

## EUROPEAN HEALTH LITERACY SCALE (HLS-EU-BR) APPLIED IN A BRAZILIAN HIGHER EDUCATION POPULATION OF RIO GRANDE DO SUL (RS)

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*Abstract:* Several scales have been built to evaluate the health literacy levels of populations. For this study the European Health Literacy Survey (HLS-EU) (Sorensen, 2012) was selected to assess the health literacy levels in a diversified sample of higher education students and lecturers. The main goal was to evaluate whether this European HLS-EU scale is appropriate for discriminating health literacy levels in a higher education population, including university and polytechnic students and lecturers of different scientific fields and educational levels, since undergraduates up to university lecturers. Four groups of participants were obtained: (i) 21 undergraduate students in agribusiness, (ii) 40 undergraduate students in computational science, (iii) 31 master students and professionals in the field of health; (iv) 87 master, PhD students and lecturers holding a master or PhD degree, most of them in the field of Education. The Cronbach's alpha test showed that the global HLS-EU-BR, the Disease Prevention items and Health Promotion items had “Excellent” internal consistency (0.95, 0.90 and 0.90, respectively) and Healthcare items had “Good” internal consistency (0.89). The majority of the respondents exhibited “Problematic” (37.4%) and “Sufficient” (34.7%) health literacy. “Inadequate” health literacy was found in 17.3% of the respondents and only 10.6% showed “Excellent” health literacy. No differences ( $p>0.05$ ) were found between age groups. Females had higher levels of health literacy as compared with men ( $p<0.05$ ). As expected, strong differences ( $p<0.0001$ ) on health literacy were found between groups having and having not experience in working in the health sector or having health training. Having in mind that this sample is mainly composed of teachers and teachers to be, these results indicate that more emphasis in health issues should be given in teachers training in order to make teachers more sensitive to healthy issues and to get better competencies for teaching these issues in basic education.

*Keywords:* Health literacy levels; Disease prevention; Healthcare; Health promotion; university population.

### 1. INTRODUCTION

Several definitions and models of health literacy have been proposed (Sorensen et al., 2012) but the WHO (1998: 10) concept is generally well accepted, referring to “*the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health*”. In other words, the way in which citizens are able to learn and to make healthy-correct decisions in their lifestyle and wellbeing is assumed to be linked to their health literacy level. In order to raise one’s health literacy, he/she needs not only to acquire knowledge, but also to become

aware of his/her health attitudes and so being able to make healthy lifestyle choices (WHO, 2013).

Improving citizens' health is highlighted in the Constitution of most countries, which is effected by disease prevention and treatment and by health promotion actions. However, the nowadays reduction of available resources to meet the requests for citizens' health, from various sectors of society, requires a complex management of the countries and, principally, the local communities, due to their proximity to citizens (DEPDAS, 2009). Health economists estimate that low health literacy can cause high costs in health systems: 73 billion dollars per year in the US (Friedland, 1998; Baker et al, 1996) and 1.5 billion francs per year in Swiss health system Swiss (Spychers, 2006). Therefore, to enhance the levels of citizens' health literacy is crucial to reduce national health costs. To increase citizens' health literacy, programmes of health education and health promotion must be implemented in the required sectors of society and their health literacy assessed, before and after the programme implementation. For those programmes to be effective, i.e. to cause an effective increase in citizen's health literacy, a previous assessment of the target population health literacy is critical for designing adequate programmes of health education and health promotion.

Several scales have been built to assess the populations' health literacy level, and for this study the European Health Literacy Survey (HLS-EU) (Sorensen, 2012) was selected to access the levels of health literacy of a diversified sample of higher education students and lecturers. The English original scale was constructed after a systematic review in the existing literature on concepts of health literacy, in order to identify the three main dimensions of health literacy: **health care**, **disease prevention** and **health promotion**, as shown in the integrated model of health literacy of Figure 1 (Sørensen et al., 2012).

