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Original Research

Assessing the health literacy level of students in higher education: evolution throughout the training

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ABSTRACT

Objectives: This work has two objectives: contribute to evaluate the level of health literacy of students in higher education, in the area of health and to contribute to the formulation of strategies to adapt the content of training to the needs of students.
Methods: In this longitudinal observational study, a health literacy assessment questionnaire (NVS) was applied to students from 3 Health Schools and 2 different courses (Nursing and Dental Hygiene), at the beginning of the first school year, and at the end of the third year.
Results: Less than 5% of the students participating in this study had inadequate health literacy at the entrance to the course. Women had a better level of health literacy than men, although no statistical significance was found (p=0.153). The health literacy gains are different among the courses. Nursing students began with a higher level of health literacy but were overtaken by oral hygiene students at the end of the 3rd year. However, the level of health literacy did not differ statistically throughout the training, although an increase in the level of health literacy was observed.
Conclusions: The relationship between health literacy and health is recognized. Higher education institutions need to formulate strategies to adapt the content of training to the needs of students and to the level of health literacy in order to train students for lifelong learning.
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Avaliação do nível de literacia em saúde de alunos do ensino superior: evolução ao longo da formação

Palavras-chave:
Educação para a saúde
Literacia da saúde
Promoção da saúde
Enfermagem
Higiene oral

RESUMO

Objetivos: Este trabalho tem dois objetivos: contribuir para avaliar o nível de literacia em saúde dos estudantes do ensino superior, na área da saúde e contribuir para a formulação de estratégias para adaptar os conteúdos da formação às necessidades dos estudantes.
Métodos: Neste estudo longitudinal observacional foi aplicado um questionário de avaliação da literacia em saúde (NVS) a estudantes de 3 Escolas de Saúde e 2 cursos diferentes (Enfermagem e Higiene Oral), no início do primeiro ano escolar, e no final do terceiro ano.
Resultados: Menos de 5% dos estudantes participantes neste estudo tinham uma literacia de saúde inadequada à entrada para o curso. As mulheres apresentam um melhor nível de literacia de saúde do que os homens, embora não tenha sido encontrado qualquer significado estatístico (p=0,153). Os ganhos do nível de literacia de saúde são diferentes entre os cursos. Os estudantes de enfermagem começaram com um nível mais elevado de literacia de saúde, mas foram ultrapassados pelos estudantes de higiene oral no final do 3º ano de escolaridade. No entanto o nível de literacia em saúde não diferiu, estatisticamente, ao longo da formação, embora se tenha observado um aumento do nível de literacia em saúde.
Conclusões: A relação entre literacia em saúde e saúde é reconhecida. As instituições de ensino superior precisam de formular estratégias para adaptar os conteúdos da formação às necessidades dos estudantes e ao seu nível de literacia em saúde de modo a capacitar os estudantes para a aprendizagem ao longo da formação. (Rev Port Estomatol Med Dent Cir Maxilofac. 2021;62(4):223-228)

Introduction

Health literacy is an increasingly discussed concept in health promotion.[1]It emerges from different interpretations of the term "literacy," defined as the ability to read and write in everyday life, allowing individuals to have an active role in society.[2] Literacy entails a set of skills in four areas: cultural and conceptual knowledge, speaking and listening, writing, and reading and numeracy. Thus, it can be developed through educational interventions[3] and promote informed decision-making.[4]

Health literacy is the individual's ability to obtain, interpret, and understand basic health information and services in a health-promoting manner.[5] It is an important facilitator for effective participation in health care and should be considered a key factor in the communication between health professionals and patients. When assessing the level of health literacy, it is essential to consider the ability of individuals to read and evaluate how this affects their daily lives in health-related situations. Although reading skills should be the focus of this assessment, conceptual and cultural knowledge and numeracy, speech and listening skills should also be studied.[6] By achieving critical literacy skills, the individual can evaluate and have a critical and reflective opinion on health information and advice, recognizing some social determinants and decisive effects on health. These three variables increase individuals' knowledge, motivation, and ability to engage in personal and community health problems by improving, encouraging, and strengthening public health, personal health, and well-being and reducing health-related costs.[7]

