

2 Study design

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2.1 Development of the HLS₁₉ study design

The HLS₁₉ was planned as a cross-sectional multi-center survey study that was meant to be as standardized as possible to allow comparisons across the national surveys that were part of the international study. To ensure this, adequate structures, and procedures for cooperation in the HLS₁₉ were developed by the M-POHL consortium. M-POHL relied on the experience and example of the European Commission's HLS-EU study (HLS-EU-Consortium 2012; Sørensen et al. 2012; Sørensen et al. 2013; Sørensen et al. 2015) and was guided by the WHO's Health Behavior in School-Aged Children study (HBSC) (<http://www.hbsc.org/>) to establish the necessary standards for working together and to create a framework for repeating the study over time. This involved defining the rights and duties of the project partners and implementing certain governance and work structures.

For the HLS₁₉, an International Coordination Center (ICC) was established to enable international coordination and support for the national HLS₁₉ Partners. The ICC was situated within the WHO CC for Health Promotion in Hospitals and Health Care in the Department of Health Literacy and Health Promotion at the Austrian National Public Health Institute (Gesundheit Österreich GmbH, GÖG). The HLS₁₉ Member Countries (the national partners in the project) had to ensure that national participation took place in accordance with the internationally agreed set of rules, especially those laid down in the HLS₁₉ Study Protocol.

The decisions on developments for the HLS₁₉ Project were taken jointly by two assemblies of representatives of the HLS₁₉ Partners (i.e., the HLS₁₉ Policy Assembly and the HLS₁₉ Research Assembly). M-POHL members who did not participate in the HLS₁₉ Project had observer status for the HLS₁₉ Project (i.e., the HLS₁₉ Observer Group).

To fulfill the research part, a National Study Center (NSC) was contracted to conduct the HLS₁₉ Project in each participating country, providing national data, compiling a country report, and representing their HLS₁₉ Member Country at the HLS₁₉ Research Assembly. To fulfill the policy role in the HLS₁₉ Project, Ministries of Health sent a member of staff or nominated a representative from another suitable institution for the HLS₁₉ Policy Assembly.

Following the examples of the HLS-EU and HBSC, specific tasks for preparing the survey were conducted by temporary HLS₁₉ Working Groups. These groups were established to deal with underlying research concepts and theories, methodological issues, and thematic areas as well as to translate research findings into policy recommendations.

An HLS₁₉ Study Protocol was developed step by step by the HLS₁₉ Consortium as a guiding document for any decisions relevant for the research.

A study design for data collection and sampling was developed to keep a balance between standardizing the data collection and sampling within an international multi-center study to enable benchmarking between the data collection in the participating countries. At the same time, it should leave enough room and flexibility for country-specific needs and accommodate countries'

practical and financial conditions and necessities. As a result, the study design was sufficiently flexible to facilitate the participation of all interested countries. Regarding the mode of data collection, this flexibility became an asset in the light of the Covid-19 pandemic, which forced some countries to change their previously chosen type of data collection (i.e., face to face) to telephone or online data collection. On the other hand, the different types of data collection limit the comparability of results across participating countries to a considerable degree.

In this chapter, the study design is described in terms of defining the population and sample size, methods of sampling, and the procedures for data collection as well as for translating and field testing the instruments. The development of the instrument itself is then dealt with in Chapter 3.

2.2 The HLS₁₉ study design

Definition of the population

The HLS₁₉ study population was defined as all permanent residents aged 18 and above living in private households in the countries participating in the study. (This is different from the HLS-EU, which included European citizens aged 15+ years.)

Sample size

A sample size was determined of at least 1,000 persons for each country, which is the same as the standard sample size per country in the HLS-EU. However, most participating countries in the HLS₁₉ study chose a larger sample.

As a rule, at least 80% of the HLS₁₉ core items, consisting of the 12 items measuring General HL and the 31 correlate items, needed to be answered to be accepted as a complete interview.

Methods of sampling

A multi-stage random sampling procedure was recommended as the main method of sampling, using the Eurobarometer standard as a reference, like in the HLS-EU study. For PAPI/CAPI, it was recommended that the sampling be based on a random selection of sampling points after stratification for gender, age groups, population density, and geographical areas/units. Quota sampling was considered acceptable if the quota were representative of the population regarding the above criteria. For data collection using CATI or CAWI, the methods of sampling were adapted to the characteristics of these methods of data collection (see Subsection 2.4.1 Survey sampling procedure and response rates).

Time frame of data collection

Originally the intention was to collect data between November 2019 and April 2020, but due to the Covid-19 pandemic, the time frame had to be extended, and data were collected between November 2019 and June 2021.

Procedure for data collection

For the HLS₁₉ survey, data collection was performed separately in each participating country. In most countries, large data collection agencies were contracted by the National Study Centers to collect the data, but in some countries data collection was done by the National Study Center itself. In contrast, in the original HLS-EU study, data collection was performed by an international agency utilizing Eurobarometer standards for all participating countries.

The recommendation to use personal face-to-face interviews (PAPI or CAPI) as the preferred method for collecting data was given in the HLS₁₉ Study Protocol. The reasons for this preference were that personal face-to-face interviews would allow for better comparability with the original HLS-EU study, which had also used face-to-face data collection via either CAPI or PAPI. In addition, face-to-face interviewing makes it possible to use visual cue cards and to include the NVS test, a test of functional HL, for validation purposes. Other advantages of personal face-to-face interviews are that individuals with poor literacy skills are easier to reach and that unfamiliar words and questions may be clarified by the interviewers. Face-to-face data collection also has its disadvantages: data collection is more expensive and time consuming than CATI or CAWI, and respondents might feel more reluctant to share truthful answers on sensitive topics (e.g., financial deprivation). In addition, people may not open the door to interviewers anymore.

For these reasons, CATI and CAWI were also included in the HLS₁₉ Study Protocol as acceptable data collection methods. Due to the Covid-19 pandemic, many countries changed their initial preference for CAPI to CATI or CAWI.

Section 2.4.1 gives a detailed description of the guiding standards for data collection and sampling procedures as well as the actual methods of data collection and sampling procedures used by each country.

2.3 Translation and field testing of instruments

2.3.1 Description of the national translation processes

The HLS₁₉ instruments were developed in English by the HLS₁₉ Consortium (see Chapter 3) and translated into the national languages by the participating countries.

Recommended procedure for the translation process

The HLS₁₉ Study Protocol suggested the following procedure for translating the HLS₁₉ instruments:

The translation process should have two stages: first, two forward translations should be performed, one by the National Study Center (NSC) and one by the data collection agency. In a second stage, the NSC should compare the two translations and decide, in a consensus process with the agency, on the most appropriate translation in case of differences.

The questions on the correlates of HL in the HLS₁₉ instrument are partly identical to items in large international surveys (EHIS, ESS). Notes referring to these initial surveys are provided in the HLS₁₉ instruments. A supporting document on the correlate items has also been produced by the ICC to provide guidance and to support the implementation of the correlate items. It is recommended that NSCs should use already existing translations of these items by consulting documents relating to the above-mentioned international surveys.