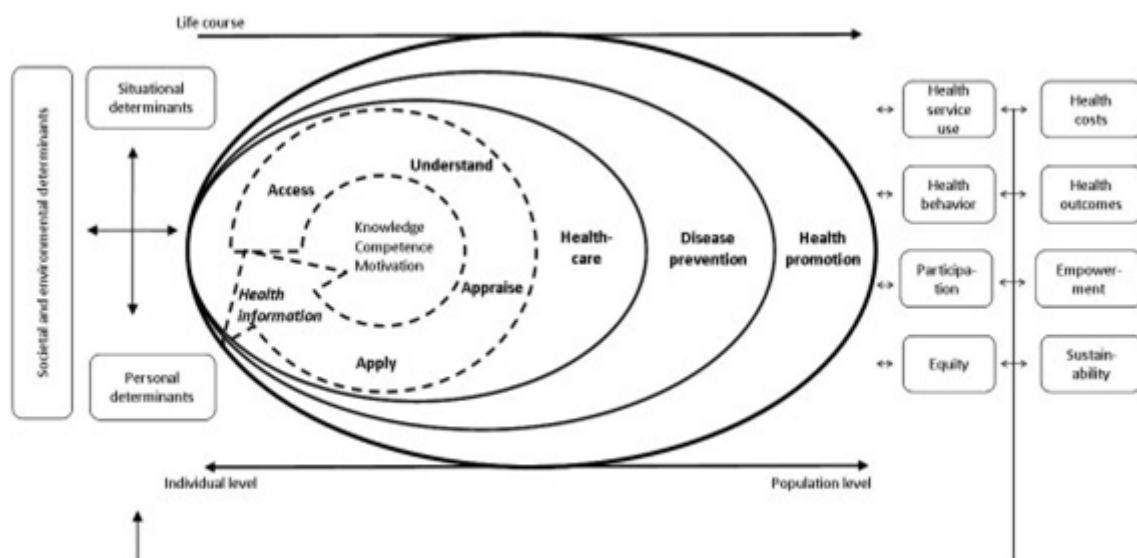


Figure 1. Integrated model of health literacy, by Sørensen *et al.* 2012.

These three health literacy dimensions were combined with four health literacy levels, which are the core of the model (Figure 1): (i) **access/obtain information** relevant to health, (ii) **understand information** relevant to health, (iii) **process/appraise** information relevant to health, and (iv) **apply/use** information relevant to health (Sorensen et al., 2012). Therefore, the **health care dimension** concerns the ability: to access information on medical or clinical issues, to understand medical information and derive meaning, to interpret and evaluate

medical information, and to interpret and evaluate medical information. **Disease prevention dimension** addresses the ability: to access information on risk factors for health, to understand information on risk factors and derive meaning, to interpret and evaluate information on risk factors for health, and to make informed decisions on risk factors for health. Finally, the **health promotion dimension** focus on the ability: to update oneself on determinants of health in the social and physical environment, to understand information on determinants of health in the social and physical environment and derive meaning, to interpret and evaluate information on health determinants in the social and physical environment, and to make informed decisions on health determinants in the social and physical environment (Sorensen et al., 2012).

The main goal of the present study was to evaluate whether this European HLS-EU scale was appropriate for discriminating health literacy levels in a Brazilian higher education population, including university and polytechnic students and lecturers of different scientific fields and educational levels, since undergraduates up to university professors.

## 2. METHOD

The European HLS-EU was set as the basis for the methodology for this research. It is composed of 47 items making a 50 point scale allowing to estimate four levels of health literacy (Sorensen, 2012):

- Inadequate: 0 to 25 pts (up to 50%)
- Problematic: >25 to 33 points (50% to 66%)
- Sufficient: >33 to 42 points (66% - 84%)
- Excellent: > 42 to 50 points (above 84%)

Vulnerable groups, with limited health literacy, were considered those below 33 points, i.e. inadequate and problematic literacy (Sorensen, 2012).

The original English questionnaire was initially translated into European Portuguese (HLS-EU-BR) by Saboga-Nunes et al. (2014). Subsequently, it was adapted to the Portuguese spoken in Brazil (HLS-EU-BR) and was validated in a population of the Brazilian State of *Minas Gerais* (Martins & Saboga-Nunes, 2014). An independent adaptation was carried out in the State of *Rio Grande do Sul* and compared with the *Minas Gerais* version. The questionnaire was adjusted and applied to a small group of university students for content validity. This Brazilian final version (HLS-EU-BR) was then accepted by the HLS-EU Consortium and is now available at the “HLS-EU-BR portal” (<http://literacia-saude.info/ls-brasil/>).

For the present study the questionnaire was applied at the beginning of four research workshops taking place in two institutions of the State of *Rio Grande do Sul*, at the Regional University of the Northeast Region of Rio Grande do Sul (UNIJUI) and Federal Polytechnic Institute of Farroupilha (IFF). Data collection was obtained from 179 respondents, participating in the four workshops: (i) 21 undergraduate students in agribusiness, (ii) 40 undergraduate students in computational science, (iii) 31 master students and professionals in the field of health; (iv) 87 master, PhD students and lecturers holding a master or PhD degree, most of them in the field of Education.

