An overview on results of health literacy studies of general population using HLS–EU instruments in Europe and beyond.

Professor em. Jürgen M. Pelikan, PHD
Austrian Public Health Institute & University of Vienna / Austria
Head, WHO–CC for Health promotion in Hospitals and Health Care

7AHLA 2019
7th INTERNATIONAL HEALTH LITERACY CONFERENCE
NOV 10 – 12, 2019 / HO CHI MINH CITY, VIETNAM
ADEQUATE CONCEPT & MEASUREMENT INSTRUMENT
Evolution of population health literacy measures & measurement worldwide and especially in Europe

• Start with performance based tests (TOPHLA, REALM, NVS) and studies for measuring functional HL of patients in HC, partly also used on general populations

• Early studies with more comprehensive performance based literacy test measures (HALS) for HL of general populations (USA 2003, Rudd, Kirsch & Yamamoto 2004; Canada 2003, CPHA, Rootman, Wilson et al. 2008; Italy, Norway, Switzerland 2003, (I)ALSS ((International) Adult Literacy and Lifeskills Survey), but not followed up!

• Later studies with more comprehensive perception based self-reporting instruments for HL of general populations (HLS-CH, HLS-EU, HLQ)
  – 2006 HLS-CH
  – 2011 HLS-EU in Europe, Asia Africa
  – 2013 HLQ in Australia, Europe, Asia
What do we expect from an instrument to measure health literacy of (general) populations?

The evolving concept (Nutbeam 2008) of health literacy with 3 trends (Pelikan & Ganahl 2017)

1. **Broadening** of understanding of
   - Health: Disease & **positive health and wellbeing**
   - Literacy: Functional /Understanding & other information/communication competences (interactive & critical: accessing, appraising, using)
   - Roles & tasks: Patient role & other roles in everyday life

2. **Differentiating** of HL for specific contexts & contents (e.g. stages in life-course, lifestyles, media, diseases)

3. **Relational/contextual/dual** understanding of HL > measure & increase personal competences & decrease situational demands

   • The instrument has to take these trends into account
   • It has to be comprehensive concerning content of “health”, of “literacy”, of covered health related tasks and roles
   • It should be flexible for creating comparable standardized measures for specific health related demands (e.g. medication, vaccination, nutrition etc.)
   • It should allow for one general measure, but also for different sub-measures of the underlying dimension of the multi-dimensional concept of HL
   • It should allow for defining of levels of HL
   • Besides a long form there should be also short forms of the measure
   • It should function for different kinds of data collection
   • It should take the relational quality of the concept of HL into account
The HLS-EU Consortium (2009-2012)....

1. provided an integrated comprehensive model and definition of personal HL based on existing models and definitions
   – By that provided for Europe A Prescription to End Confusion!

2. developed an instrument to measure personal HL of populations (HLS-EU-Q47) and relevant determinants and consequences of health literacy (HLS-EU-Q86)
   – By that provided a comprehensive, perception based efficient instrument for surveys!

3. measured HL in 8 European countries (AT, BG, DE, EL, IE, NL, PL, ES) using probability samples of each 1000 EU citizens aged 15+ by personal interviews
   – By that allowed for benchmarking between countries with a comparable study design and instrument!

4. showed by benchmarking that there are general tendencies in distribution and associations of HL, but also considerable variation between countries
   – By that demonstrated that HL matters for Public Health, but has to be measured in each country!
The HLS-EU integrative & comprehensive conceptual & generic model and definition of health literacy (Sørensen et al. 2012)

HLS-EU Definition

“Health literacy is linked to literacy and encompasses people’s knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life during the life course.”

HLS-EU Matrix

<table>
<thead>
<tr>
<th>Health care (16)</th>
<th>Disease prevention (15)</th>
<th>Health promotion (16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access/obtain information relevant to health (13)</td>
<td>Understand information relevant to health (11)</td>
<td>Process / appraise information relevant to health (12)</td>
</tr>
<tr>
<td>1) Ability to access information on medical or clinical issues (4 Questions)</td>
<td>2) Ability to understand medical information and derive meaning (4 Questions)</td>
<td>3) Ability to interpret and evaluate medical information (4 Questions)</td>
</tr>
<tr>
<td>5) Ability to access information on risk factors for health (4 Questions)</td>
<td>6) Ability to understand information on risk factors and derive meaning (3 Questions)</td>
<td>7) Ability to interpret and evaluate information on risk factors for health (5 Questions)</td>
</tr>
<tr>
<td>9) Ability to update oneself on health related issues (5 Questions)</td>
<td>10) Ability to understand health related information and derive meaning (4 Questions)</td>
<td>11) Ability to interpret and evaluate information on health related issues (3 Questions)</td>
</tr>
</tbody>
</table>
Understanding of HL as a relational concept has consequences for measurement (& interventions)

