

Food Consumption Survey 2022-2023:

Finger prick study

Methodological information

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1. INTRODUCTION

The objective of the Finger prick study falls within the overall objective of the Food Consumption Survey (FCS) 2022-2023, that is to better understand the relationship between nutrition and health, and to monitor the nutritional status of the population. The Finger prick exploratory study aims to test the feasibility of monitoring the nutritional status of the population in Belgium using biomarkers obtained from non-invasive data collection methods (*i.e.*, using microsampling-at-home).

Specifically the study aims to use biomarkers in order to:

- estimate the vitamin D status of the population aged three years and older;
- estimate the thiamine (vitamin B1) status of the adult population aged 18 years and older;
- estimate the alcohol consumption of the adult population aged 18 years and older.

2. COLLECTION OF DATA

2.1. Collection of dried blood microsamples

During the first home visit, participants in the FCS 2022-2023 were asked if they wished to take part in the Finger prick study. Following inclusion, dried blood microsamples were collected by self-sampling at the end of the first home visit following the interviewer's instructions. Participants of all ages (*i.e.*, three years and older) were asked to provide at least two dried blood spots (DBS) for the analysis of vitamin-D status. Adults (*i.e.*, those aged 18 years and older) additionally provided three blood drops using another microsampling technique, called volumetric absorptive microsampling (VAMS) to analyse their alcohol and thiamine status.

Once sample collection was completed, the interviewer recorded the sample barcodes (one for the DBS sample and one for the VAMS sample) in the questionnaire of the first visit. The interviewer then took the samples home in a sealed storage box containing desiccant and let them dry in the open air for two to three hours. The samples were then mailed – together with the participant's anonymous identification code – to the Laboratory of Toxicology of Ghent University the next day (or within 24 hours), using pre-stamped padded envelopes. The samples were registered, stored and analysed by the Laboratory of Toxicology (Ghent University). The registered data were shared with the Sciensano team who performed the cleaning of the participant's identification codes and sample barcodes.

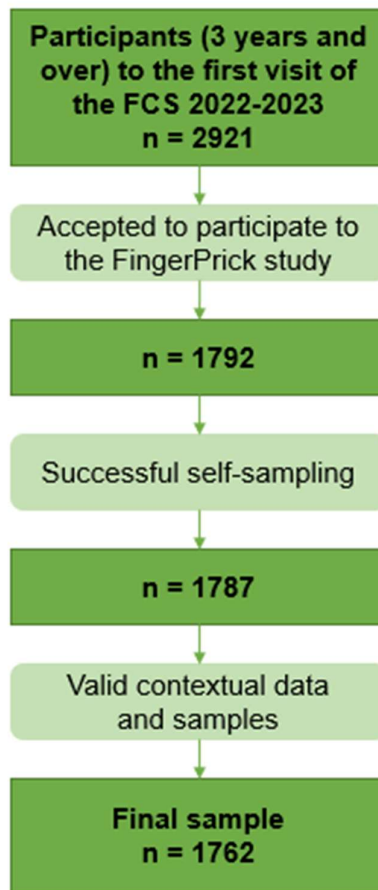
2.2. Contextual data

To help interpret the data and allow for adjustment for potential confounders, specific questions (*e.g.*, on sun-exposure behaviour, skin type, bariatric surgery) were asked to the participants who agreed to take part in the Finger prick study. These questions can be found on the [FCS website](#). Following completion of the study, these data were cleaned, linked to the barcode of the samples, anonymised and the resulting dataset was sent to the team of the Laboratory of Toxicology from Ghent University for analysis and linkage to the biomarker data.

3. DESCRIPTION OF THE SAMPLE

Figure 1 illustrates the flow of data from the initial number of persons who participated into the first visit of the FCS 2022-2023 ($n = 2921$) until the final sample of persons having both valid blood sample and available demographic data (*i.e.* at least age and sex) ($n = 1762$).

Figure 1 | Flow chart of Finger prick data: from the participation into the FCS 2022-2023 first visit to the inclusion in the final sample, Food Consumption Survey 2022-2023, Belgium



52% of children and adolescents (3-17 years) and 69% of adults (18 years and above) who participated into the FCS 2022-2023 first visit were included in the final sample of persons with both valid blood sample and available demographic data (*i.e.*, at least age and sex).