Being a digital questionnaire (<http://literacia-saude.info/ls-brasil/>), data were automatically introduced in the digital HLS-EU Consortium database where all data from all different language questionnaires are pooled together. For the present study, only the data of the above four groups (179 respondents) were worked out.

For the analysis of the HLS-EU-BR internal consistence reliability, the Cronbach's alpha test was used. Pearson Chi-Square test was used for statistical analysis between groups, with significant level at 95%.

### 3. RESULTS

According to the Cronbach's alpha test, the global HLS-EU-BR, the Disease Prevention items and Health Promotion items showed “Excellent” internal consistency (0.95, 0.90 and 0.90, respectively) and Healthcare items had “Good” internal consistency (0.89). These results indicate the global HLS-EU-BR instrument has good internal consistency and good reliability of scores.

For this initial work, intending to assess the validity of this HLS-EU-BR instrument, three items of the questionnaire were analysed: age, gender and health experience.

Of the total of 179 respondents, the large majority were women (112; 62.6%) and the mean age was 33.5 years old (range 18 – 70 years old).

Results showed that the majority of this population exhibited “Problematic” (37.4%) and “Sufficient” (34.7%) health literacy (Figure 2). “Inadequate” literacy was found in 17.3% of the respondents and 10.6% showed “Excellent” literacy.

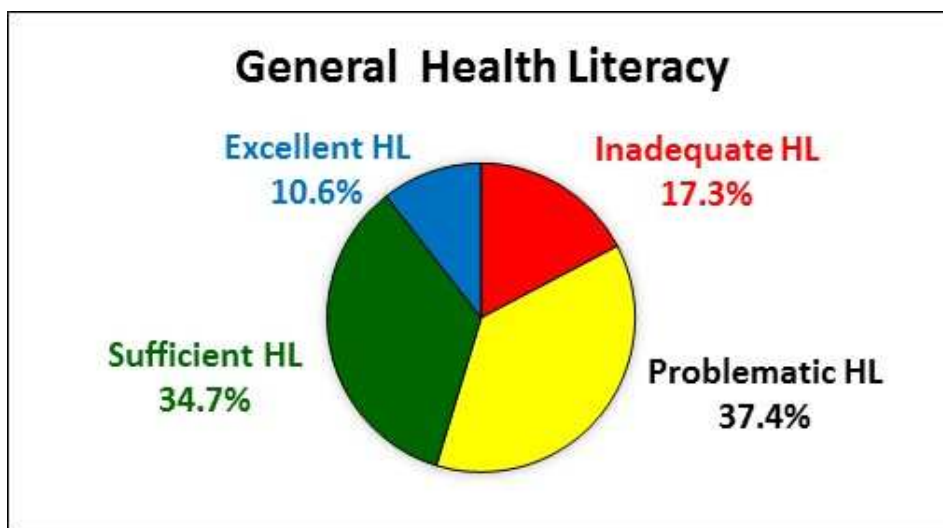


Figure 2. Levels of health literacy (HL) of the whole sample.

In order to find out possible differences in health literacy levels by age, three **age groups** were formed: 25 years old and below (43 respondents), between 26 and 35 years (71 respondents) and above 35 years old (65 respondents). Results are presented in Figure 3 and statistical analysis shows no significant differences between groups ( $p > 0.05$ ).