Measure personal HL competences

Measure **fit** of pers. HL competences to situat. HL demands

Measure situational HL demands and support

**Personal Skills/Abilities**

**Health Literacy**

**Situational Demands/Complexity**

Format & examples of HLS-EU-Q questions

„On a scale from very easy to very difficult, how easy would you say it is to ....
“very easy” - “fairly easy” - “fairly difficult” - “very difficult”, (don’t know)

**Health care**
5. ... understand, what your doctor says to you?
12. ... judge if the information about illness in the media is reliable?

**Disease prevention**
18. ... find information on how to manage mental health problems like stress or depression?
29. ... decide if you should have a flu vaccination?

**Health promotion**
38. ... understand information on food packaging?
47. ... take part in activities that improve health and well-being in your community?
Figure 8.1: Generic Vienna model of health literacy defining the principal determinants and consequences of health literacy

0. Situational determinants (country, province, district, urban/rural, etc.)

1. Personal determinants

2. Personal health literacy

3. Health behaviors

4. Health status

5. Illness behaviors

Situational determinants:
- Country
- Province
- District
- Urban/rural
SELECTED RESULTS
Results of original HLS-EU and follow-up studies

Besides validation of the instrument, mainly six kinds of results, have been analyzed, published and demonstrated that HL matters for Public Health

1. **Distribution** of general and certain aspects of HL
2. **Association** with other measures of HL (NVS)
3. Determination of HL by **social determinants**
4. Consequences of HL for **healthy life-styles**
5. Consequences of HL for indicators of **self-reported health**
6. Consequences of HL for **usage of professional health services**
Later use of the HLS-EU concept, study design and instrument in research

• In the original HLS-EU survey only eight EU member states were included.

• To date, the HLS-EU survey has been conducted in WHO-Europe in Albania, Austria, Belgium, Bulgaria, Czech Republic, Denmark, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Kazakhstan, Kosovo, Malta, Netherlands, Norway, Poland, Portugal, Spain, Turkey and Switzerland.

• Also in Asian countries, such as Indonesia, Japan, Malaysia, Myanmar, Taiwan and Vietnam or in African countries, such as used study design and instrument.

• Furthermore, the HLS-EU-Q47/Q16 or Q6 has been used in many more specific studies in different countries.
Construction of different HLS-EU based measurement instruments for personal HL

Longform

• HLS-EU-Q47, one general index, 7 sub-indices and 12 sub-sub-indices and 4 levels for the general index, validated first for 7 languages in 8 countries, later also for CZ, HU

Short forms

• HLS-EU-Q16, Rasch scale with 4 levels, validated first 8 + 2 countries later also for French language with Belgian data
• HLS-EU-Q6, Rasch scale validated first 8 + 2, later also for also for French language with Belgian data
• HLS-Asia-Q12, CFA based scale, validated first in Mandarin for Taiwan, later also for Indonesia, Malaysia, Myanmar, Taiwan and Vietnam
• HLS-NOR-Q12, Rasch scale, validated in Norwegian for Norway
• HLS-EU-Q12, Rasch scale validated for 7 + 2 languages for 10 countries

Content specific measures using same format of items

• HL of migrants (Austria)
• HL of children and adolescents (Germany)
• Digital HL, HL for communication in health care, navigation HL (in preparation HLS19)
Levels of health literacy vary considerably by country, but in each country there considerable proportions of the population with limited health literacy!
### Health literacy levels of general populations in Europe and Asia