Many translations of the HLS₁₉ instruments were created by the HLS₁₉ project partners (see Table 2.1 and Table 2.2 for details of the translated instruments by country). The HLS₁₉ instruments were translated into their national language(s) by 16 out of the 17 countries (Ireland used the original English version). Each NSC organized the translation process. This was mostly done by the data collection agencies and/or other professional translation services.

The translation processes are listed in Table 2.1 and Table 2.2. Different national versions of the instruments were created for the German, French, Israeli and Italian translations, namely three German versions (AT, CH, DE), three French versions (BE, CH, FR), three versions for the Israeli population (Hebrew, Arabic and Russian) and two Italian versions (CH, IT), as each participating country adapted the instruments to its cultural, linguistic, and healthcare context. Countries with common languages cooperated in translating the instruments.

The suggested procedure of performing two forward translations was implemented by ten countries (AT, BE (Dutch translation), CH (German translation), DE, DK, HU, IT, NO, SI, and SK). One forward translation was chosen by countries which cooperated with other countries using the same language (BE for the French translation, CH for the French and Italian translations). Although back translation was not required according to the study protocol, it was performed by four countries (IL, NO, RU, and SI).

Moreover, 14 countries chose additional ways of ensuring the quality of the translations, such as

- » cognitive interviewing (NO, SI),
- » focus groups (RU),
- » expert discussion/review (CH, CZ, RU, PT, and SK),
- » three forward translations (DK, SI),
- » comparison of the translation with the (national) HLS-EU translation (BG, CH, CZ, HU, DK, and NO), and
- » cooperation with other countries (AT, CH, DE, BE, and FR).

The final versions of the translated instruments were based on consensus processes in all countries. The different translations and, if applicable, the additional quality assurance methods for the translated instruments were agreed on by the different actors in the translation process.

Although the countries participating in the study did not face any major problems with the translations, some challenges were reported, such as adapting the wording of items to the national context without changing their meaning. A way of dealing with this was to add some examples to support the respondents' understanding. Adapting health service terminology to the national healthcare system was another challenge that was sometimes reported, but solutions were found each time.

Table 2.1:
Overview of the different processes used by each country to translate the instruments

	AT	BE	BG	CH	CZ	DE	DK	FR	HU
Translated languages	German	Dutch, French	Bulgarian	French, German, Italian	Czech	German	Danish	French	Hungarian
One forward translation		x (French)	x	x (French) x (Italian)	x				
Two forward translations	x	x (Dutch)		x (German)		x	x		x
Back translation									
Based on consensus processes	x	x	x	x	x	x	x	x	x
Other quality assurance methods for the translation	x	x	x	x	x	x	x	x	x
The translation procedure applied is marked with an "x"									

Source: HLS₁₉ Consortium

Table 2.2:

Overview of the different processes used by each country to translate the instruments (continued from Table 2.1)

	IE	IL	IT	NO	PT	RU	SI	SK
Translated languages	n.a.	Hebrew, Arabic, Russian	Italian	Norwegian	Portuguese	Russian	Slovenian	Slovak
One forward translation		x			x	x		
Two forward translations			x	x			x	x
Back translation		x		x		x	x	
Based on consensus processes		x	x	x	x		x	x
Other quality assurance methods for the translation					x	x	x	x
The translation procedure applied is marked with an “x”								

Source: HLS₁₉ Consortium

2.3.2 Description of national field-testing procedures

Recommended procedure for field testing

The HLS₁₉ Study Protocol suggested the following procedure for field testing the HLS₁₉ instruments:

In each partner country a field test is to be performed with the HLS₁₉ instruments. Countries with non-English national languages have to test the translated version of their national HLS₁₉. The field test must be performed by the data collection agency.

Sample size of the field test: 30 interviews. Purposeful sampling is suggested to ensure an equal distribution of participants in terms of age, gender, and education.

The data collection agency should compile a field-test report and send it to the NSC. The field-test report should include information on the participants, the comprehensibility of each item, and the length in minutes of each part of the survey and the full interview, as well as any problems experienced and suggestions for changes, e.g., of the wording of an item.

In the case of an online survey, the aim of the field (or pilot) test is specifically to: (1) check that the questions asked and the proposed response modalities were fully understood by the respondents, (2) validate the average time needed to complete the survey, and (3) consider the need to

include short instructions that can be accessed with a simple click, thus allowing respondents to obtain additional information in case the terminology used is not clear.

Field testing was performed to check whether the items in the survey were fully understood by respondents and to assess the feasibility of its implementation using the data collection method chosen for the country. Table 2.3 to Table 2.6 provide an overview of the procedures implemented for field testing in the participating countries, grouped by the main type of data collection. All the countries, except Bulgaria, performed a field test (16 out of 17). The sample size for these field tests varied by country, from six interviews in Belgium to 161 interviews in Italy, but for most countries, the field tests involved at least 30 completed interviews (8 out of 16 countries). Germany was the first country to conduct the national field test (in November 2019). The German field-test results were taken into consideration when developing the final English version of the HLS₁₉ instruments. None of the countries experienced major difficulties during the field test, and only slight changes were made due to the results of the field testing and interviewers' feedback in 12 countries (AT, BE, CH, CZ, DE, FR, HU, IT, NO, PT, SK, and SI). Such changes concerned language adaptations, removing brackets around examples, adding examples, and clarifying instructions for the interviewers.

Countries that selected interviewees by purposeful sampling used gender, age groups, educational levels, degrees of urbanity, and administrative regional units (whereby different mixes of these criteria were used). Switzerland made use of intentional oversampling for younger and older age groups. Portugal decided to select Portuguese-speaking immigrants as interviewees for field testing to ensure that the language was accessible to all population groups. In eight countries (BE, CZ, DK, FR, IL, NO, RU, and SK), respondents were selected by convenience sampling. Additional test methods relating to all or part of the HLS₁₉ instruments were applied in six countries; these included in-depth cognitive analyses (CH), setting up focus groups (PT, RU), additional testing of the instruments by staff (DE) or a team of researchers (FR, IE), and expert interviews (DE, RU).

Countries that used CATI reported that they needed to adapt the wording of the instrument slightly because the visual cue cards for response categories could not be used (such visual cue cards were used with CAPI/PAPI). An example of an adaption is changing the interviewer's instruction for items measuring HL from "On a scale from very easy to very difficult, how easy would you say it is?" to "On a scale from very easy, easy, difficult, and very difficult, how easy would you say it is?".

