Overview

Identification

ID NUMBER
CHE-FSVO-MENUCH-2014-2015_V2.0

Version

VERSION DESCRIPTION
First version of menuCH 2014-2015 Data. Some fields may change and some others may be added in the future

PRODUCTION DATE
2016-08-04

Overview

ABSTRACT
National Nutrition Survey menuCH

Nutrition and physical activity directly affect health and quality of life. But what do people living in Switzerland usually eat and drink? The National Nutrition Survey menuCH pursued these questions and collected data concerning nutrition and physical activity behaviors of the Swiss population.

menuCH inquired men and women aged between 18 and 75 years living in the German, French or Italian parts of Switzerland, about what they ate the previous day (i.e., 24-hour dietary recall) and their eating and drinking habits but also about their physical activity. Anthropometric measurements were taken in addition. Survey participation was voluntary.

menuCH inquired 2000 participants in 10 study centers. The study centers were located all over Switzerland so that most participants could reach them within reasonable time. The survey took place between January 2014 and February 2015.

Aims

„What and how much do people living in Switzerland usually eat and drink, when and where?” With this and other questions regarding eating and drinking habits, it should possible to...

- evaluate better the nutrition situation;
- keep high and improve food safety;
- detect faster possible risks associated with food;
- verify and adapt if necessary the present dietary recommendations;
- improve the food range and composition;
- develop and implement effective nutrition strategies and measures to promote health and quality of life;
- support research and development in the fields of nutrition, food and behavior sciences with up-to-date and nationally representative data.

For more information in German, French or Italian see
https://www.blv.admin.ch/blv/de/home/lebensmittel-und-ernaehrung/ernaehrung/menuch.html,
https://www.blv.admin.ch/blv/fr/home/lebensmittel-und-ernaehrung/ernaehrung/menuch.html,

For first results from the questionnaire about nutrition behavior and physical activity in Switzerland see:

UNITS OF ANALYSIS
Individuals

KEYWORDS
Nutrition Survey, Dietary Survey, Swiss Diet, 24h dietary recall, Switzerland

Coverage

GEOGRAPHIC COVERAGE
Switzerland (46° 57' N, 7° 25' E)

UNIVERSE
Food consumption of Swiss residents, male and female from three language regions, between 18 and 75 years of age

Producers and Sponsors

PRIMARY INVESTIGATOR(S)

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institut universitaire de médecine sociale et préventive (IUMSP)</td>
<td>CHUV / UNIL</td>
</tr>
<tr>
<td>Swiss Federal Food Safety and Veterinary Office (FSVO)</td>
<td>FDHA</td>
</tr>
</tbody>
</table>

OTHER PRODUCER(S)

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institut universitaire de médecine sociale et préventive (IUMSP)</td>
<td>CHUV / UNIL</td>
<td>Original producer</td>
</tr>
<tr>
<td>Institut für Sozial- und Präventivmedizin (ISPM)</td>
<td>University of Bern</td>
<td>Survey collaborator</td>
</tr>
<tr>
<td>Swiss Federal Food Safety and Veterinary Office (FSVO)</td>
<td>The Federal Department of Home Affairs (FDHA)</td>
<td>Data proprietary and data linkage with Swiss Food Composition Database</td>
</tr>
</tbody>
</table>

FUNDING

<table>
<thead>
<tr>
<th>Name</th>
<th>Abbreviation</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swiss Federal Food Safety and Veterinary Office</td>
<td>FSVO</td>
<td>Primary Funder</td>
</tr>
<tr>
<td>Swiss Federal Office of Public Health</td>
<td>FOPH</td>
<td>Co-Funder</td>
</tr>
</tbody>
</table>

OTHER ACKNOWLEDGEMENTS

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institut universitaire de médecine sociale et préventive (IUMSP)</td>
<td>CHUV / UNIL</td>
<td>Survey management, data cleaning and hosting, weighting strategy</td>
</tr>
<tr>
<td>Institut für Sozial- und Präventivmedizin (ISPM)</td>
<td>University of Bern</td>
<td>Survey collaboration</td>
</tr>
<tr>
<td>Fachbereich Gesundheit</td>
<td>Bern University of Applied Sciences (BUAS)</td>
<td>Survey collaboration, data cleaning</td>
</tr>
</tbody>
</table>