<table>
<thead>
<tr>
<th>Country</th>
<th>Inadequate Gen-HL</th>
<th>Problematic Gen-HL</th>
<th>Sufficient Gen-HL</th>
<th>Excellent Gen-HL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL</td>
<td>10.2</td>
<td>34.4</td>
<td>35.9</td>
<td>19.5</td>
</tr>
<tr>
<td>NL</td>
<td>1.8</td>
<td>26.9</td>
<td>46.3</td>
<td>25.1</td>
</tr>
<tr>
<td>IE</td>
<td>10.3</td>
<td>29.7</td>
<td>38.7</td>
<td>21.3</td>
</tr>
<tr>
<td>ES</td>
<td>7.5</td>
<td>50.8</td>
<td>32.6</td>
<td>9.1</td>
</tr>
<tr>
<td>EL</td>
<td>13.9</td>
<td>30.9</td>
<td>39.6</td>
<td>15.6</td>
</tr>
<tr>
<td>DE</td>
<td>11</td>
<td>35.3</td>
<td>34.1</td>
<td>19.6</td>
</tr>
<tr>
<td>BG</td>
<td>26.9</td>
<td>35.2</td>
<td>26.6</td>
<td>11.3</td>
</tr>
<tr>
<td>AT</td>
<td>18.2</td>
<td>38.2</td>
<td>33.7</td>
<td>9.9</td>
</tr>
<tr>
<td>JP</td>
<td>49.9</td>
<td></td>
<td>35.5</td>
<td>10.4</td>
</tr>
<tr>
<td>ID</td>
<td>10.7</td>
<td>53.1</td>
<td>32</td>
<td>4.3</td>
</tr>
<tr>
<td>MM</td>
<td>23.3</td>
<td>35.4</td>
<td>28.7</td>
<td>12.6</td>
</tr>
<tr>
<td>KZ</td>
<td>22.2</td>
<td>31.3</td>
<td>32.3</td>
<td>14.2</td>
</tr>
<tr>
<td>VN</td>
<td>27.7</td>
<td>9.2</td>
<td>23.8</td>
<td>9.3</td>
</tr>
<tr>
<td>TW</td>
<td>5.4</td>
<td>39.1</td>
<td>41.6</td>
<td>13.9</td>
</tr>
<tr>
<td>Asian total</td>
<td>19.9</td>
<td>38.2</td>
<td>30.8</td>
<td>11.0</td>
</tr>
</tbody>
</table>

Presentation: Tuyen V. Duong, Altyn Aringazina, Gaukhar Baisunova, Nurjanah Nj, Thuc V. Pham, Khue M. Pham, Tien Q. Truong, Kien T. Nguyen, Win Myint Oo, Emma Mohamad, Tin Tin Su, Hsiao-Ling Hwang, Kristine Sørensen, Jürgen M. Pelikan, Stephan Van Den Brouke, Peter Wushou Chang: Health literacy in Five Asian countries: A population-based cross-sectional study, 3rd AHLA conference, Tainan/ Taiwan 9-11-2015

Pelikan - 7th AHLA IC 2019
The Newest Vital Sign Test - a predictor of the ability to understand medical instructions by combining prose literacy, numeracy and document literacy

The NVS test is a food label (of an imaginary ice cream) that is presented to participants for answering 6 questions related to the label. It ranges from 0 to 6 points, where 2 points or less indicate a high likelihood of limited functional HL, 3 and 4 points the possibility of limited functional HL respectively 5 and 6 points adequate functional HL.

<table>
<thead>
<tr>
<th>Score Sheet for the Newest Vital Sign Questions and Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>READ TO SUBJECT:</strong> This information is on the back of a container of a pint of ice cream.</td>
</tr>
<tr>
<td>1. If you eat the entire container, how many calories will you eat?</td>
</tr>
<tr>
<td><em>Answer:</em> 1,000 is the only correct answer</td>
</tr>
<tr>
<td>2. If you are allowed to eat 60 grams of carbohydrates as a snack, how much ice cream could you have?</td>
</tr>
<tr>
<td><em>Answer:</em> Any of the following is correct: 1 cup (or any amount up to 1 cup), half the container. Note: If patient answers &quot;two servings,&quot; ask &quot;How much ice cream would that be if you were to measure it into a bowl?&quot;</td>
</tr>
<tr>
<td>3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 12 g of saturated fat each day, which includes one serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day?</td>
</tr>
<tr>
<td><em>Answer:</em> 83 is the only correct answer</td>
</tr>
<tr>
<td>4. If you usually eat 2,500 calories a day, what percentage of your daily value of calories will you be eating if you eat one serving?</td>
</tr>
<tr>
<td><em>Answer:</em> 10% is the only correct answer</td>
</tr>
<tr>
<td><strong>READ TO SUBJECT:</strong> Pretend that you are allergic to the following substances: peanuts, latex gloves, and shell eggs.</td>
</tr>
<tr>
<td>5. Is it safe for you to eat this ice cream?</td>
</tr>
<tr>
<td><em>Answer:</em> No</td>
</tr>
<tr>
<td>6. (Ask only if the patient responds &quot;no&quot; to question 5): Why not?</td>
</tr>
<tr>
<td><em>Answer:</em> Because it has peanut oil</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Interpretation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Score of 0:1 suggests high likelihood (50% or more) of limited literacy.</td>
</tr>
<tr>
<td>Score of 2:3 indicates the possibility of limited literacy.</td>
</tr>
<tr>
<td>Score of 4:6 almost always indicates adequate literacy.</td>
</tr>
</tbody>
</table>