Countries that used CAWI had to find a solution to deal with the possible response "don't know/does not apply". When using CAPI/PAPI and CATI, the "don't know/does not apply" category was not a direct option for the respondents but had to be coded by the interviewer as "no answer". Some countries using CAWI did not provide the option for "don't know/does not apply". In France, the poll company suggested keeping all items mandatory as the participants were members of a panel and keen to respond to all items. In Switzerland, the "don't know/does not apply" option was not displayed on the screen to prevent participants from choosing it without trying to understand the question. The option only appeared if participants did not tick any of the four answer categories and tried to continue, with the questions not answered indicated in red. The message text was: "please answer all questions; if this is not possible, click continue". In case a participant

clicked “continue” without filling in an answer, the software automatically coded the answer as “don’t know/does not apply”.

In Italy both CATI and CAWI were used. The response category “don’t know/does not apply” was explicitly offered for both data collection formats. The Italian field test revealed that CATI respondents showed a lower propensity to indicate the “very difficult” and “difficult” response options, despite being older and having a lower level of education than the interviewees targeted for CAWI. To reduce this effect, interviewers were instructed to specify at the beginning of the interview that there were no right or wrong answers and that it was particularly important that respondents answered each item truthfully.

Table 2.3:

Overview of the different field-testing procedures used in countries where CAPI/PAPI was the main method of data collection

Countries using CAPI/PAPI			
	DE	RU	SK
No. of interviews ≥ 30	x	x	x
Purposeful sampling	x		
Convenience sampling		x	x
Additional test method(s) applied	x	x	

The procedure applied is marked with an “x”

Source: HLS₁₉ Consortium

Table 2.4:

Overview of the different field-testing procedures used in countries where CATI was the main method of data collection

Countries using CATI					
	AT	HU	IE	NO	PT
No. of interviews ≥ 30	x	x	x	x	
Purposeful sampling	x	x	x		x
Convenience sampling				x	
Additional test method(s) applied			x		x

The procedure applied is marked with an “x”

Source: HLS₁₉ Consortium

Table 2.5:

Overview of the different field-testing procedures used in countries where CAWI was the main method of data collection

Countries using CAWI				
	BE	CH*	DK	FR
No. of interviews ≥ 30		x		
Purposeful sampling		x		
Convenience sampling	x		x	x
Additional test method(s) applied		x		x

* CH: CAWI was the main type of data collection and a small number of CATI interviews were carried out. In field testing both CAWI and CATI were used.

The procedure applied is marked with an "x"

Source: HLS19 Consortium

Table 2.6:

Overview of the different field-testing procedures used in countries where mixed methods were the main method of data collection

Countries using mixed methods					
	BG	CZ	IL	IT	SI
Type of method(s) used for field test	No field test performed	CAPI	CAWI	CAWI, CATI	CAPI
Type of method(s) used in main data collection	CAPI, CAWI	CAWI, CATI	CAWI, CATI	CAWI, CATI	CAPI, CAWI, paper and pencil
No. of interviews ≥ 30			x	x	x
Purposeful sampling				x	x
Convenience sampling		x	x		
Additional test method(s) applied					

The procedure applied is marked with an "x"

Source: HLS19 Consortium

2.4 Data collection and processing

2.4.1 Survey sampling procedures and response rates

Preliminary remark: The planning phase for the HLS19 started in 2018 with the aim of collecting data in 2019 and 2020. As the Covid-19 pandemic progressed, some partner countries which had initially planned face-to-face data collection decided to change to methods without physical contact.

In Table 2.7 and Table 2.8 Table 2.7, details of survey sampling and response rates are presented by country and grouped by the main type of data collection respectively, providing an overview of

the standard procedures used as well as on differences and similarities in procedures and performances. For each procedure, the approach recommended in the HLS₁₉ Study Protocol is shown in an information box.

Detailed recommendations when using PAPI/CAPI

For countries using CAPI or PAPI for data collection, it is suggested to draw samples from the general population using a multi-stage random sampling procedure. Quota samples are also acceptable. In each country a number of sampling points is to be drawn with probability proportional to population size and density. The drawing of sampling points has to be done in a systematic way in each stratum so that the number of interviews is equal to the proportion of the strata in the population aged 18 years and over. As a next step, it is suggested to randomly draw a starting address in each of the selected sampling points. Then, further addresses are to be selected as every Nth address using the standard random route procedure from the initial address. A respondent in each household is to be drawn using “the nearest birthday” method or the Kish method. Up to four attempts were allowed to obtain an interview with the selected respondent. No more than one interview should be conducted in each household.

Details of survey sampling and response rates in the countries using CAPI/PAPI as the main method of data collection can be found in Table 2.7.

In Germany, multi-stage random and quota sampling were combined to ensure the representativeness of the sample. First, sampling points in administrative regional units (NUTS2 level) were selected randomly bearing population density in mind. In those areas, respondents were sampled/recruited using a community-based quota sampling approach, with quota for gender in combination with age, size of household, and education.

In the Russian Federation, a multi-stage random sampling procedure was applied in three selected regions. Out of a list of all medical institutions in each of the three regions, 13 medical institutions (for Novosibirsk and Tatarstan) and ten medical institutions (for Karelia) were randomly selected, taking the proportion of people living in urban and rural areas into account. In each medical institution selected, four therapeutic areas were randomly selected for each region and then in each therapeutic area, the sampling of addresses (households) was also selected randomly. In Slovakia the sample was calculated by NUTS2. However, the data collection was organized via regional public health offices (36 across Slovakia) and the samples were then calculated by catchment areas to fulfill the national sample.

The number of net interviews in which 80% of the core items were answered are the basis for the data analyses in this international report. These varied from 2,143 in Germany to 5,660 in the Russian Federation. The response rates (calculated as the number of net interviews/number of individuals contacted) varied between 94% in the Russian Federation and 64% in Germany, while Slovakia had a response rate of 67%. The especially high response rate in the Russian Federation might be a result of the interviewers, i.e., doctors (therapists and paramedics) working in the Centers for Medical Prevention, who are well known and trusted by the population.

Table 2.7:

Details of survey sampling and response rates in the countries using CAPI/PAPI as the main method of data collection

Countries using CAPI/PAPI			
	DE (PAPI)	RU (PAPI)	SK (CAPI)
Sampling procedure	Multi-stage random and quota sampling	Multi-stage random sampling	Multi-stage random sampling
Source for the selection of households	Randomly selected sampling points combined with a community-based quota sample with 558 sampling points, which equaled the number of interviewers	List of household addresses in four therapeutic areas of selected medical institutions in the three regions: Novosibirsk, Karelia, and Tatarstan	36 regional public health offices
Number of sampling points (=interviewers)	558	48	42
Number of individuals contacted	3,394	6,926	3,220
Number of net interviews	2,162	6,493	2,171
Number of net interviews with 80% of the core items answered	2,143	5,660	2,145
Response rate %	64	94	67

Source: HLS₁₉ Consortium

Detailed recommendations when using CATI

For the telephone surveys, households should be selected using a random selection procedure in stages as described in PAPI/CAPI (see above). A CATI system should randomly generate landline numbers using the Random Digit Dialing (RDD) procedure. A dual-frame approach should be applied to ensure the inclusion of both landline phone and mobile phone users.

