The HLS₁₉-NAV Instrument to measure Navigational Health Literacy

Development of the Instrument

The HLS₁₉-NAV instrument is a newly developed 12-item questionnaire for measuring navigational health literacy (HL) for health care systems and services in general adult populations and is part of the HLS₁₉ family of instruments on measuring HL.

It was developed by a working group of the HLS₁₉ (Health Literacy Population Survey 2019-2021) Consortium of 17 countries. HLS₁₉ is the first project of the WHO Action Network on Measuring Population and Organizational Health Literacy (M-POHL; https://m-pohl.net), coordinated by the HLS₁₉ International Coordination Centre (ICC).

The HLS₁₉-NAV was applied in eight countries (Austria, Belgium, Czech Republic, France, Germany, Portugal, Slovenia, Switzerland) in large samples using different methods of data collection.

Underlying definition of navigational HL: The Instrument is based on a new definition of navigational HL which was developed based on a scoping review of the literature on existing definitions and concepts on navigation in healthcare systems and on the integrative definition of comprehensive, general HL by the HLS-EU Consortium of eight European countries. Navigational HL is defined as "people's knowledge, motivation and skills to access, understand, appraise and apply information and communication in various forms necessary to adequately for navigating healthcare systems and services adequately to get the most suitable health care for oneself or related persons" (Griese et al. 2020: 6).

Underlying concept of operationalization: The instrument operationalises navigational HL on three levels of the health care system: on the macro/systemic level (e.g., how is the health system organized, how does it function and work?), on the meso/organizational level (e.g., which service organization functions in which way, who is the right contact person there, and what are the rules for using it?), and on the micro/interactional level (e.g., how to interact with and communicate one's own problems to health professionals in such a way that a workable solution for making use of health services can be jointly discussed and agreed upon). In addition, the instrument equally displays the four aspects of health-related information management (to access/obtain, understand, appraise/judge/evaluate, and apply/use information relevant for navigating healthcare systems and services) with three indicators for each aspect. Moreover, it belongs to a "family" of instruments developed in the tradition of HLS₁₉/HLS-EU, aiming on measuring HL in the specific field of navigating healthcare systems. Indicators were rated by a four-point Likert scale concerning the experienced difficulty of each task. As such, the HLS₁₉-NAV is a 'subjective' perception-based instrument.

Developed and validated for measuring navigational HL in general adult national residents' populations aged 18+.

Available languages: Czech, Dutch, English, French, German, Portuguese, Russian, Slovenian, and Turkish.

Description of the instrument

Introductory question[1] and items in the English (original) version

"Now we would like to know how easy it is to inform yourself on finding your way around the health care system. It does not matter whether you use information for yourself or for someone else. By "health service" we typically mean a doctor, specialist, hospital, nursing home, rehabilitation or mental health facility. On a scale from very easy to very difficult, how easy would you say it is …

1.   … to understand information on how the health care system works? [e.g., which types of health services are available]
2.   … to judge which type of health service you need in case of a health problem?
3.   … to judge to what extent your health insurance covers a particular health service? [e.g., are there any co-payments]
4.   … to understand information on ongoing health care reforms that might affect your health care?
5.   … to find out about your rights as a patient or user of the health care system?
6.   … to decide for a particular health service? [e.g., choose from different hospitals]
7.   … to find information on the quality of a particular health service?
8.   … to judge if a particular health service will meet your expectations and wishes on health care?
9.   … to understand how to get an appointment with a particular health service?
10. … to find out about support options that may help you to orientate yourself in the health care system?
11. … to locate the right contact person for your concern within a health care institution? [e.g., in a hospital
12. … to stand up for yourself if your health care does not meet your needs?"

Response categories: 4 "Very easy", 3 "Easy", 2 "Difficult", 1 "Very difficult", 999 "DK / Refusal (SPONTANEOUS)"

Calculation of the score: The HLS$_{19}$-NAV score is calculated as the percentage (ranging from 0 to 100) of items with valid responses that were answered with "very easy" or "easy" provided that at least 80 % of the items contain valid responses:

$$\frac{\text{Number of "easy" or "very easy" responses}}{\text{Number of valid responses}} \times 100$$

If less than 80 % of the items contain valid responses, the score is set to "missing". A higher score value signifies a higher level of navigational HL.

Interpretation of the score: Users should keep in mind that the HLS$_{19}$-NAV score by assessing difficulties of tasks measures the interaction of personal capabilities and contextual factors related to the health system of the respective country.