The Nutrition Facts:
- Serving Size: 1/2 cup
- Servings per container: 4
- Amount per serving:
  - Calories: 250
  - Fat Cal: 120
  - %DV: |
  - Total Fat: 13g (20%)
  - Sat Fat: 9g (40%)
  - Cholesterol: 28mg (12%)
  - Sodium: 55mg (2%)
  - Total Carbohydrate: 30g (12%)
  - Dietary Fiber: 2g
  - Sugars: 23g
  - Protein: 4g (8%)

*Percentage Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

**Ingredients:** Cream, Skim Milk, Liquid Sugar, Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.
Statistical characteristics of the CHL & the NVS – distributions, means, SD

### CHL

**Distribution of the General HL Index**

- Austria ($\bar{X} 32/SD 7.6$)
- Bulgaria ($\bar{X} 30.5/SD 9.2$)
- Germany ($\bar{X} 34.5/SD 7.9$)
- Greece ($\bar{X} 33.6/SD 8.5$)
- Spain ($\bar{X} 32.9/SD 6.1$)
- Ireland ($\bar{X} 35.2/SD 7.8$)
- Netherlands ($\bar{X} 37.1/SD 6.4$)
- Poland ($\bar{X} 34.5/SD 8$)
- Total ($\bar{X} 33.8/SD 8$)

### NVS

**Distribution of NVS**

- Austria ($\bar{X} 4.1/SD 1.9$)
- Bulgaria ($\bar{X} 3.1/SD 2.1$)
- Germany ($\bar{X} 3.9/SD 2.0$)
- Greece ($\bar{X} 3.6/SD 2.0$)
- Spain ($\bar{X} 2.6/SD 2.0$)
- Ireland ($\bar{X} 3.6/SD 2.1$)
- Netherlands ($\bar{X} 4.5/SD 1.8$)
- Poland ($\bar{X} 2.9/SD 2.1$)
- Total ($\bar{X} 3.5/SD 2.1$)

### Tables

#### General health literacy index

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Min.</th>
<th>Max.</th>
<th>Mean</th>
<th>Std. deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7795</td>
<td>0</td>
<td>50</td>
<td>33.78</td>
<td>7.95</td>
<td>-0.26</td>
<td>0.29</td>
</tr>
</tbody>
</table>

#### NVS Test score

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Min.</th>
<th>Max.</th>
<th>Mean</th>
<th>Std. deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8102</td>
<td>0</td>
<td>6</td>
<td>3.55</td>
<td>2.11</td>
<td>-0.36</td>
<td>-1.19</td>
</tr>
</tbody>
</table>
There is a significant, but moderate statistical association between CHL & a test measures of functional HL (NVS)

**Distribution of CHL Index by NVS Test Score, for Total Sample**

**Correlation of CHL Index and NVS Test Score, for Countries and Total Sample**

<table>
<thead>
<tr>
<th>Country</th>
<th>Pearson Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>0.266**</td>
</tr>
<tr>
<td>Spain</td>
<td>0.214**</td>
</tr>
<tr>
<td>Poland</td>
<td>0.302**</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.088**</td>
</tr>
<tr>
<td>Ireland</td>
<td>0.242**</td>
</tr>
<tr>
<td>Greece</td>
<td>0.347**</td>
</tr>
<tr>
<td>Germany</td>
<td>0.151**</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>0.381**</td>
</tr>
<tr>
<td>Austria</td>
<td>0.208**</td>
</tr>
</tbody>
</table>