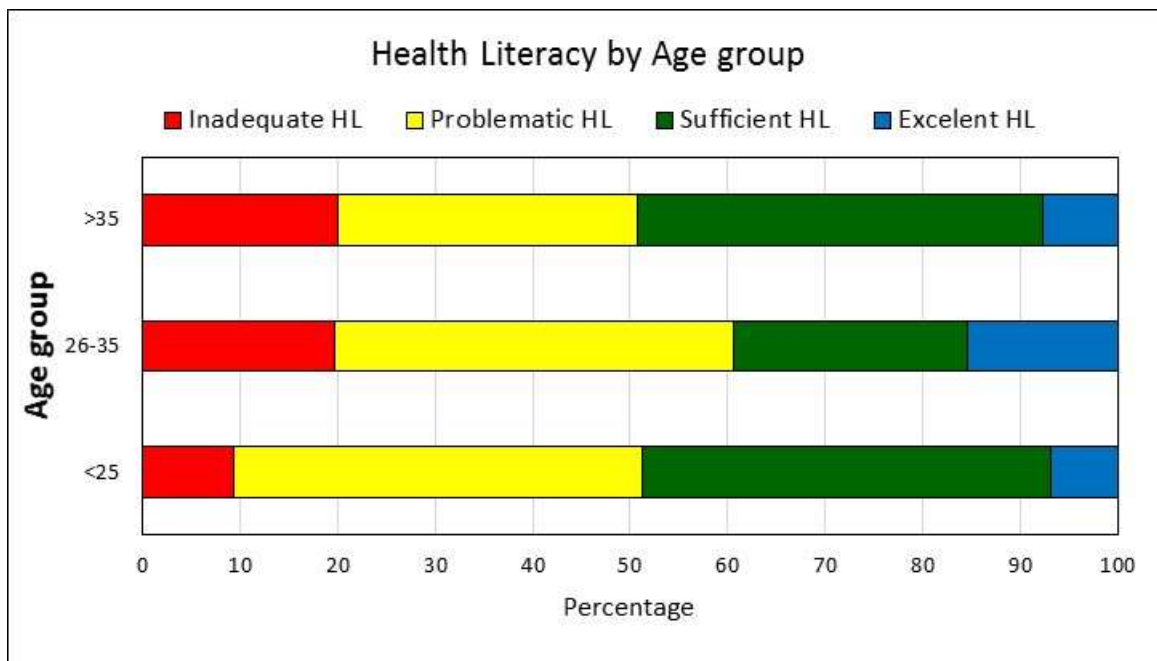


Figure 3. Health literacy by age group.  
No Significant differences were found between groups ( $p>0.05$ ).

The analysis by **gender** (Figure 4) showed that females have higher levels of Health literacy, with 13.4% of “Excellent” and 38.4% of “Sufficient” health literacy (together: 51.8%), as compared with 6.1% and 28.8% (together: 34.6%) in the case of men. These differences are statistically significant ( $p<0.05$ ).

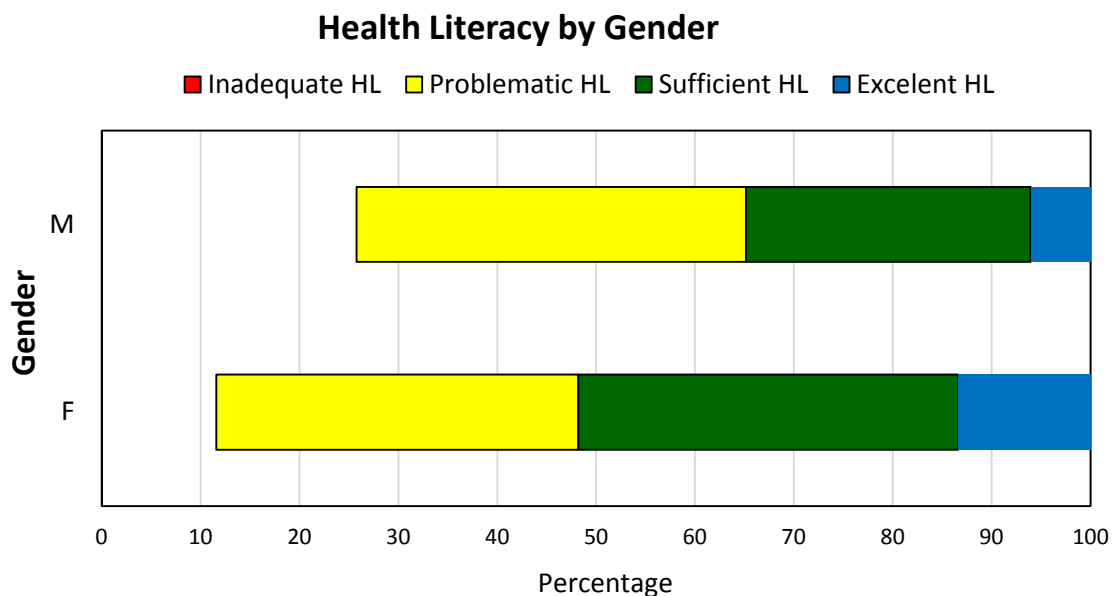


Figure 4. Health literacy by gender.  
Significant differences were found between groups ( $p<0.05$ ).

Finally, the effects of having experience in working in the health sector or having health training was analysed. As expected, strong differences ( $p < 0.0001$ ) on health literacy levels between groups were found. Data showed that of those with experience on health, 26.2% had “Excellent” and 52.4% had “Sufficient” health literacy (together: 78.6%), as compared with 4.9% and 27.0% (together: 31.9%) in the case of those having no health experience (Figure 5).