Details of survey sampling and response rates in the countries that used CATI as the main method of data collection can be found in Table 2.8. Of these countries, Austria and Hungary used multi-stage random sampling procedures. While in Austria the Randomized Last Digit Method was used, in Hungary a hybrid form of sampling was used in which stratification was based on regions/type of settlements (as in the face-to-face mode) to define the case numbers to achieve while ensuring random selection within the sample frame by using a pool of phone numbers drawn from public registries. Complemented by a quota controlling for gender/age/region/type of settlement during fieldwork, this ensured a representative sample with the same level of random selection as in the case of face-to-face surveys. In Ireland, random selection of mobile phone numbers using a Random Digit Dialing approach was used as the sampling procedure. In Norway, sample management was significantly improved by stratification of the random sample. This methodology splits the population into smaller groups from which a random sample is drawn from each stratum. This method ensures the correct proportion of the different population groups. In Portugal, the sampling procedure was also based on stratified random sampling, with placement according to the Portuguese population on the following variables: number of residents by NUTS III, gender, and

large age groups. A dual-frame approach including landline phone and mobile phone was implemented in four countries (AT, HU, NO, and PT), while in Ireland only mobile phone numbers were included.

The number of net interviews with 80% of the core items answered, serving as the basis for the analyses presented in this international report, varied from 1,195 in Hungary to 4,487 in Ireland.

The response rate (calculated as the number of net interviews/number of individuals contacted) was highest in Portugal at 69% and lowest in Hungary at 14%.

Table 2.8:

Details of survey sampling and response rates in the countries using CATI as the main method of data collection

Countries using CATI					
	AT*	HU	IE	NO	PT
Sampling procedure	Multi-stage random sampling procedure	Multi-stage random sampling procedure	Random digit dialing approach	Random sampling procedure within each stratum	Random stratified sampling procedure
Dual-frame approach applied	Yes	Yes	No	Yes	Yes
Source for the selection of telephone numbers	Registry of landline and mobile telephone numbers	Online public phonebook	Registry of mobile phone numbers	Registry of landline and mobile telephone numbers	Registry of landline and mobile telephone numbers
Number of telephone contacts	28,558	13,381	22,866	39,371	6,749
Number of individuals contacted	22,704	8,654	16,730	15,008	2,257
Number of net interviews	3,535	1,221	4,530	3,000	1,555
Number of net interviews with 80% of the core items answered and included in the HLS₁₉ international analyses	2,967	1,195	4,487	2,855	1,247
Response rate %	16	14	27	20	69

* In AT, data collection included additional interviews on a regional level (n=509) which were not used in the international analyses but which could not be extracted when calculating the response rate.

Source: HLS₁₉ Consortium

Detailed recommendations when using CAWI

For CAWI, a representative sample of the national population is usually constituted from a panel of internet users. To that effect, the following stepwise sampling procedure is to be followed: (1) A first group of potential respondents is selected from the panel based on established inclusion criteria (residents of the country aged 18–75 years); (2) Preselected potential respondents are invited by e-mail to participate in the survey; (3) For those who agree to participate, compliance with the inclusion criteria is verified; those who comply with the criteria can access the instrument via a personalized login; (4) After a first wave of responses, a second wave of potential respondents

is selected from the panel according to the pre-established quotas (defined by gender, age group, population density, and geographical areas/units) that are underrepresented; (6) This procedure is repeated until the sample is representative of the population for the pre-established quotas.

Details of survey sampling and response rates for the countries that used CAWI as the main method of data collection can be found in Table 2.9. Four countries used CAWI as the main type (BE, CH, DK, and FR). Quota sampling was used in Belgium and in France, where respondents were sampled from a pre-existing online access panel. Switzerland and Denmark used multi-stage random sampling to select respondents. Respondents in Switzerland were selected from the SRPH registry and an invitation letter was sent to all sampled individuals including a CAWI link; in case they preferred a telephone interview, a toll-free phone number was provided. In Denmark the sample was based on the Register of Civil Registration Numbers.

The number of net interviews with 80% of the core items answered, which are the basis of the analyses presented in this international report, varied from 1,000 in Belgium to 3,602 in Denmark. The response rate (calculated as the number of net interviews/number of invited participants) was highest in Switzerland, where 54% of the invited participants completed the survey. For Belgium, where data collection was carried out by an external organization using automated multi-source sampling, the number of invited participants (and response rate) is not available.

Table 2.9:

Details of survey sampling and response rates in the countries using CAWI as the main method of data collection

Countries using CAWI				
	BE	CH*	DK	FR
Sampling procedure	Quota sampling	Multi-stage random sampling	Multi-stage random sampling	Quota sampling
Source for the selection of respondents	Online panel	SRPH registry	Register of Civil Registration Numbers	Online panel
Number of participants invited (e-mail, letter)	–	4,764	27,727	47,102
Number of invited participants who agreed to participate	–	4,560	4,605	15,262
Number of net interviews	1,000	2,348 (+ CATI 210) Total: 2,558	3,679	2,003
Number of net interviews with 80% of the core items answered and included in the HLS₁₉ international analyses	1,000	2,312 (+ CATI 190) Total: 2,502	3,602	2,003
Response rate %	–	54**	13	4

* CH: CAWI was the main type of data collection; additionally, a small number of CATI interviews were conducted.

** Response rate for both types of data collection.

Source: HLS₁₉ Consortium

Detailed recommendations when using multiple or mixed methods

When mixed methods are used for data collection, the recommendations for the specific data collections described above apply.

Details of survey sampling and response rates for the countries using mixed or multiple methods can be found in Table 2.10.

Bulgaria used a random quota sample for CAWI and a proportional stratified sampling procedure for CATI. The Czech Republic used CAWI and CATI for data collection, with random quota sampling for CAWI and a random digital procedure for CATI. Israel, where a combination of CAWI and CATI was used, and Slovenia, where CAPI, CAWI, and paper and pencil were applied, both chose a multi-stage random sampling strategy. In Slovenia, respondents were sampled from the Central Population Registry. In Italy, a proportional stratified sampling procedure selecting respondents randomly was applied for CATI and CAWI data collection.

The number of net interviews with 80% of the core items answered, which are the basis for this international report, was 865 for Bulgaria, 1,315 for Israel, 1,599 for the Czech Republic, 3,360 for Slovenia, and 3,500 for Italy.