**Average score of CHL gradually increases with NVS score!**

**The correlation coefficient considerably differs by country!**

**Correlation is significant at the 0.01 level (2-tailed).**

General health literacy index from low score to high score (0-50);
Functional health literacy (NVS) from low score to high score (0-6)
There is a **social gradient** for GHL, varying in strength by country! The same holds true for the strength of the different social determinants as predictors of GHL!
Results for included Life styles in HLS-EU-8 (Spearman’s Rho Correlations)

1. Physical activity
A significant correlation of -.189** for Total, varying between -.043 for Spain and -.213** for Greece

2. Body-Mass-Index
A significant correlation of -.066** for Total, varying between .031 for Ireland and -.127* for Austria

3. Alcohol Consumption
A significant correlation of .065** only for Total and for 3 countries (of .073* for PL and for Greece, of .081** for Bulgaria)

4. Smoking Habits
No significant correlation for Total, significant, but inconsistent correlations for 4 countries (-.068* for Germany, .081** for Greece, -.110** for Ireland, .134** for Bulgaria).

Included indicators in HLS-EU-8

1. Physical Activity from 1=almost every day to 4= not at all

2. For Body-Mass-Index the metric variable was used

3. Alcohol Consumption from 0=no alcohol to 4=very excessive alcohol consumption

4. Smoking Habits from 1=never smoked to 4=daily

Further included life styles in follow-up studies!
Percentage Distribution of Physical Activity by Grouped Health Literacy Index
(for Total Sample, HLS-EU 2012)

> There is a considerable rather continuous relationship!
Physical Activity by 5 social & 2 HL determinants

(Beta Weights and Adjusted R-Square for Total Sample & Countries) (HLS-EU 2012)

Physical Activity from 1=almost every day to 4= not at all;

Adj. $R^2 = 0.079$ Total
(NL. 013 / .102 DE)
Results for self-assessed health in HLS-EU-8 (Spearman’s Rho Correlations)

1. **Self-assessed health**
   Significant correlation of -.274** for Total and for all countries, varying from -.154** for the Netherlands to -.332** for Poland

2. **Long-term illness**
   Significant correlation of .156** for Total, varying from .047 for the Netherlands to .257** for Bulgaria

3. **Limitations by health problems**
   Significant correlation of .170** for Total, varying from 0.08 for Germany to .278** for Austria

---

**Indicators included in HLS-EU-8**

1. **Self-Assessed Health**
   from 1=very good to 5=very bad

2. **Long-Term Illness**
   from 1=yes, more than one to 3=no illness

3. **Limitations by Health Problems**
   from 1=severely limited to 3=not limited
Percentage Distributions of Self-Assessed Health (SF-36) by Grouped Health Literacy Index (for Total Sample, HLS-EU 2012)

> There is a considerable rather continuous relationship!

Self-assessed health by 5 social and 2 HL determinants

(Beta Weights and Adjusted R-Square for Total Sample and Countries) (HLS-EU 2012)

Self-assessed Health

NL .144 AGE .496 EL
BG -.103 CHL -.205 AT
AT -.020 SOC.STATUS -.158 NL
IE .053 FIN. DEPRIV. .212 DE
PL -.027 GENDER .077 ES
NL -.007 EDUCATION -.131 IE
AT .000 NVS -.081 IE

Adj. R² = .268
(NL .88 / .452 EL)

α...not significant on the 0.05 level
Self-assessed health by 5 social, 2 HL & 2 risk factors
(Beta Weights and Adjusted R-Square) (NVS were not significant!), for Countries and Total Sample (HLS-EU 2012)

Adj. $R^2 = .447$
(NL .330 / .630 EL)

Pelikan - 7th AHLA IC 2019
Chronic Illness by 5 social & 2 HL determinants

(Beta Weights and Adjusted R-Square for Total Sample & Countries) (HLS-EU 2012)

Adj. $R^2 = .195$
(NL .098 / .366 BG)

IE -.275 **AGE** -.478 BG

IE .016 **FIN. DEP.** -.207 DE

ES .014 **CHL** .169 AT

DE .015 **GENDER** -.080 PL

AT -.006 **EDUCATION** .066 EL

AT -.019 **SOCIAL STATUS** .092 PL

PL -.052 **NVS** .142 IE

Chronic Illness

-.388

-.082

.080

-.045

.023

.018

-.004
Results for use of professional health care services (Spearman’s Rho Correlations)