Measures for sub-dimensions of the score: It is not recommended to calculate sub-scales of the HLS$_{19}$-NAV.

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[1] This wording was used in personal interviews (CAPI/PAPI) and online surveys (CAWI). In telephone interviews (CATI), the question was: "On a scale from very easy, easy, difficult, and very difficult, how easy would you say it is …"

Psychometric Properties

In the following, the main characteristics of the eight HLS$_{19}$ national surveys (in the general adult population, i.e., 18 years or older) are summarized for the countries that collected data on navigational HL as part of HLS$_{19}$. Further below, the Cronbach's alpha coefficients and the results of confirmatory factor analyses, Partial Credit Models and Rasch analyses are shown.

Table 1: Main characteristics of the national HLS$_{19}$ surveys that collected data on navigational HL as part of HLS$_{19}$

Country	Languages	Type of data collection	Sampling procedure	Item set	Period of data collection	Valid responses
Austria	German	CATI	Multi-stage random sampling	HLS$_{19}$-NAV	16.03.2020-26.05.2020	2,967
Belgium	Dutch, French	CAWI	Quota sampling	HLS$_{19}$-NAV	30.01.2020-28.02.2020 and 01.10.2020-26.10.2020	1,000
Czech Republic	Czech	CATI, CAWI	Random digital procedure and random quota sampling	HLS$_{19}$-NAV	10.11.2020-24.11.2020	1,599
France	French	CAWI	Quota sampling	HLS$_{19}$-NAV	27.05.2020-05.06.2020 and 08.01.2021-18.01.2021	2,003
Germany	German	PAPI	Multi-stage random and quota sampling	HLS$_{19}$-NAV	13.12.2019-27.01.2020	2,143
Portugal	Portuguese	CATI	Random stratified sampling	HLS$_{19}$-NAV	10.12.2020-13.01.2021	1,247
Slovenia	Slovenian	CAPI, paper-and-pencil*, CAWI	Multi-stage random sampling	HLS$_{19}$-NAV	09.03.2020-15.03.2020 and 09.06.2020-10.08.2020	3,360
Switzerland	French, German, Italian	CAWI**	Multi-stage random sampling	HLS$_{19}$-NAV	05.03.2020-29.04.2020	2,502

CATI Computer-assisted telephone interview
CAWI Computer-assisted web-based interview
CAPI Computer-assisted personal interview
PAPI Paper-assisted personal interview

*Paper-and-pencil was used only in 12 interviews in Slovenia
**CAWI was the main type of data collection; additionally, a small number of CATI interviews were conducted.

Source: HLS$_{19}$ Consortium

Cronbach's alpha: The Cronbach's alpha coefficients range from 0.83 (Germany) to 0.92 (Portugal) with a mean of 0.89 (Table 2). For details, please see Chapter 10.2.2 in The HLS$_{19}$ Consortium of the WHO Action Network M-POHL (2021).

Single-Factor Confirmatory Factor Models by country [CFA]: The Standardized Root Mean Square Residual [SRMSR] the Root Mean Square Error of Approximation [RMSEA], the Comparative Fit Index [CFI], the Tucker-Lewis Index [TLI], the Goodness of Fit Index [GFI], and the Adjusted Goodness of Fit Index [AGFI] indicate at least an acceptable model-data fit for all of the 8 surveys for the dichotomised items (Table

2). For details, please see Chapter 10.2.2 in The HLS₁₉ Consortium of the WHO Action Network M-POHL (2021).

Table 2: Cronbach's alpha's and Single-Factor Confirmatory Factor Analysis

Country	Cronbach's alpha	Single-Factor Confirmatory Factor Analysis		
		SRMSR	RMSEA	CFI
Austria	0.87	0.05	0.05	0.99
Belgium	0.89	0.06	0.07	0.99
Czech Republic	0.90	0.03	0.02	1.00
France	0.91	0.05	0.06	1.00
Germany	0.83	0.07	0.06	0.98
Portugal	0.92	0.06	0.07	1.00
Slovenia	0.90	0.05	0.05	0.99
Switzerland	0.88	0.07	0.07	0.99

CFI=Comparative Fit Index; RMSEA=Root Mean Square Error of Approximation; SRMSR=Standardized Root Mean Square Residual
NOTE: These values are based on the 12 dichotomized HLS₁₉-items (very easy + easy vs. difficult + very difficult).