3
### Metadata Production

#### METADATA PRODUCED BY

<table>
<thead>
<tr>
<th>Name</th>
<th>Abbreviation</th>
<th>Affiliation</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institut universitaire de médecine sociale et préventive</td>
<td>IUMSP</td>
<td>CHUV / UNIL</td>
<td>Survey management</td>
</tr>
<tr>
<td>Swiss Federal Food Safety and Veterinary Office</td>
<td>FSVO</td>
<td>FDHA</td>
<td>Survey management, survey collaboration, data linkage and documentation</td>
</tr>
</tbody>
</table>

**DDI DOCUMENT VERSION**

Version 2.0 (May 2017)

**DDI DOCUMENT ID**

DDI-CHE-FSVO-MENUCH-2014-2015_V2.0

Sampling

Sampling Procedure

Sampling was carried out by the Federal Statistical Office (FSO) using the Sampling frame for individual and household surveys (SRPH, Stichprobenrahmen für Personen und Haushaltserhebungen, https://menuch.iumsp.ch/index.php/catalog/4/download/62) database. The three-step sampling procedure for the survey was as follows:

1. The first stratum consisted of the seven Swiss major regions (Lake Geneva region, Midland, Northwest Switzerland, Zurich, Eastern Switzerland, Central Switzerland and Ticino*). To facilitate logistics, only the most populous cantons of each major region were considered. The number of cantons was chosen so that they represent at least half of the population of the corresponding major region (Table 1). The sampling frame of the main study consisted of participants living in the cantons of Vaud (VD), Geneva (GE), Neuchatel (NE), Jura (JU), Berne (BE), Basel-Land (BL), Basel-Stadt (BS), Zürich (ZH), St. Gallen (SG), Aargau (AG), Luzern (LU) and Ticino (TI).


Table 1. Major regions of Switzerland and cantons selected for menuCH

2. Within the first stratum, a second stratification was conducted, taking into account gender- and age groups. For each major region, the final sample aimed to achieve a comparable number of men and women, with an age group distribution comparable to the one observed within the administrative regions.

3. The 24-hour dietary recall interviews were as evenly distributed as possible throughout the week in order to capture all days of the week. The number of interviews conducted on Mondays was twice as large as for the other days, in order to cover the food consumption on Saturdays and Sundays. For participants interviewed on Mondays, the day of the interview (Saturday or Sunday) was randomly chosen.

Overall, the target was to recruit a total of 2'000 participants with two appointments/interviews each, following quotas by canton of residence (Table 2; Table 3).

Table 2. Survey sampling frame overall and by linguistic region

Table 3. Target number of participants by administrative region and canton of residence

Weighting

As in most sampling surveys, subjects do not all have the same probability to be part of the sample. This is why weights must be considered and applied to the data. The principle of weighting is about assigning different weights to survey participants based on their probabilities of inclusion in the sample and participation in the survey.

Weighting strategy in menuCH involves three steps:
1. Calculation of the sampling weights
2. Correction of non-response
3. Calibration on marginal totals of the sampling frame

These three steps define, for each person who participated in the survey, an extrapolation weight. This latter is used to extrapolate the results of the investigation to the target population.

In addition, food consumption data from 24-hour dietary recalls can be weighted to provide information that is balanced across seasons (and weekdays).

Detailed description of methods and calculations are available here:
Questionnaires

Overview

Non-participant questionnaire (available here https://menuch.iupsm.ch/index.php/catalog/4/download/26)
A short non-participant questionnaire was applied orally by the recruiters during the contact call when it became clear that the contacted person was unwilling to participate.

Eating and physical activity behavior were assessed by a 49 question paper/written questionnaire in three languages. The questionnaire has been developed by FOPH/FSVO and was pre-tested using cognitive interviews. For physical activity, the short version of the IPAQ - International Physical Activity Questionnaire - was considered. For health related questions, reference was made to questions of the Swiss Health Surveys and for diet related questions also standard questions from other nationally or internationally used questionnaires had been included. Thus, comparisons with other studies are possible. The questionnaire was amended by a selection of socio-economic and -demographic questions from the most current Swiss Health Survey 2012, with very few changes applied due to experiences from regional surveys (CoLaus and Bus santé studies).
The questionnaire was sent to the participants by postal delivery together with the confirmation of the first appointment and the instruction to complete it at home and bring it to the appointment. Upon handover, the questionnaire was checked by the dietitian for completeness and clarity At the end of the appointment the dietitian keyed the information into a central on-line database.
Data Collection

