CHRIS Study

FFQ-Estimated Flavonoid intake

Version 1.1

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1. Introduction

This module stores information related to the flavonoids intake, derived from the Food Frequency Questionnaire, that was completed by the participants prior to the examination at the CHRIS Center.

Since May 5th, 2014, when receiving the invitation letter to the CHRIS study center, participants also received a questionnaire on their food consumption habits over the past year, that they were asked to complete at home and bring along at the study center. If several family members participated in the CHRIS study at the same time, they could write their name on the front page. Upon receiving the questionnaire, the receptionist removes the front page and shreds it. On the first page of the FFQ, the barcode with the participant's ID is pasted in the space provided.

Such questionnaire, called Food Frequency Questionnaire (FFQ), is a modified version of the German and Italian FFQ of the Global Allergy and Asthma European Network of Excellence (GA2LEN) study. The questionnaire was modified by IfB researchers under the supervision of Vanessa Garcia-Larsen (Imperial College London, London, UK), to incorporate food items that are typical of South Tyrol.

The FFQ questionnaires are available at CHRIS Baseline/Self-Assessment/Food Frequency Questionnaire.

From the answers to the FFQ questionnaire, it was possible to estimate the daily flavonoids intake for each participant. More specifically, the following daily intakes were estimated: total flavonoids the classes flavanones, anthocyanidins, flavan-3-ols, flavonols, flavones, and proanthocyanidins, as well as the specific flavonoids (e.g., Hesperetin, Malvidin).

2. History version changes

Until May 16th, 2014, participants answered questions on food and alcohol consumption during the interview (see x0fd* and x0al* variables). Since May 5th, 2014, the GA2LEN FFQ was introduced as part of the self-administered questionnaires. No version change occurred afterwards.

3. Data cleaning

1. The main CHRIS dataset was loaded.
2. The flavonoids intake was not estimated in the following cases:
    a) More than 20% of the FFQ items were missing;
    b) the participant was in the extreme 0.5th and 99.5th -centile of the ratio total energy intake/basal metabolic rate (TEI/BMR).
3. The more generic food items (e.g., “Any pasta” x0ff012 or “Any vegetables” x0ff069), the ones in Table 1 of CHRIS_baseline_x0ff.pdf document without an asterisk, were ignored.
4. From the FFQ answers, the total intake in grams/day for each specific food item (x0ff001-x0ff229) was computed as follows:
    a) Each food frequency was converted to weekly portions, specifically “Rarely or never” to 0, “1-3 times per month” to 0.5, “Once per week” to 1, “2-4 times per week to 3, “5-6 times per week” to 5.5, “Once per day” to 7, “2+ times per day” to 14,
    b) Weekly portions were converted to daily portion,

c) Finally, each daily portion was multiplied by its portion size, as estimated in the USDA FDA database. If that database did not contain a specific food item, the Database was used instead.

5. To estimate the amount of flavonoids for each food, the USDA Flavonoids Database 3.2, Harvard database, and Phenol-Explorer database for polyphenols, the USDA Database for the Proanthocyanidin Content of Selected Foods release 2 were used. Those spreadsheets contain a list of foods and their estimated flavonoid content. Flavonoids are reported as total flavonoids, total of flavonoid classes (flavanones, anthocyanidins, flavan-3-ols, flavonols, flavones, and proanthocyanidins), as well as the specific flavonoids (e.g., Hesperetin, Malvidin). Each flavonoid class/specific flavonoid (e.g., flavonols and hesperetin, respectively) was saved as a separate dataset, and reshaped in wide form, so that each food item was a column and that flavonoid class/specific flavonoid intake per 100g was a single row.
6. Observations as "N" or "Tr" were regarded as zero.
7. For each flavonoid/flavonoid class (e.g., flavonols and hesperetin, respectively), the FFQ answers (1 row per participant) were merged with the single flavonoid wide dataset:
    a) Each food item was assigned a correspondent daily flavonoids intake: nutrient content * portion size in grams/100 grams
    b) All the food items' specific daily flavonoids intakes were summed into a total daily intake for that flavonoid/flavonoid class.
8. The baseline dataset was saved.

4. Advices for the analysis

The daily flavonoids intake was estimated from the answers to the GA2LEN FFQ questionnaire, saved in the module x0ff. Similarly, the nutrients daily intake was also estimated from the FFQ answers, and it can be found in the module x0nu. The daily flavonoids intake was not computed for participants with more than 20% of FFQ items missing or in the extreme 0.5^{th} and 99.5^{th} centile of the ratio total energy intake over basal metabolic rate ratio.

The FFQ data entry operator, x0ff241a, might have played a role in how the free text variables have been entered, however the food frequency questions, x0ff001-x0ff229, were directly derived from the scanning software.

5. References

Garcia-Larsen V, Luczynska M, Kowalski ML, Voutilainen H, Ahlström M, Haahtela T, et al. Use of a common food frequency questionnaire (FFQ) to assess dietary patterns and their relation to allergy and asthma in Europe: pilot study of the GA2LEN FFQ. Eur J Clin Nutr. 2011 Jun;65(6):750-6. DOI: 10.1038/ejcn.2011.15

Portion size database: Food Standard Agency. Food Portion Sizes Guidelines. 3rd ed. Food Standard Agency; London, UK: 2006. IBSN: 9780112429616

USDA Database for the Flavonoid Content of Selected Foods. Release 3.2 (November 2015): https://data.nal.usda.gov/dataset/usda-database-flavonoid-content-selected-foods-release-32-november-2015

Phenol-Explorer Database: Neveu V, Perez-Jiménez J, Vos F, Crespy V, du Chaffaut L, Mennen L, Knox C, Eisner R, Cruz J, Wishart D, Scalbert A, Phenol-Explorer: an online comprehensive database on polyphenol contents in foods. Database (Oxford). 2010:2010:bap024. DOI: 10.1093/database/bap024

USDA Database for the Proanthocyanidin Content of Selected Foods, Release 2 (2015): https://data.nal.usda.gov/dataset/usda-database-proanthocyanidin-content-selected-foods-release-2-2015