On the other hand, low levels of health literacy or inadequate literacy can negatively affect an individual's health.[3] Low literacy is also associated with a decline in using health information and services, observable in disease prevention services, poor disease management, and response to health education. It also reveals inappropriate behaviors and habits related to the weak motivation to change to health-promoting behaviors.[8] It can thus be considered a risk factor in health decision-making since individuals with higher education generally exhibit higher health literacy. This rationale demonstrates a strong association between literacy, health status, and social factors. Combating the adverse effects on public health caused by low levels of literacy is essential.[4]

The students of health courses are the future professionals responsible for the education and health promotion of the individuals and populations they will work with. However, many students of health courses have important gaps in skills essential for health literacy.[9] When the internet is one of the most (if not the most) important sources of health-related information, it is necessary to work on health literacy with students but also on a wide range of fields of knowledge for health literacy.[10]

The health literacy skills of students in health courses can be improved by first studying their competencies and then providing information that reveals their shortcomings and abilities and offering them opportunities to improve.[9] It is es-

sential to ascertain and evaluate the evolution of the health literacy level of health students in higher education throughout their training. The scarcity of scientific research in this area highlights its importance and relevance.

As in any education program, the success of the health literacy training of students in higher education health courses is based on recognizing the population's needs. Among the several tools to quantify health literacy, examples are TOFHLA (Test of Functional Health Literacy in Adults) and its shortened version S-TOFHLA, REALM (Rapid Estimate of Adult Literacy in Medicine), and eHEALS (The eHealth Literacy Scale), which measures the knowledge, willingness, and skills to find, evaluate, and apply health information conveyed by electronic means. Some instruments are already adapted for adolescents, like the Rapid Estimate of Adult Literacy in Medicine-Teen version (REALM-Teen) or the KidsHealth KidsPoll of Health Literacy (KidsPoll).[11] In 2005, an instrument for measuring health literacy, the Newest Vital Sign (NVS), was developed in English and Spanish.[12] This tool uses a set of six questions based on an ice cream's nutrition label to assess the literacy and numeracy of the respondent; there is a version in Portuguese.[13]

An individual's ability to read or analyze any nutrition label requires the same analytical and conceptual skills necessary to understand and follow medical instructions. These skills constitute health literacy and include understanding and applying words (prose), numbers (numeracy), and forms (documentation). The use of a label is very relevant as there is a high correlation between poor understanding of the information on a label and a low level of health literacy, and even individuals with high reading literacy may struggle with understanding labels.[14] When reading a label or understanding medical instructions, patients need to (i) memorize numbers and perform mathematical calculations; (ii) identify and become aware of the different factors that may be potentially harmful to their health, and (iii) make decisions based on the information provided.

This work has the following two fundamental objectives: i) to contribute to evaluating the level of health literacy of health students in higher education and ii) to contribute to the formulation of strategies to adapt the contents of the training to the students' training needs.

Material and methods

In this observational cross-sectional study, the NVS questionnaire for health literacy assessment was applied to students from two courses – Nursing and Oral Hygiene – of three different health schools at the beginning of the first school year and the end of the third year. Participants had to be first-year students of the Nursing or Oral Hygiene Degrees at the Portalegre School of Health Sciences (ESSP), the Faculty of Dental Medicine of the University of Lisbon (FMDUL), or the Ribeiro Sanches College of Health (ERISA) of the Polytechnic Institute of Lusofonia (IPLuso). The study was approved by the Ethics Committee of FMDUL.

After obtaining permission to participate in the study and signing an informed consent form, participants responded to the survey by questionnaire in a classroom at each institution, taking about 10 minutes to complete it. In the first year, the questionnaire was applied at the beginning of the school year, while in the third year, it was applied at the end of the school year. Even though the nursing course had four years of training, the last questionnaire was carried out in the third year of school training for uniformity of observation.