Data Collection Dates

<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
<th>Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-01-27</td>
<td>2015-02-28</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Data Collection Mode

Computer Assisted Personal Interview [capi]

Data Collection Notes

The Federal Office of Statistic (FSO) provided a population-based random sample of 13,606 addresses of adults, aged 18-75 years from seven administrative regions representing the three main linguistic regions of Switzerland (German, French, Italian). The invitation letter, sent to the sampled addresses, included a reply card to either specify the preferred way and time of contact, in case of participation interest or else to declare no interest. Then, potential participants were contacted by phone from a centrally located recruitment center (CATI Laboratory) to arrange the first of two appointments. Trained dietitians collected data on food consumption between January 2014 and February 2015. The first 24-hour dietary recall was administered face-to-face and the second by telephone on two non-consecutive days, that is, at least two weeks apart and if possible on different weekdays. The 24-hour period was defined as from when the participant got up the day prior to the face-to-face/telephone interview date until the time the respondent got up on the interview day. Since interviews were conducted from Monday to Saturday only, on Monday either the food intake of Saturday (for participants with even ID number) or Sunday (for participants with uneven ID number) was assessed. No detailed information on dietary supplement use was collected.

Several computer-assisted as well as paper-based instruments were used in the survey:

Scheduling Tool
In order to allocate the survey participants to the 15 dieticians across the 10 study centers at different days of the week in a well-coordinated and efficient way, a web-based Scheduling Tool was developed.

Anthropometry
Body weight (kg), height (cm), waist (cm) and hip (cm) circumferences were measured using calibrated devices according the WHO-MONICA protocol, available at https://menuch.iumsp.ch/index.php/catalog/4/download/59

GloboDiet® (formerly EPIC-Soft®)
The software GloboDiet® developed by the International Agency on Research on Cancer (IARC, http://www.iarc.fr/) allows the standardized collection and management of 24-hour dietary recall data. Applying GloboDiet® survey participants are asked to describe consumed foods and beverages according to a predefined sequence of questions/facets with pre-defined answers/descriptors (see lists of facets (Available : https://menuch.iumsp.ch/index.php/catalog/4/download/64) and descriptors (Available : https://menuch.iumsp.ch/index.php/catalog/4/download/63) available for menuCH). For menuCH, about seventy common and country-specific GloboDiet® databases on foods, recipes, quantification methods and coefficients were customized to Swiss specific needs and requirements, and translated into German, French and Italian to form the trilingual Swiss version of GloboDiet®. GloboDiet allows choosing among the following six different quantification methods to quantify consumed amounts: gram, volume, standard unit, household measure, photo and shape. Consumed amounts are given in grams after application of conversion factors, if necessary.

Picture book for the estimation of portion sizes
Based on a thoroughly validated and widely applied international picture book for the estimation of portion sizes (Van Kappel AL, Amoyel J, Slimani N, Vozar B and Riboli E. Epic-Soft Picture Book for estimation of Food Portion Sizes. Lyon: International Agency for Research on Cancer; 1995) a Swiss specific picture book was developed and used to help participants estimate the consumed food portions (Camenzind-Frey, E. and Zuberbuehler, C.A. (2014) menuCH - SCHWEIZERISCHES FOTOBUCH / LIVRE PHOTO SUISSE / MANUALE FOTOGRAFICO SVIZZERO. 2. Auflage., Bern, Switzerland: Federal Office of Public Health (FOPH) & Federal Food Safety and Veterinary Office (FSVO)).

Questionnaires
Non-participant questionnaire (available here https://menuch.iumsp.ch/index.php/catalog/4/download/26)
A short non-participant questionnaire was applied orally by the recruiters during the contact call when it became clear that the contacted person was unwilling to participate.


Eating and physical activity behavior were assessed by a 49 question paper/written questionnaire in three languages. The questionnaire has been developed by FOPH/FSVO and was pre-tested using cognitive interviews. For physical activity, the short version of the IPAQ - International Physical Activity Questionnaire - was considered. For health related questions, reference was made to questions of the Swiss Health Surveys and for diet related questions also standard questions from other nationally or internationally used questionnaires had been included. Thus, comparisons with other studies are possible. The questionnaire was amended by a selection of socio-economic and -demographic questions from the most current Swiss Health Survey 2012, with very few changes applied due to experiences from regional surveys (CoLaus and Bus santé studies).