1. Doctor Visits (last 12 month)
   Significant correlation of -.114** for Total, varying from -.014 (!) for the Netherlands to -.185** for Austria

2. Hospital Services (last 12 month)
   Significant correlation of -.062** for TOTAL, varying from -.031 (!) for the Netherlands to -.188** for Austria

3. Emergency Service (last 24 month)
   Significant correlation of -.061** for Total, varying from -.011 (!) for the Netherlands to -.151** for Austria

4. Other Health Professionals (last 12 month)
   Significant correlations of .062** for Total and only for two countries (of .070* for Poland, of .114** for Greece)
Doctor’s Visits by Grouped Health Literacy Index
(for Total Sample, HLS-EU 2012)

> There is a slight relationship between Health literacy and doctor’s visits!

Percentages of categories of Doctor Visits In the last 12 month

Grouped Scores of Comprehensive Health Literacy Index

Doctor’s Visits by 5 Social Determinants and CHL

(Beta Weights and Adjusted R-Square for Total, HLS-EU 2012)

> The effect of health literacy on doctor’s visits stays on, when social determinants are controlled for!

\[
\begin{align*}
\text{NL,116}^{**} & \quad \text{AGE,437}^{**} \quad \text{EL} \\
\text{AT,088}^{**} & \quad \text{GENDER,174}^{**} \quad \text{BG} \\
\text{NL,-016} & \quad \text{CHL,-103}^{**} \quad \text{AT} \\
\text{EL,-003} & \quad \text{SOC. STATUS,-123}^{**} \quad \text{IR} \\
\text{AT,-006} & \quad \text{EDUCATION,-096}^{**} \quad \text{NL} \\
\text{EL,-008} & \quad \text{FIN. DEPRIVAT.,160}^{**} \quad \text{AT}
\end{align*}
\]

\[\text{Adj. R}^2 = ,125 \text{ Total, ,032 NL to ,226 EL}\]

*…not significant on the 0,05 level*

Doctor Visits’ from 0 to 6 or more visits, Comp.-HL from 0= minimal HL to 50=maximal HL; Gender 0=male, 1=female; Age in years; Education (ISCED) from 0= lowest education level to 6= highest education level; Financial Deprivation from low deprivation to high deprivation; Social Status from 1=lowest place in society to 10= highest place in society;
HL a determinant, mediator or moderator of self-assessed health?

Results using HLS-EU-8 data

1. CHL (and to a much lesser degree functional HL) is mainly a relevant predictor and **determinant** for self-assessed health.

2. Comprehensive HL is only to a limited degree **mediating** the effects of other determinants on self-assessed health.

3. Only for age does CHL partly **moderate** the effects on health.

4. Explained variance and strength of effects **vary** considerably by national context.
Path Model for variables explaining variation of self-assessed health

(Beta weights for TOTAL, HLS-EU 2012)

Explained Variance of SAH by CHL: direct .133, indirect .63, total .196
Health literacy is a **moderator** between age and self-assessed health

Probability of having fair, bad or very bad self-assessed health by HL levels and age groups other influences controlled for
(Total Sample, N= 6923, HLS-EU 2012)

> With older age the probability of having fair, bad or very bad self-assessed health is rising steadily, but much less, when one has better HL!

Logistic Regression controlled for: long-term illness (*), social status (*), exercising (*), BMI (*), Gen-HL-Raw (ns), Age(*), Gender (female ↑) (*), financial Deprivation(*), demographic standard weights (ns),) – means by HL-Levels and age groups, Nagelkerke/pseudo R²=0.46
IMPACT OF THE RESULTS OF HL POPULATION STUDIES ON HEALTH POLICY
“Population data are an important starting point for a policy discussion / advocacy” (Nutbeam 2019)

The presentations and publications of the results of HLS-EU and advocacy

• put health literacy on the health policy agenda in many European countries and in the EU and encouraged countries to adopt policy documents, install specific infra-structures for HL and invest in specific measures to improve HL. E.g. AT (Health target, alliance, projects, conferences), DE (national action plan, alliance, research money, conferences), CZ (Health 2020)