In Bulgaria, the CAWI sample of net interviews with 80% of the core items answered (463) was slightly higher than the CATI sample (402). In the Czech Republic, the CAWI sample of net interviews with 80% of the core items answered (1,067) was twice as high as the CATI sample (532), CATI being selected to contact the older population, which was less represented in the e-mail registry. In Israel, CATI sampling focused on the Arab population, which was expected to be more difficult to reach via the internet panel; 311 net interviews with 80% of the core items answered were collected by CATI and 1,004 by CAWI. In Italy, the CATI survey was targeted primarily at over 65 year olds and CAWI at younger people. However, to allow a comparative analysis of the possible effects derived from using two data collection tools, both methodologies were applied to all age groups. Out of the 3,500 Italian net interviews with 80% of the core items answered, 2,949 were collected by CAWI and 551 by CATI. In Slovenia, 1,860 net interviews with 80% of the core items answered were collected by CAPI, 1,488 by CAWI, and 12 by self-administered paper-and-pencil questionnaire, with the mixed-method mode used to increase the response rates to a maximum level despite the Covid-19 pandemic. The procedure in Slovenia was as follows: Invitation letters were sent to all 6,000 people in the sample, inviting them to participate online and informing them that an interviewer would come and visit them for personal interviews if they did not complete the online questionnaire within the next seven days. Interviewers were instructed to make up to four contact attempts in person, at different times on different days, and then visited the selected respondents at their home addresses. If the latter did not want to complete the questionnaire with an interviewer, they were again reminded that they could do it online or were even offered a self-administered paper-and-pencil questionnaire with a return prepaid envelope to send it back.

Table 2.10:

Details of survey sampling and response rates in the countries using mixed methods for data collection

Countries using mixed methods											
	BG		CZ		IL		IT		SI		
Type of method(s) used in the main data collection	CAWI	CATI	CAWI	CATI	CAWI	CATI	CAWI	CATI	CAPI	CAWI	Paper and pencil, self-administered
Sampling procedure	Random quota sampling	Proportional stratified sampling	Random quota sampling	Random digital procedure	Multi-stage random sampling		Proportional stratified sampling		Multi-stage random sampling		
Dual-frame approach applied (CATI only)		–	–	x	–	x		x	–	–	–
Source for the selection of respondents	Internet panel	Telephone register	Online panel	Main public telephone directory	Online panel	Telephone register	SWG Panel Community	Main public telephone directory	Central Population Registry	Central Population Registry	Central Population Registry
Number of initial contacts (addresses/telephone numbers) or invited participants (e-mail, letter)	1,654	1,238	3,455	9,952	9,400	1755	13,441	11,075	6,000		
Number of individuals contacted in CAPI/CATI/ paper and pencil or number of invited participants who agreed to participate in CAWI	948	912	1,797	4,635	1,861	300	7,627	4,973	5,585		
Number of net interviews	555	402	1,070	580	1,004	300	3,357	582	3,412		
Number of net interviews with 80% of the core items answered and included in the HLS ₁₉ international analyses	463	402	1,067	532	1,004	311	2,949	551	1,860	1,488	12
	Total: 865		Total: 1,599		Total: 1,315		Total: 3,500		Total: 3,360		
Response rate %	59	44	31	13	54	18	25	12	61*		

* Response rate for all types of data collection calculated as the number of net interviews/number of individuals contacted in CAPI/CATI/paper and pencil or the number of invited participants who agreed to participate in CAWI.

"x"=yes, "–"=no

Source: HLS₁₉ Consortium

2.4.2 Study population and representativeness

Definition of study population

The HLS₁₉ study target population is permanent residents aged 18 years and older living in private households.

Recommended procedure for stratification

To increase representativeness, stratification is suggested for gender, age groups, population density, and geographical areas/units. For stratification by age group, seven age groups are suggested: 25 or younger, 26–35, 36–45, 46–55, 56–65, 66–75, 76 or older. As for stratification for population density, three categories are suggested: predominately urban, intermediate, and predominately rural. According to this definition, predominantly urban regions have a rural population of less than 20%, intermediate regions between 20% and 50%, and predominantly rural regions more than 50%. For non-EU countries a similar classification should be used. NUTS2¹ areas/units are suggested for stratification by geographical area/unit. Non-EU countries should use equivalent standards.

Table 2.11 to Table 2.14 provide details regarding the representativeness of the samples, including the key demographics used for stratification when selecting the sample and the data on which stratification was based. All countries targeted the permanent resident population aged 18 years and older living in private households. None of the countries carried out purposeful oversampling or undersampling of subpopulations.

Details regarding the study population and representativeness of the sample for countries using CAPI/PAPI as the main method of data collection are shown in Table 2.11. Limitations regarding representativeness must be considered for the sample of the Russian Federation, for which respondents were selected from only three regions, Novosibirsk, Karelia, and Tatarstan. The Russian Federation has highly heterogeneous areas and populations, and therefore it is not possible to draw conclusions regarding the whole country based on data from just three regions. The Russian Federation also reported that the age group of 75+, especially men in rural areas, was the least covered, since men in rural areas usually die at a younger age.

Stratification for key demographics was applied to different degrees. Further variables for stratification were used in Germany and Slovakia. Target distributions were based on the 2018 micro-census in Germany, on national census data from 2019 in the Russian Federation, and on national census data from 2018 in Slovakia.

¹ NUTS: nomenclature of territorial units for statistics as used by the statistical office of the European Union (EUROSTAT).

Table 2.11:

Details of study population and representativeness in countries using CAPI/PAPI as the main method of data collection

Countries using CAPI/PAPI			
	DE	RU	SK
Limitations on representativeness		(1) Representative for the three regions, not the whole country (2) Age group 75+ less covered	
Variables considered for stratification/quota sampling			
» Gender	x	x	x
» Age groups (no. of groups)	x (5)	x (7)	x (7)
» Population density	x	–	x
» Administrative regional units (NUTS level or other)	x (NUTS2)	–	x (NUTS2)
» Other variables, described	3 levels of education and 2 groups by size of household	–	36 Regional Public Health Office areas
Stratification/quota based on (which data)	Microcensus 2018	National census 2019	National census 2018
“x”=yes, “–”=no			

Source: HLS₁₉ Consortium

Details regarding the study population and representativeness of the sample for countries that used CATI as the main method of data collection are shown in Table 2.12. One major limitation in representativeness in CATI was that people with secret or non-listed phone numbers (in Norway) or those who did not make their phone numbers and names available for the purpose of phone surveys (in Hungary) could not be contacted. In Ireland, only mobile phone numbers were used, but as there is near-universal ownership of mobile phones in Ireland, this is unlikely to have impacted representativeness. Portugal included the mainland population and not that of its islands.

Stratification for key demographics is shown in Table 2.12. In Ireland no stratification was carried out on the target population with target distributions based on census data.

