of cancer.* | *True* | *1* |
| *63. Vegetarian diet increases the risk of anaemia.* | *False* | *0* |
| *64. Bio-yoghurts contain beneficial gut bacteria.* | *Unsure* | *0* |
| *65. Vegetable oils and olive oil contain a high amount of cholesterol.* | *False* | *1* |
| *66. Wholemeal bread have more fibre than white bread.* | *True* | *1* |
| *67. Fruit and vegetables are a source of ‘empty calories’.* | *False* | *1* |
| *68. Butter and fortified margarines have high content of vitamin A and D.* | *True* | *1* |
| *69. Cheese is a better source of calcium than cottage cheese.* | *True* | *1* |
| *70. Offal has high amounts of ‘bad’ cholesterol - LDL.* | *True* | *0* |
| *71. In a healthy diet, complex carbohydrates should be replaced with simple sugars.* | *False* | *1* |
| *72. In a balanced diet, proteins should be the main source of energy.* | *False* | *1* |
| *73. Inadequate intakes of vitamin PP can cause skin inflammation and diarrhoea.* | *False* | *0* |
| *74. Sun exposure increases the synthesis of vitamin D in the human body.* | *True* | *1* |
| *75. Phosphorus is a component of neural tissue.* | *Unsure* | *0* |
| *76. The ratio of calcium to phosphorus in a healthy diet should be 1:1.* | *Unsure* | *0* |
| *77. Consumption of fruit with high content of vitamin C increases bioavailability of iron.* | *True* | *1* |
| *78. Starting cooking vegetables in cold water helps to preserve the nutrients.* | *True* | *0* |
| *79. Sweets and animal fats are particularly high nutrient dense foods.* | *False* | *1* |

*The data has been developed according to the scheme presented in suggestion II.*

*Total number of points = 15 points (between range 9-16 points).*

*Result: The respondent has a sufficient nutrition knowledge.*

**3.5.4. Part D. Lifestyle and personal data**

The date of the interview and date of birth of the respondents should be used to calculate metrical age of the respondents. The age of adults can be calculated in the simplified way, with the accuracy to the whole years, by subtracting the year of birth from the year of the interview. For the respondents below age of 18, it is recommended to calculate the age with accuracy to the whole months. In this case, the specific real number should be assigned to each month according to below scheme:

* January = 0.083
* February = 0.166
* March = 0.249
* April = 0.332
* May = 0.415
* June = 0.498
* July = 0.581
* August = 0.664
* September = 0.747
* October = 0.830
* November = 0.913
* December = 0.996

The next step is to make new variables coding the "year and month of the interview" as well as "year and month of birth". The "accurate metric age" should be calculated, which will reflect the biological age better than the full years age.

*Example 8*

*Date of the interview: 20th January 2014*

*Date of birth of the respondent: 5th December 1997*

*Coding variable "year and month of the interview": 2014.083*

*Coding variable "year and month of birth": 1997.996*

*The metric age calculated from the full ages only: 2014-1997= 17 years old*

*The metric age calculated with months: 2014.083-1997.996= 16.087 years old*

Questions no. 90 and 91 concerning physical activity can be analysed and interpreted:

* independently from each other, for example calculating % of respondents with low, medium, or high physical activity:
  + during work or at school (question no. 90),
  + during free time (question no. 91),
* together, after joining two question categories into one criterion of physical activity – recommended way shown in table 21.

Table 21. Recommended way of joining two categories of questions concerning physical activity (no. 90 and 91)

|  |  |  |  |
| --- | --- | --- | --- |
| Physical activity at work or at school (question 90) | Physical activity in the free time (question 91) | | |
| Low (1) | Moderate (2) | High (3) |
| Low (1) | Low | Low | Moderate |
| Moderate (2) | Low | Moderate | Moderate |
| High (3) | Moderate | Moderate | High |

It is recommended to take body mass, height and waist measurements of the respondents. The declared by the respondents numbers can be collected if there is no possibility of taking a measurement. The declared numbers by the respondents can be used to calculate anthropometric indicators, such as BMI, WHtR:

* directly (without any modifications),
* after correction with regression formulas (picked accordingly to age and gender of the respondent) in order to approximate to accurate values (measured) and decrease the bias – this way is definitely recommended, if the measures were not performed.

Regression formulas to correct the body mass and height declared are shown below (Niedzwiedzka et al. 2006, 2014).

**Regression formulas for adolescents** (Niedzwiedzka et al. 2006)

Boys age 13-20

Measured\_body mass (kg) = 0.9839 x declared\_body mass (kg) + 0.0861 x age (years) (±2.6455)

Measured\_height (cm) = 0.9590 x declared\_height (cm) + 0.1938 x age (years) + 3.8458 (±2.3951)

Girls age 13-20

Measured\_body mass (kg) = 0.9740 x declared\_body mass (kg) + 0.1210 x age (years) (±3.1251)

Measured\_height (cm) = 0.9428 x declared\_height (cm) + 9.4831 (±2.5405)

**Regression formulas for elderly** (Niedzwiedzka et al. 2014)

Men age 64-90

Measured\_body mass (kg) = 0.9991 x declared\_body mass (kg) (±3.639)

Measured\_height (cm) = 0.9976 x declared\_height (cm) (±3.5833)

Women age 64-94

Measured\_body mass (kg) = 1.0166 x declared\_body mass (kg) (±3.5631)

Measured\_height (cm) = 31.4867+ 0.7874 x declared\_height (cm) (±3.3778)

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