• encouraged WHO-Europe to invest in HL (e.g. Solid Facts available in English (2013), Russian (2014), German (2016), Mandarin (2016), M-POHL (2017), HEN Report (2018) and also WHO-HQ (Shanghai Declaration 2016)
http://www.euro.who.int/__data/assets/pdf_file/0008/190655/e96854.pdf 
Available also in German, Mandarin, Russian

• Recommendations for ...
• Regular measurement of HL 
• “The European Health Literacy Survey should be sustained, have dedicated funding, be applied to more countries and be conducted at regular intervals through the continued support of the European Union, the WHO and countries.” (p.71)
• Also measuring organizational HL 
• “Existing measures of health literacy are still too oriented towards the individual and must be expanded to include the collective level (including communities) and to assess the literacy friendliness of materials, organizations and environments.” (p.71)
Goals:
Regular measurement of population and organizational health literacy for evidence-informed health literacy policy

Follows example of:
WHO’s Health Behavior in School-aged Children (HBSC) NW

Structure
Participants: One policy & one research expert per member state
Executive committee: delegates from AT, CH, DE
Plenary: So far delegates from 27 participating member states (AT, BE, BG, CH, CZ, DE, DK, EL, ES, FR, IE, IL, IT, KZ, LU, MD, NL, NO, PL, PT, RU, SE, SK, SL, TR, UA, UK).
Observer: TW, USA. Still open for further members!
National committees planned in each participating member state

Start: 2018-02 Kick off with Vienna Statement in Vienna / AT
First Project: Health Literacy Population Survey HLS19

Contact M-POHL chairs:
Policy expert: Christina.dietscher@sozialministerium.at,
Research expert Juergen.Pelikan@goeg.at

Pelikan - 7th AHLA IC 2019
Selected characteristics of HLS19 study of M-POHL of EHII of WHO-Europe

• **Participation** of about 15 WHO-Europe countries, first time or as a second wave of measuring HL

• **Study design** and **instrument** based on HLS-EU, but further developed cautiously, to be still comparable
  
  – **Data collection** by personal interviews, telephone interviews or internet based, depending on country
  
  – **Sample size** minimal 1000, but some countries with larger samples
  
  – **Wording of HLS-Q47 items and of core correlates** slightly improved
  
  – For measuring comprehensive general HL, minimum new short form HLS-Q12 scale or HLS-Q22 (combination of HLS-Q16 & HLS-Q12) or HLS-Q47
  
  – **Optional packages** for specific measures and correlates for digital HL, HL of navigation, HL for communication in health care and vaccination HL
  
  – **Opportunity for addition** of specific national relevant items by countries

• **Data collection:** November 2019 – March 2020

• **Comparative international report** of results: December 2020
Summary on HLS-EU instruments

- A theory based measure of comprehensive HL with good psychometric properties
- A measure of 47 standardized concrete items which can be aggregated into specific (sub-) indices & levels of HL, with few validated short form scales (Q16, different Q12,Q6)
- For data collection it can be applied by personal interviews, telephone interviews, self-administration or internet based
- It is already available and validated for many European & Asian languages
- The measure shows expected associations with relevant determinants & consequences of HL, but with quite some variation by country
- By the measure HL has been demonstrated to be a determinant, partly also mediator or moderator of health, which can be better influenced than most other social determinants of health by different kinds of available interventions
- Results on HL are available for benchmarking with 8+ EU countries and some Asian countries
Conclusions

• For putting HL higher on the agenda in health research, practice and policy for investing in improving HL, it is necessary to measure HL in general resident populations regularly.

• For this a comprehensive definition, conceptual and generic model and instrument is necessary, to capture the different aspects HL has concerning the health of people.

• It is preferable to measure with an international standardized instrument (complemented by specific national addenda) in many countries to enable for benchmarking between countries.

• The initiative of WHO-Europe with the M-POHL action network and its first study HLS19 - uniting research and policy - is a good way to do this.

• Therefore it would make much sense if the this model would be taken up also by other WHO-regions or countries in these regions!
Thank you so much for your kind attention!

Prof. Jürgen M. Pelikan, Ph.D.
Director, CC–HPH

Stubenring 6
1010 Vienna, Austria
T: +43 1 515 61–
F: +43 1 513 84 72
E: juergen.pelikan@goeg.at
www.goeg.at

http://www.lbihpr.lbg.ac.at
http://www.health-literacy.eu