Table 2.12:

Details of study population and representativeness in countries using CATI as the main method of data collection

Countries using CATI					
	AT	HU	IE	NO	PT
Limitations on representativeness		People who did not allow the authorities to make their phone numbers and names available for the purpose of phone surveys were excluded	Only mobile phone numbers were used (but near-universal ownership of mobile phones in Ireland)	People with secret or non-listed phone numbers were excluded	Mainland population included/no population from the islands included
Variables considered for stratification/quota sampling					
» Gender	X	x	–	x	x
» Age groups (no. of groups)	x (7)	x (3)	–	x (7)	x (3)
» Population density	X	–	–	–	–
» Administrative regional units (NUTS level or other)	x (NUTS2)	x (NUTS2)	–	x (11 regional units)	x (NUTS3)
» Other variables, described	3 levels of education	3 levels of education	–	–	–
Stratification/quota based on (which data)	Microcensus 2017	National census 2011	n.a.	National census 2020	National census 2011

"x"=yes, "–"=no

Source: HLS₁₉ Consortium

Details regarding the study population and representativeness of the sample for countries that used CAWI as the main method of data collection are shown in Table 2.13. In France and Belgium, one limitation was that only participants belonging to a pre-existing online panel were sampled. In France people aged 76 or older were not covered. Denmark reported that individuals without an official e-mail ("e-box") were excluded, but since this concerns only a small proportion of Danish residents, this is considered a minor limitation. Stratification for key demographics was applied to different degrees in the countries. Target distributions were based on census data (see Table 2.13).

Table 2.13:

Details of study population and representativeness in countries using CAWI as the main method of data collection

Countries using CAWI				
	BE	CH*	DK	FR
Limitations on representativeness	Only participants of an online panel	–	Individuals without official e-mail “e-box” were excluded (=small proportion of Danish residents)	Only participants of an online panel (IPSOS i–say), people aged 76 or older were not covered
Variables considered for stratification/quota sampling				
» Gender	x	x	x	x
» Age groups (no. of groups)	x (3)	x (7)	x (7)	x (6)
» Population density	–	x	x	x
» Administrative regional units (NUTS level or other)	x (Region)	x (NUTS3)	–	x (NUTS2)
» Other variables, described	–	–	–	–
Stratification/quota based on (which data)	National census 2011	National census, 2020	National census Q4, 2020	National census 2015

* CH: CAWI was the main type of data collection; additionally, a small number of CATI interviews were conducted.

“x”=yes, “–”=no

Source: HLS₁₉ Consortium

Details about the study population and representativeness of the sample for countries that used mixed or multiple methods for data collection are shown in Table 2.14. A possible limitation on representativeness is that the internet panel might oversample people with high Digital Health Literacy. Another factor affecting representativeness might be the timing of the data collection.

Variables considered for stratification/quota sampling are detailed in Table 2.14.

Table 2.14:

Details of study population and representativeness in countries using mixed methods for data collection

Countries using mixed methods					
	BG	CZ	IL	IT	SI
Limitations on representativeness	The internet panel probably oversamples people with high Digital Health Literacy.				
Variables considered for stratification/quota sampling					
» Gender	x	x	x	x	x
» Age groups (no. of groups)	X (12)	x (4)	x (7)	x (7)	x (13)
» Population density	–	x	–	x	–
» Administrative regional units (NUTS level or other)	X (NUTS2)	x (NUTS3)	–	X (NUTS2)	x (NUTS3)
» Other variables, described	Location (city/ village)	3 levels of education	Geographical periphery measure	–	4 levels of education
Stratification/quota based on (which data)	National Census 2011	National census 2011 and 2019	Israel Central Bureau of Statistics	National census 2020	National census 2020

“x”=yes, “–”=no

Source: HLS₁₉ Consortium

2.4.3 Fieldwork

Recommended procedure for fieldwork

For performing data collection, it is suggested that the HLS₁₉ National Study Centers sign a contract with data collection agencies. The data collection agency should ensure high quality data collection and provide detailed documentation of the fieldwork.

Table 2.15 to Table 2.18 provide information on who performed the data collection, the time taken for data collection, and the average length of interviews in minutes as well as the shortest and longest interview times. Data collection was carried out in most of the participating countries by national data collection agencies and in three cases by the HLS₁₉ National Study Centers (BG, DK, and SK).

The planning phase for the HLS₁₉ started in 2018 with the aim of collecting data in 2019 and 2020. Due to the Covid-19 pandemic, the timeframe for collecting data was extended and the data collection phase lasted from November 2019 until June 2021.

The timeframe for data collection in the Russian Federation was from November to December 2019 and in Germany² from December 2019 to January 2020, so in both countries, data were collected before the Covid-19 pandemic. All other participating countries started data collection during the pandemic, which reached different phases of intensity in the different countries at different points in time. Slovenia started data collection in March 2020 and had to stop after six days due to the pandemic, starting a second wave of data collection from June 2020 to August 2020. For Belgium, the first part of data collection took place just before the pandemic, with a second part during the pandemic.

In the Czech Republic there was a spike in the second Covid-19 pandemic wave in November 2020, with many restrictions and measures. At that time the public debate on vaccination also started. Many health- and vaccination-related items might have unusual results due to this distortion. Some segments of the population (e.g., elderly, people with chronic diseases) might have reacted more sensitively than others.

The average length of the interviews varied between 13 min in Israel and Italy for CAWI respondents and 65 min in Germany (PAPI). Differences in the average length of the interviews depend on the number of items included in the questionnaire and the different types of data collection. In Denmark, where CAWI was used for data collection, the length was measured from opening the survey to finishing the last page (the median length was 22 minutes).

²

DE conducted an additional round of data collection in August and September 2020 in order to assess the effects of Covid-19 on HL. These data were not included in this report but were analyzed and reported on a national level.

Table 2.15:

Details of fieldwork in countries using CAPI/PAPI as the main method of data collection

Countries using CAPI/PAPI			
	DE (PAPI)	RU (PAPI)	SK (CAPI)
Data collection performed by	Institut fuer Demoskopie Allensbach GmbH	Center of Medical Prevention of the Republic of Karelia, Regional Center of Medical Prevention of the Novosibirsk region, Regional public organization "Golden Heart", Republic of Tatarstan	Regional Offices of Public Health managed by the Public Health Authority of the Slovak Republic (HLS ₁₉ National Study Center)
Time of data collection	13.12.2019–27.01.2020	01.11.2019–20.12.2019	22.06.2020–14.09.2020
Average interview length (in minutes)	65	28	28
Shortest interview (in minutes)	15	8	10
Longest interview (in minutes)	180	120	95

Source: HLS₁₉ Consortium

Table 2.16:

Details of fieldwork in countries using CATI as the main method of data collection

Countries using CATI					
	AT	HU	IE	NO	PT
Data collection performed by	Das Österreichische Gallup Institut	TÁRKI Social Research Institute	Ipsos MRBI	Norstat Norge AS	Universidade de Aveiro – CIMAD – Centro de Investigação em Marketing e Análise de Dados
Time of data collection	16.03.2020–26.05.2020	02.12.2020–20.12.2020	24.07.2020–07.12.2020	04.04.2020–13.05.2020	10.12.2020–13.01.2021
Average interview length (in minutes)	26	23	29	21	15
Shortest interview (in minutes)	15	10	20	8	9
Longest interview (in minutes)	60	84	60	59	30

Source: HLS₁₉ Consortium

Table 2.17:

Details of fieldwork in countries using CAWI as the main method of data collection

Countries using CAWI				
	BE	CH*	DK	FR
Data collection performed by	Medistrat	M.I.S. Trend	Aalborg University and Aalborg University Hospital (HLS ₁₉ National Study Center)	IPSOS
Time of data collection	30.01.2020–28.02.2020 and 01.10.2020–26.10.2020	05.03.2020–29.04.2020	11.12.2020–05.02.2021	27.05.2020–05.06.2020 and 08.01.2012–18.01.2021
Average interview length (in minutes)	–	16 (CATI: 21)	39	22
Shortest interview (in minutes)	–	5 (CATI: 8)	2	10
Longest interview (in minutes)	–	110 (CATI: 104)	1,435	329
* CH: CAWI was the main type of data collection; additionally, a small number of CATI interviews were conducted.				