Source: HLS₁₉ Consortium

Rasch Partial Credit Model (PCM): The results of the PCM and Rasch models are based on the 12 poly-tomous (4 levels: very easy, easy, difficult, very difficult) HLS₁₉-NAV-items. When testing data against the PCM for each country, the HLS₁₉-NAV displays good overall data-model fit in Austria. In Switzerland, the Czech Republic and Germany, analyses display an acceptable overall data-model fit. The HLS₁₉-NAV displays acceptable/good overall data-model fit in the remaining countries after reducing the sample size, excluding France. The scale was well-targeted for Belgium, the Czech Republic, France, Germany, Portugal, and Switzerland, indicating that the measure is neither too easy nor too hard (Tennant/Cona-ghan 2007). In Austria and Slovenia, targeting could have been somewhat better. Several items displayed differential item functioning (DIF). For details, please see Chapter 10.2.2 in The HLS₁₉ Consortium of the WHO Action Network M-POHL (2021).

The HLS₁₉-NAV is sufficiently unidimensional and measures one latent trait. For details, please see Chapter 10.2.2 in The HLS₁₉ Consortium of the WHO Action Network M-POHL (2021).

Distribution of the score: The distribution of the navigational HL score does not indicate a normal distribution, but shows differing distribution patterns across countries and a strong ceiling effect for all countries except Germany, where the distribution is rather right skewed.

Validity: Content and face validity are ensured by using a theory-based model and definition of navigational HL for selecting and operationalizing the included indicators.

Discriminant validity: The mean Pearson correlations of the HLS₁₉-NAV with the HLS₁₉-Q12 (measuring general HL) was 0.56 (based on data for 8 countries), with the HLS₁₉-COM-P-Q6 (measuring HL relating to communication with physicians in health care services, six items) 0.43 (based on data for 6 countries), with the HLS₁₉-DIGI (measuring digital HL) 0.55 (based on data for 7 countries), and for the HLS₁₉-VAC (measuring vaccination HL) 0.40 (based on data for 6 countries).

Concurrent predictive validity: The HLS₁₉-NAV score showed a social gradient in all 8 countries and expected associations with selected health measures and indicators for the use of health services – for details see chapters 10.2.5/10.2.6 in The HLS₁₉ Consortium of the WHO Action Network M-POHL (2021).

Summarizing: The HLS₁₉-NAV was validated for 4 modes of data collection (PAPI, CAPI, CATI, CAWI), for several languages, in large samples collected in most cases by multi-stage

random sampling or quota sampling procedures and demonstrated sufficient psychometric properties and validity.

Use of the Instrument

Procedure for obtaining the instrument: The ownership of the HLS$_{19}$-NAV rests with the HLS$_{19}$ Consortium, which developed the instrument. The HLS$_{19}$-NAV can be used by third parties for research purposes free of charge but requires a contractual agreement between the user and the ICC of the HLS$_{19}$ Consortium. An application form with details on the conditions for getting permission to use the instrument can be found at https://m-pohl.net/tools.

Address any questions to: The International Coordination Centre (ICC) of the HLS$_{19}$ Project, located at:

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The HLS$_{19}$-NAV is part of a family of instruments also measuring different types of HL (please see https://m-pohl.net/tools):

» HLS$_{19}$-Q12, HLS$_{19}$-Q16 and HLS$_{19}$-Q47 to measure General Health Literacy
» HLS$_{19}$-COM-P-Q11 (long form) and HLS$_{19}$-COM-P-Q6 (short form) to measure Communicative Health Literacy
» HLS$_{19}$-DIGI to measure Digital Health Literacy
» HLS$_{19}$-VAC to measure Vaccination Literacy.

Please cite as: The HLS$_{19}$ Consortium of the WHO Action Network M-POHL (2022): The HLS$_{19}$-NAV Instrument to measure Navigational Health Literacy. Factsheet. Austrian National Public Health Institute, Vienna

References

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Tennant, A.; Conaghan, P. G. (2007): The Rasch measurement model in rheumatology: what is it and why use it? When should it be applied, and what should one look for in a Rasch paper? In: Arthritis and rheumatism 57/8:1358–1362

The HLS$_{19}$ Consortium of the WHO Action Network M-POHL (2021): International Report on the Methodology, Results, and Recommendations of the European Health Literacy Population Survey 2019–2021 (HLS$_{19}$) of M-POHL. Austrian National Public Health Institute, Vienna (https://m-pohl.net/Int_Report_methdology_results_recommendations)

A list of further publications relating to the HLS$_{19}$ instruments can be found at:

- » https://m-pohl.net/Results
- » https://m-pohl.net/HLS_Project_Publications_Presentations