A total of 726 children and adolescents and 1036 adults were included in the final dataset used for the analyses. This final dataset included 49% of women and 51% of men. Table 1 shows how the dataset is distributed by age and sex, and how this compares with the complete sample of participants in the Food Consumption Survey and with the Belgian reference population in 2024. The comparison reveals an overrepresentation of children and adolescents and underrepresentation of adults in the Finger prick dataset. This overrepresentation reflects in large part the sampling strategy of the Food Consumption Survey which oversampled children and adolescents in order to allow for age-specific estimations.

Table 1 | Distribution of the Belgian reference population aged 3 years and above, the Finger prick sample and the FCS sample, by age and sex, Food Consumption Survey 2022-2023, Belgium

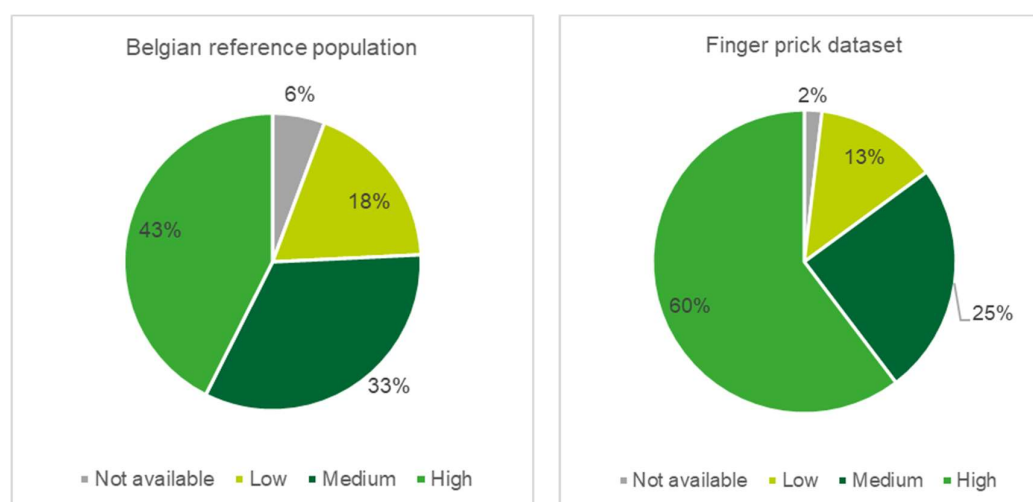
		% in the Belgian population	% in the Finger prick sample	% in the FCS* sample
Children (3-9 years)	Girls	4	8	11
	Boys	4	8	11
Adolescents (10-17 years)	Girls	5	12	12
	Boys	5	13	12
Adults (18-64 years)	Women	31	18	15
	Men	31	17	16
Older adults (65 years and +)	Women	11	11	11
	Men	9	12	11

*FCS sample = sample of participants in the Food consumption survey (excluding the additional sample in Brussels and in the German-speaking community).

62% of the Finger prick participants lived in Flanders, 6% lived in Brussels and 32% in Wallonia. Compared to the Belgian reference population of 2024, we observe a slight overrepresentation of persons living in Flanders (58% in the reference population) and underrepresentation of those living in Brussels (11% in the reference population). This discrepancy with the reference population was also observed in the full sample of participants in the Food consumption survey (excluding the additional sample in Brussels and in the German-speaking community), where 60% of the participants lived in Flanders, 6% in Brussels, and 34% in Wallonia.

Figure 2 shows that persons included in the Finger prick dataset came from households with a higher education level than that observed in the Belgian reference population. Indeed, 60% of the sample came from household with a high education level while this percentage is 43% in the Belgian population. This difference with the reference population was also observed in the full sample of participant in the Food consumption survey.

Figure 2 | Distribution of the Belgian reference population and the Finger prick dataset by education level, Food Consumption Survey 2022-2023, Belgium



Low = low secondary education and lower; Medium = upper secondary and post-secondary education; High = higher education.