Source: HLS₁₉ Consortium

Table 2.18:

Details of fieldwork in countries using mixed methods for data collection

Countries using mixed methods											
	BG		CZ		IL		IT		SI		
Type of method(s) used in the main data collection	CATI	CAWI	CAWI	CATI	CAWI	CATI	CAWI	CATI	CAPI	CAWI	Paper and pencil
Data collection performed by	Faculty of Public Health, Medical University, Sofia		STEM – Ústav empirických výzkumů, z.ú.		Sekernet	Statnet	SWG spa		IPSOS Slovenija		
Time of data collection	15.08.2020–30.11.2020	1.04.2021–1.06.2021	10.11.2020–24.11.2020		15.12.2020–10.1.2021		08.04.2021–08.05.2021		9.3.2020–15.3.2020 (stopped due to Covid-19) and 9.6.2020–10.8.2020		
Average interview length (in minutes)	30	15	19	34	13	19	13	14	28	31	–
Shortest interview (in minutes)	15	10	7	12	–	14	7	7	7	6	–
Longest interview (in minutes)	45	30	111	102	–	24	27	33	124	–	–

"–"=no information available

Source: HLS₁₉ Consortium

2.4.4 Data quality checks and data weighting

Recommendation to perform quality checks on data and to weight the sample

The HLS₁₉ Study Protocol suggests that national samples should be weighted by gender, age group, population density, and geographical areas/units, based on national census data to increase representativeness. Quality checks for data entry and outcomes are recommended.

Table 2.19 to Table 2.22 provide an overview of the data quality checks on data entry and outcomes, information on weighting by demographics, and the source of data used for applying weights. Quality checks on data entry and outcomes were performed by all participating countries. Weight factors used to weight respondents by gender were included in all country data sets. Fourteen countries weighted their data for different socio-demographic factors; two countries (PT and SK) did not weight their data. For weighting by age groups, the number of age groups varied between three and thirteen, with most countries using seven groups as suggested in the HLS₁₉ Study Protocol. Population density was either weighted using three groups, predominately urban, intermediate, and predominately rural (AT, CH, DE, DK, and IT) or by two groups differentiating between urban and rural areas (FR, RU), or by four quota categories (CZ). For weighting by administrative regional units, NUTS2 was used in Austria, France, and Italy. Switzerland and Slovenia used NUTS3. Other administrative geographical units were used in Germany (17 federal states, whereby West Berlin and East Berlin were included separately), Norway (11 administrative geographic units), and Belgium (three regions). Levels of education were used for weighting the data by six countries (AT, CZ, DE, HU, IE, and SI).

Table 2.19:

Details of data quality checks and data weighting in countries using CAPI or PAPI as the main method of data collection

Countries using CAPI/PAPI			
	DE	RU	SK
Quality checks on data entry performed	x	x	x
Quality checks on data outcomes performed	x	x	x
Weighted by gender	x	x	–
Weighted by age group (no. of groups)	x (7)	x (7)	–
Weighted by population density (no. of groups)	x (3)	x (2)	–
Weighted by administrative regional units (NUTS level or other)	x (17 federal states, whereby West Berlin and East Berlin were included separately)	–	–
Other weighting	8 levels of education	–	–
Weights are based on (which data)	Microcensus 2018	National census 2019	–
"x"=yes, "–"=no			

Source: HLS₁₉ Consortium

Table 2.20:

Details of data quality checks and data weighting in countries using CATI as the main method of data collection

Countries using CATI					
	AT	HU	IE	NO	PT
Quality checks on data entry performed	x	x	x	x	x
Quality checks on data outcomes performed	x	x	x	x	x
Weighted by gender	x	x	x	x	–
Weighted by age group (no. of groups)	x (7)	x (3)	x (7)	x (7)	–
Weighted by population density (no. of groups)	x (3)	–	–	–	–
Weighted by administrative regional units (NUTS level or other)	x (NUTS2)	–	–	x (11 units)	–
Other weighting	3 levels of education	3 levels of education, 3 settlement types	9 levels of education	–	–
Weights are based on (which data)	Microcensus 2017	National census 2011	Labour Force Survey 2020	National census 2020	–

"x"=yes, "–"=no

Source: HLS₁₉ Consortium

Table 2.21:

Details of data quality checks and data weighting in countries using CAWI as the main method of data collection

Countries using CAWI				
	BE	CH*	DK	FR
Quality checks on data entry performed	x	x	x	x
Quality checks on data outcomes performed	x	x	x	x
Weighted by gender	x	x	x	x
Weighted by age group (no. of groups)	x (3)	x (7)	x (7)	x (7)
Weighted by population density (no. of groups)	–	x (3)	x (3)	x (2)
Weighted by administrative regional units (NUTS level or other)	x (regions)	x (NUTS3)	–	x (NUTS2)
Other weighting	–	–	–	–
Weights are based on (which data)	National census 2011	National census 2020	National census Q4, 2020	National census 2015

* CH: CAWI was main type of data collection; additionally, a small number of CATI interviews were conducted.

"x"=yes, "–"=no

Source: HLS₁₉ Consortium

Table 2.22:

Details of data quality checks and data weighting in countries using mixed methods for data collection

Countries using mixed methods					
	BG	CZ	IL	IT	SI
Quality checks on data entry performed	x	x	x	x	x
Quality checks on data outcomes performed	x	x	x	x	x
Weighted by gender	x	x	x	x	x
Weighted by age group (no. of groups)	x (12)	x (4)	x (10)	x (7)	x (13)
Weighted by population density (no. of groups)	–	x (4)	–	x (3)	–
Weighted by administrative regional units (NUTS level or other)	x (NUTS2)	–	–	x (NUTS2)	x (NUTS3)
Other weighting	Location (city/village)	3 levels of education	Religion	–	4 levels of education
Weights are based on (which data)	National Census 2011	Data from demographic yearbook	Israel Central Bureau of Statistics	National census 2020	National census 2020

“x”=yes, “–”=no

Source: HLS19 Consortium

2.4.5 Ethical considerations, data protection, and informed consent by country

Recommendations for ethical approval, data protection, and informed consent

In countries where national regulations foresee a review of ethical conduct requirements (e.g., through ethics committees at universities), it has to be ensured that these countries meet these requirements. Where such requirements and ethics committees are not in place, countries are required to adhere to national ethical guidelines concerning population surveys and submit their protocol to any relevant board at national level.