The questionnaire was sent to the participants by postal delivery together with the confirmation of the first appointment and the instruction to complete it at home and bring it to the appointment. Upon handover, the questionnaire was checked by the /dietitian for completeness and clarity At the end of the appointment the dietitian keyed the information into a central on-line database.
Data Processing

Data Editing

Data editing took place at a number of stages throughout the processing, including:
a) During data entry
b) Structure checking and completeness
c) Secondary editing
d) Structural checking of SQL and STATA data files

Other Processing

Data about participation
A total of 2086 persons initially participated (participation rate: 15%). Please see the chapter "Weighting"

A) Data from the dietary behavior and physical activity questionnaire

Missing questionnaires
Out of the 2086 participants 5 participants never gave back their questionnaire. One of them could finally be reached by phone and answered the questions about socio-economic determinants only. This results in a total of 2081 complete questionnaires.

Data cleaning
Data cleaning was done with Stata Statistical Software (Release 13. College Station, TX: StataCorp LP). Most variables were only slightly modified: they were only re-coded with numerical values and labeled in English to facilitate data analysis. For instance, the variable "sex" was initially coded "Homme" and "Femme" and was re-coded as such: 1 for men and 2 for female. Others variables had to be adapted prior to analysis. These adaptations and explanations of large missing values are described below.

Physical activity (Questions 14-20)
Many participants (n=525) claiming they could not estimate how much time they had spent on average doing any of the three activity types of physical activity. In addition, 11 participants had missing or illogical (and deleted) data.

Occupation and socioeconomic background (Questions 41-49)
An important limitation of the questionnaire was the instruction for Question 46, stating that only people without remunerated professional activity at all should complete Questions 46 and next. To comply with this statement, field dietitians were instructed to enter only Questions 42 to 45 (and not Question 46 and following) if the participant was a student or a housewife, etc. and had part-time paid-work, even if it was only 1 hour per week. Unfortunately, with the statement in the questionnaire plus the systematic correction of field dietitians, many students or retired people, etc. who worked part-time were recorded in the database only as active worker (and not additionally student, retired, etc.). A consequence of this limitation is that the information on occupation is not optimal.

Before data cleaning, the proportion of students was 4%, housewives/househusbands 6% and retired 16%, respectively. In comparison, in the 2012 Swiss Health Survey, for which data were collected by phone among 21'597 people aged 15 years old and over, there was about 10% of students, 20% of housewives/househusbands and 23% of retired people, taking into consideration the ones working. Based on that observation, we went back to all 2081 paper questionnaires and captured answers to Question 46 that were not taken into consideration by field dietitians during data entry. Going back to the questionnaires allowed us to recapture participants who had ticked an answer to this question. We created then a new variable for Question 46, which was considered of better quality. The initial variable for Question 46 was left as such (not cleaned). Furthermore going through the 2081 questionnaires allowed us to identify a few inconsistencies in the Questions 41-49, which were also cleaned. Finally, age limit was set for housewives / househusbands at 64 years for women and 65 years for men. Participants above this age were re-coded only as retired.

Although we did our best to capture as much information as possible for variables about occupation and Question 46, all data should be interpreted with caution due to limitations of the questionnaire in Questions 41-49. For example, we highly suspect that information about housewives / househusbands were partially lost as their percentage is still relatively low compared to the Swiss Health Survey. In addition, 115 participants (almost all women) declared working less than 20 hours/week and did not answer Question 46. We may suppose they may be potential housewives/househusbands.
Information about retired people are expected to be of good quality after the paper copy checks: more than 96% of people aged \( \geq 65 \) years old were classified as retired in Question 46. Same for students: 7% of students was a very reasonable proportion compared to the Swiss Health Survey results (i.e., 10%).

**Age**

Participants' age was calculated from their birth date and estimated questionnaire completion date, which corresponds for most to face-to-face appointment date.

**B) Data from anthropometry**

**Missing data**

Out of the 2086 participants, 34 weight measures were missing. Following the study protocol, 27 pregnant or lactating women, 6 handicapped participants (e.g. in a wheelchair) were not measured. Only one participant refused to be weighted. For height, there were 7 missing values because height was again impossible to be measured in these 6 handicapped participants plus the same participant who refused weighing. For waist and hip measures, there are again 34 missing values. The reasons are identical: 27 pregnant or lactating women, 6 handicapped participants and 1 refusal.