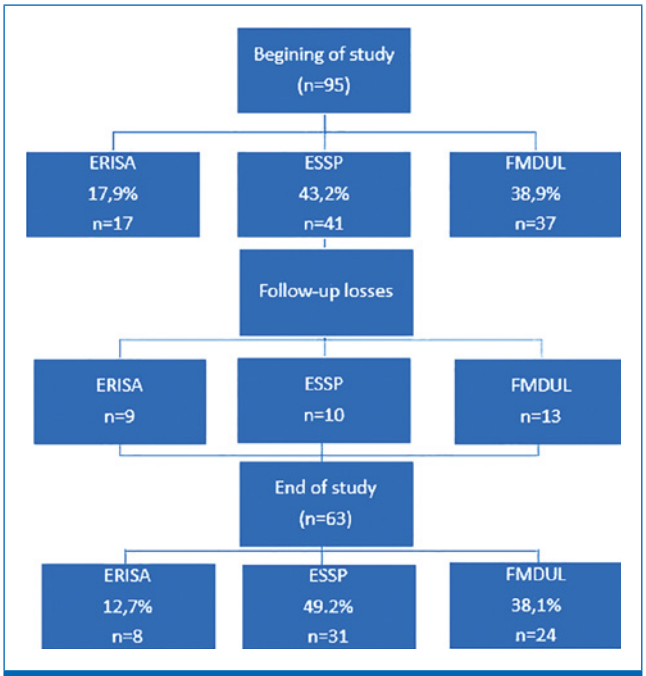

Figura 1. Flowchart of the evolution of the number of participants in the study, percentage figures for total participants.

During the study period, there was a loss to follow-up, which was most relevant at ERISA, resulting in this institution having a diminished relevance in the final sample size. In turn, ESSP increased its weight slightly in the final sample size. FMDUL's sample size did not suffer major changes. In all schools, losses were due to students' retention and dropouts. Figure 1 shows the evolution of the number of study participants.

The survey consisted of the Portuguese version of the NVS. This instrument places great emphasis on the use of skills for the analysis of numbers and mathematical concepts, thus encompassing literacy and numeracy, which should improve during the course. The NVS comprises a six-question questionnaire based on a food label. Respondents who answer 0–1 questions correctly are 50% or more likely to have limited health literacy, 2–3 correct answers indicate the possibility of limited health literacy, and four or more demonstrate high levels of health literacy.

The use of a food label is truly relevant due to a high correlation between poor understanding of the information on a label and a low level of health literacy since both understanding health aspects and reading a label require:

1. Decorating numbers and performing mathematical calculations
2. Identifying and becoming aware of the different aspects harmful to health
3. Making decisions based on the information provided

This relationship demonstrates the applicability of a label as an aid to assessing and quantifying an individual's level of health literacy.

For the statistical analysis, the IBM SPSS 25 (Statistical Package for the Social Sciences) was used with data analysis performed according to the variables defined, namely, the Eta test to compare nominal and interval data and descriptive statistics for sample characterization.

Results

The data collected were analyzed considering the level of health literacy throughout the school training in each and all courses. At the beginning of the study, the sample included 95 students, with 21.1% men (n=20) and 78.9% women (n=75). Regarding their enrollment in higher education, 83.5% (n=76) had enrolled through the general access competition; 6.6% through the special competition for people over 23 years old (n=6), and 9.9% through other higher education access competitions (n=9). Four people did not give this information. Concerning the level of health literacy, 72.6% (n=69) gave four or more correct answers in the NVS questionnaire, which corresponds to a high level, 24.2% gave 2 or 3 correct answers (n=23), which corresponds to an intermediate level, and 3.2% gave 0 or 1 correct answers (n=3), indicating a low level.