Furthermore, each country participating in the HLS19 was required to:

- » comply with applicable national data protection legislation (EU countries additionally needed to comply with the EU General Data Protection Regulation (GDPR) (Regulation (EU) 2016/679 2016),
- » guarantee that study participants were fully informed about the research and procedures in place to enable them to withdraw from the study easily,
- » employ written and/or oral procedures for informed consent, and
- » fully document their national procedures.

In Table 2.23 and Table 2.24, details of ethical approval, compliance with data protection rules, and informed consent are shown by country. National regulations on the need to perform a scientific ethical review vary and ten countries had to get approval from an ethics committee. One country (DE) was not obliged to obtain such approval but applied for it nevertheless and was granted it. All participating countries ensured compliance with data protection and explicitly obtained informed consent from respondents before carrying out any interviews.

Table 2.23:

Details of ethical approval, compliance with data protection rules, and informed consent

	AT	BE	BG	CH	CZ	DE	DK	FR	HU
Ethical approval needed?	–	–	–	–	–	–	–	x	x
Ethical approval obtained?	–	–	–	–	–	x	–	x	x
Compliance with data protection ensured?	x	x	x	x	x	x	x	x	x
Informed consent obtained?	x	x	x	x	x	x	x	x	x
"x"=yes, "–"=no									

Source: HLS₁₉ Consortium

Table 2.24:

Details of ethical approval, compliance with data protection rules, and informed consent
(continued from Table 2.23)

	IE	IL	IT	NO	PT	RU	SI	SK
Ethical approval needed?	x	x	x	x	x	x	x	x
Ethical approval obtained?	x	x	x	x	x	x	x	x
Compliance with data protection ensured?	x	x	x	x	x	x	x	x
Informed consent obtained?	x	x	x	x	x	x	x	x
"x"=yes, "–"=no								

Source: HLS₁₉ Consortium

2.5 Summary of study design and its implementation in the HLS19: Discussion and conclusions

This chapter describes the HLS₁₉ study design, especially the translation and field testing of the instruments as well as methods of data collection and processing.

The main features of the cross-sectional study design developed and decided on by the HLS₁₉ Consortium and its working groups were to do a national survey for adults aged 18 and above living in private households in the 17 participating countries. A minimum sample size of 1,000 was defined, but most countries used larger samples. A multi-stage random sampling procedure was recommended as a main standard for the methods of sampling, using stratification for gender, age group, population density, and geographical areas/units. Quota sampling was considered acceptable if the quota were representative of the population regarding the above criteria. For data collection using CATI or CAWI, the methods of sampling were adapted to the characteristics of

these methods of data collection. Using personal face-to-face interviews (PAPI or CAPI) was recommended, but CATI and CAWI were also included in the HLS₁₉ Study Protocol as being acceptable and were used more often than originally planned due to Covid-19. The time frame for data collection was originally planned for November 2019 to April 2020 but had to be extended to June 2021 due to the Covid-19 pandemic. Countries had to find and commission a suitable agency to carry out data collection.

Although in principle based on the HLS-EU, the HLS₁₉ deviates from the HLS-EU study protocol in more than one aspect, which makes a comparison of results with the HLS-EU rather difficult. Of the 17 participating countries, four had already participated in the original HLS-EU study (AT, BG, DE, and IE), another nine had administered their own national survey at a later date using the HLS-EU study design and instrument (BE, CH, CZ, DK, HU, IL, IT, NO, and PT), while four countries carried out their first national population survey on HL in the HLS₁₉ study (FR, RU, SI, and SK).

For the translation and field testing of instruments, recommendations were provided, which were adhered to by countries to varying extents.

The same holds true for the methods of data collection administered by the individual countries. Four “pure” types of data collection were used: PAPI (by DE and RU), CAPI (by SK), CATI (by AT, HU, IE, NO, and PT), and CAWI (by BE, CH (with a few CATI), DK, and FR). There were also mixed types, namely CAWI + CATI (by BG, CZ, IL, and IT) and CAPI + CAWI (by SI). In addition to these different types of data collection, individual types were administered quite differently in detail by the countries employing them (e.g., selecting and approaching respondents, kind of interviewers, presenting questions in interviews, realized response rates).

Therefore, the comparability of results between countries participating in the HLS₁₉ is severely limited, more so for univariate measures than for measures of association. Due to further differences, a comparison of results from earlier HLS-EU studies with results from the HLS₁₉ is even more restricted.

The different kinds of data collection used in the countries participating in the HLS₁₉ and in the HLS-EU studies can affect the results in different ways:

First, different kinds of data collection use different procedures and sources of data to construct the samples, which can therefore represent different populations (Robling et al. 2010). Hoebel et al. (2014) found that socio-demographic characteristics differed significantly between study participants in paper, telephone, and online data collection procedures. Cornesse/Bosnjak (2018) found that web surveys have a significantly lower representativeness compared to other survey methods. It can be hypothesized that for personal interviews, better representation can be obtained of vulnerable groups in the population than for CATI or CAWI. This can partly be demonstrated by looking at the raw distributions of representativeness indicators in samples. Possibly, these effects can be dealt with partly by using weighting procedures.

Second, while most countries used probability samples, quota sampling was also used by some countries, partly due to the kind of data collection chosen, e.g., CATI, which can have effects on the representativeness of the raw sample.

Third, the response rates can differ for the three modes of data collection, which is clearly demonstrated by the considerable differences in response rates achieved for national samples in the HLS₁₉ study.

Fourth, the different communication situations when the interviewer is personally present, on the telephone, or when a computer is used can have different effects. According to the literature, one consistent result is that people interviewed by telephone tend to give more positive answers to scale questions than people completing online questionnaires (Christian et al. 2008; Lugtig et al. 2011; Ye et al. 2011) and that online surveys yield more accurate and complete responses than telephone surveys (Chang/Krosnick 2009; Kreuter et al. 2009). Fessler et al. (2018) looked at variation in interview modes in the Austrian EU SILC panel and found that a switch from CAPI to CATI led to major changes in response behavior (unit and item non-response) and answering behavior (potential misreporting), leading to large differences in estimated inequality measures.

In addition, differences in sample size may affect the precision of the results.

Collecting data in different seasons of the year, with the respondents' experiences of illness at the time of the survey differing, may also influence responses on health-related issues. Moreover, the national surveys took place in different stages of the Covid-19 crisis, and the communication strategies used by the countries also differed.

Conclusions

The differences in the way the study design was fulfilled across countries severely restrict direct and precise comparisons between the HLS₁₉ countries, and even more so with the results of earlier HLS-EU studies. Nevertheless, this international study of 17 countries trying to follow a common study design as far as possible offers a rare opportunity to study general trends and ranges in variation for HL across countries in the WHO European Region.

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