**Data cleaning**

Data were controlled for consistency (e.g., comparison of self-reported vs. measured weight and height) or incorrect rounding. Data were cleaned when necessary, going back to written data on the paper sheet.

**Data correction for clothing**

Because weight was measured while participants were wearing light clothes (more than underwear), 1.2kg were deducted from measured weight for men, respectively 0.8kg for women, independent of season. This correction for light clothing was performed based on recommendations from the literature and in relation to what was done in other Swiss surveys. Because waist circumference was taken directly on the skin, we did not apply any correction factor. By contrast, hip circumference was taken while participants were wearing pants or skirts. However, we decided not to correct hip measures for clothing as field dietitians were required to put more tension on the string when the pants/skirts were thick.

**C) Food consumption (data from GloboDiet®, 24h dietary recalls)**

**Missing data**

Of the 2086 initial participants 29 participants did not complete the second 24-hour dietary recall by phone. Additionally, one face-to-face (first) 24-hour dietary recall was deleted due to incompleteness. All other 24-hour dietary recalls (4142 in total, 2085 face-to-face and 2057 phone) were considered as valid.

**Data cleaning**

The 15,637 notes written in GloboDiet® by field dietitians were handled centrally by a senior registered dietitian following IARC guidelines. The latter also checked all 24HDR with extreme energy intakes (n=85). Furthermore, food consumption data were evaluated using all criteria recommended by IARC. Detailed quality control procedures were implemented and published.

**Data linkage for energy and nutrient values**

Food consumption data e.g. foods, recipes and ingredients (from GloboDiet®) were linked semi-automatically with the most appropriate item from the Swiss Food Composition Database (SFCDB, [http://naehrwertdaten.ch](http://naehrwertdaten.ch)) (V20 not public) using a newly developed matching tool on the food information platform FoodCASE (Premotec GmbH). The matching tool was programmed to provide for each different consumed item a list of possible matches from the SFCDB ranked according to similarity (Hochuli 2014; [https://www.research-collection.ethz.ch/bitstream/handle/20.500.11850/154526/eth-8507-01.pdf?sequence=1&isAllowed=y](https://www.research-collection.ethz.ch/bitstream/handle/20.500.11850/154526/eth-8507-01.pdf?sequence=1&isAllowed=y). The Masters Thesis describes essential aspects of the matching tool from chapter 4 onward.). Whenever possible a 1:1 match was selected or a match with an equivalent or generic item was selected. If neither was available the consumed item was linked with an item similar with regard to the most relevant nutrient. For menuCH more than 32’000 different items from GloboDiet® were linked in this way.

When using the consumption data of this survey please be aware that:

1. Both recipes and their ingredients have been matched separately to the most appropriate item from the SFCDB. Therefore adding energy/nutrients of the ingredients may not result in exactly the same figures as are given for the respective recipes.
2. To avoid duplication of nutrient intake you must either use recipes or ingredients but never both!
3. The Swiss Food Composition Database contains information on the composition of foods that are available in Switzerland. For all the foods contained in the database, complete information is presented on the macronutrients (carbohydrates, proteins, fats) as well as for water, alcohol and energy content. In addition, the content of dietary fibres and micronutrients...
(vitamins, minerals) as well as the composition of the fats (saturated, mono-unsaturated, poly-unsaturated) are listed for the majority of generic foods. In the case of branded products, however, the only information available is that provided or published by the manufacturer (e.g. on packaging or websites).
Data Appraisal

Estimates of Sampling Error

See the document "Weighting strategy" available under "Technical documents" and document "Codebook for the data from Weights for statistical analysis" available under "Other materials" in the "Documentation" section.

Remarks:
1. The variables "sampling_w", "nonresponse_w" and "nonresponse_w_2rec" are given for information only. These variables should not be used for extrapolation as they correspond to intermediate steps in the calculation of the calibrated weights.
2. For extrapolation always use calibrated weights. As season and weekday influence nutrition, it is preferable to use "sw_calibrated_w" weights rather than "calibrated_w" weights.
3. The statistical program SPADE requires two 24HDR per person for usual intake analyses. For this reason the variables "calibrated_w_2rec" and "sw_calibrated_w_2rec" are provided (see chapter "Weighting for SPADE" in the document "Weighting strategy").