At the end of the study, 63 students were still participating – 19% (n=12) men and 81% (n=51) women. At this stage, 87.3% (n=55) of the participants had a high level of health literacy, with four or more correct answers to the NVS questionnaire, and 12.7% (n=8) had an intermediate level, with 2–3 correct answers. Thus, everyone got more than two questions right, which had not occurred at the beginning of the study. There are no statistically significant differences in the level of health literacy between the beginning and end of the study (p=0.187) and in the level of health literacy per sex between the beginning (p=0.153) and end of study (p=0.064).

Regarding nursing students, 53 participants started the study – 26.4% men (n=14) and 73.6% women (n=39). Of these students, 75.5% (n=37) had entered higher education via the general access competition, 8.2% (n=4) through the special access competition for those over 23 years old, and 16.3% (n=8) via other competitions for access to higher education. Four of the participants did not provide this information. The implementation of the NVS showed that 71.7% (n=38) of these students had a high level of health literacy, 26.4% (n=14) an intermediate level, and 1.9% (n=1) a low level on admission. Considering sex, one woman had a low level of health literacy, six men and eight women had an intermediate level, and eight men and 30 women had a high level. There was no statistically significant difference in health literacy level according to sex (p=0.152).

Considering the level of health literacy according to the type of access to higher education, most nursing students with a high level of health literacy (n=32) had enrolled in higher education institutions via general access competition, one via the special access competition for people over 23 years old, and four through other access competitions. Those with an intermediate level of health literacy had enrolled mainly through the general access program (n=5), followed by the special program for people over 23 years old (n=3) and other competitions (n=4). These latter figures reflect the four participants who did not provide information on the type of access to higher education, which includes the participant who presented a low level of health literacy. No statistically significant differences in the health literacy level were found between the types of access to higher education (p=0.468).

At the end of the study, 37 nursing students were still participating in the study – 24.3% men (n=9) and 75.7% women (n=28). Of these, 86.5% had a high level of health literacy (n=32), and 13.5% had an intermediate level of health literacy (n=5). All participants got at least two correct answers. Concerning the variable sex, one man and four women had an intermediate level of health literacy, and eight men and 24 women had a high level of health literacy. After 3 years of higher education in nursing, the health literacy level was statistically significantly higher in women (p=0.04). The statistical analysis also revealed there was no statistically significant difference in the level of health literacy achieved at the end of 3 years of study between the ways of access to higher education (p=0.604).

At the beginning of the study, there were 42 participants from the Oral Hygiene course, with 14.3% men (n=6) and 85.7% women (n=36). Almost all – 92.9% (n=39) – accessed higher education via the general access competition, 4.8% (n=2) through the special access competition for those over 23 years old, and 2.4% (n=1) by other competitions. At this stage, 73.8% (n=31) presented a high level of health literacy, 21.4% (n=9) a level of intermediate health literacy, and 4.8% (n=2) a low level of health literacy. Comparing the participants' health literacy level per sex, five men and 26 women had a high level of health literacy, one man and eight women an intermediate level, and two women a low level. There was no statistically significant difference (p=0.105).

Analyzing the level of health literacy according to the type of access to higher education institutions, no statistically significant difference was observed (p=0.484). Thirty students who entered via the general competition for access to higher education and one through other competitions presented a high level of health literacy. Eight students with access through the general competition and one via the special competition for people over 23 years old presented an intermediate level. Lastly, one student with access through the general competition and one with access through the competition for over 23 years old had the lowest level of health literacy.

At the end of the 3 years of study, 26 participants from the Oral Hygiene course were still participating – 11.5% male (n=3) and 88.5% female (n=23). The analysis of the health literacy level revealed that 88.5% (n=23) had a high level, 11.5% (n=3) an intermediate level, and no participant had a low level.

There was no statistically significant difference in health literacy level between sexes (p=0.130) and between types of access to higher education (p=0.072) (Table 1).