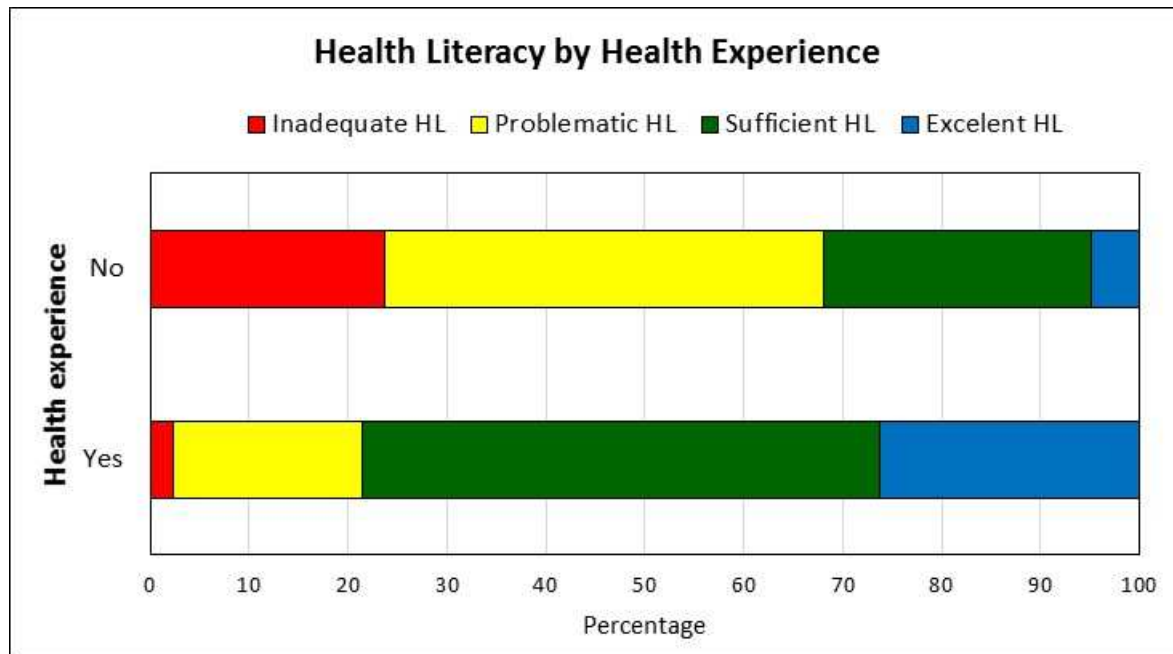


Figure 5. Health literacy by health experience and/or training. Strong significant differences were found between groups ( $p < 0.0001$ ).

#### 4. DISCUSSION AND CONCLUSIONS

This study showed that the Brazilian European Health Literacy survey, HLS-EU-BR, could differentiate the health literacy levels of a diversified sample of higher education (university and polytechnic institute) students and lecturers. Indeed, the sample was composed of undergraduate and graduate (master and PhD) students as well as university lecturers of different scientific backgrounds as referred in the “Method”. No differences concerning age ( $p > 0.05$ ) were found, but significant differences ( $p > 0.05$ ) could be found between gender, and strong significant differences ( $p > 0.0001$ ) between those having and having not health experience. These results, as a whole, indicate that this scale is very appropriate for application in higher education Brazilian population.

The health literacy levels (Excellent; Sufficient; Problematic; Inadequate) of the total Brazilian sample (Figure 1) was very similar to general health literacy levels found in the Austrian population (9.9%; 33.7%; 38.2%; 18.2%, respectively) but lower than the total of eight European countries (16.5%; 36.0%; 35.2%; 12.4%, respectively) (Sorensen et al., 2015). However, care must be taken in the comparison of these data because the academic levels of the respondents in the European countries is not specified by Sorensen et al. (2015) whereas it is clear that the Brazilian sample is composed of university students and lecturers, who are expected to have higher health literacy than the general population.

It was interesting to find better health literacy levels in the women population, which may be due to the tradition higher sensibility of women for healthy issues, who are usually more devoted than men to their own health and their children's health care.

More than half of the respondents (54.7%) showed weak health literacy (37.4% "Problematic" plus 17.3% "Inadequate" health literacy). Having in mind that the majority of this Brazilian sample is composed of teachers and teachers to be, these results indicate that more emphasis in health issues should be given in teachers training in order to make teachers more sensitive to healthy issues and to get better competencies for teaching these issues in basic education. Further analysis of the HLS-EU-BR data will allow to identify which health literacy specific matters are more fragile in the Brazilian teachers' population, so that health education and health promotion programmes to be designed for teachers' training will address such weaknesses.

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