At the beginning of the study, the undergraduate nursing students had a level of health literacy higher than the undergraduate oral hygiene students, with a statistically significant difference (p=0.007). At the end of the third year of study, the results were the opposite, with the oral hygiene students presenting better health literacy than the nursing students (p=0.029).

Table 1. Comparison between the 1st and 3rd years in nursing and oral hygiene students.

	Nursing students		Oral Hygiene students	
	Year 1 (n=53)	Year 3 (n=37)	Year 1 (n=42)	Year 3 (n=26)
Literacy level				
High	n=38 (71.7%)	n=32 (86.5%)	n=31 (73.8%)	n=23 (88.5%)
Intermediate	n=14 (26.4%)	n=5 (13.5%)	n=9 (21.4%)	n=3 (11.5%)
Low	n=1 (1.9%)	n=0	n=2 (4.8%)	n=0
Literacy level per sex				
	Male / Female	Male / Female	Male / Female	Male / Female
High	n=8 / n=30	n=8 / n=24	n=5 / n=26	n=3 / n=20
Intermediate	n=6 / n=8	n=1 / n=4	n=1 / n=8	n=0 / n=0
Low	n=0 / n=1	n=0 / n=0	n=0 / n=2	n=0 / n=0
P value	0.152	0.04*	0.105	0.130

*Statistically significant

Discussion

The study aimed to contribute to an insight into the health literacy level among higher education students from the health sciences areas. Fewer than 5% of these students had inadequate health literacy, which is better than the results described in a 2015 study in Lithuania[15] and in the comparative report of health literacy in eight EU member states.[16]

Females have better health literacy than males, although no statistical significance was found. This prevalence also happened in the Lithuanian study, the comparative report of eight EU member states, and a study developed in 2014 in Holland.[15-18] The higher level of knowledge about health by females might explain this finding.[19]

Our study had limitations since we did not collect detailed health education information and collected limited demographic and socio-economic sample characteristics. These limitations jeopardize the external validation of the results.

Our results show that health literacy level gains are different across student courses. Nursing students started with a higher health literacy level but were surpassed by oral hygiene students by the end of the 3rd year. This lower gain in health literacy was also found in a study presented in 2017 where nurses were the group of health professionals with the lowest health literacy level compared to doctors and other allied health students.[20]

Access to higher education may also influence health literacy level. Students that enter higher education coming from special application systems, such as the process for people over 23 years old, may have had lower grades in high school,[20] a longer period without studying, and different demographic characteristics[18] and personal backgrounds[21] that may reflect on their health literacy level.

In the present study, the level of health literacy did not statistically differ from the first to the third year in all students of the health sciences courses studied, even though an increase in health literacy level was observed. Other studies described in the literature show the same tendency, i.e., that health literacy is different among school years,[22] increasing with the advance of studies.[23,24]

The authors believe that this study's results are a real contribution to the development of strategies necessary to answer the problems found in the research data; for example, the development of strategies to ensure the increase of literacy level throughout the education of nursing students, as happens in oral hygiene students, who obtain a higher level at the end of their education.

Another limitation of this study is the loss to follow-up as the number of participants decreased and the number of schools with both programs (nursing and dental hygiene) is different in this study, and limited in Portugal.

Conclusions

This study contributes to our understanding of higher education students' health literacy and shows its importance for people pursuing a career in health education and health professions. Future health professionals will be responsible for providing patient-centered care, which requires them to consolidate and improve their level of health literacy, particularly during years of training at higher education institutions. Health literacy training modules must be included in course curricula, adapted to the different needs of student groups, to provide a wider range of skills to these future professionals.

The relationship between health literacy and health is recognized, so higher education institutions need to formulate strategies to adapt the contents of the training and their support activities interventions to the needs of students to improve the health literacy of students, especially those who enter the course from special access programs.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed their work center protocols on access to patient data and for its publication.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

Conflict of interest

The authors have no conflicts of interest to declare.

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