SciELO Preprints

Publication status: This preprint has not been published elsewhere.

Level of digital health literacy among dental students

Marcela Macedo de Freitas Oliveira, Jonatas Silva de Oliveira, Kildson Costa Gaudencio, Tarciana Maria Pereira de Lima, Carla Cabral dos Santos Accioly Lins

https://doi.org/10.1590/SciELOPreprints.18753

Submitted on: 2026-11-04
Posted on: 2026-11-05 (version 1)
(YYYY-MM-DD)

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

e20260034
Original Article

Level of digital health literacy among dental students

Nível de letramento digital em saúde de estudantes do curso de odontologia

Marcela Macedo de Freitas OLIVEIRA[a*]
https://orcid.org/0000-0002-5157-5651
Jonatas Silva de OLIVEIRA[b]
https://orcid.org/0000-0001-5704-5427
Kildson Costa GAUDENCIO[c]
https://orcid.org/0009-0009-0040-1203
Tarciana Maria Pereira de LIMA[c]
https://orcid.org/0000-0002-9740-9536
Carla Cabral dos Santos Accioly LINS[d]
https://orcid.org/0000-0002-1018-5331

[a] UFPE - Universidade Federal de Pernambuco, Centro de Ciências da Saúde, Curso de Odontologia, Recife, PE, Brasil

[b] UNESP - Universidade Estadual Paulista "Júlio de Mesquita Filho", Programa de Pós-

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

Graduação em Odontologia, Araraquara, SP, Brasil

[c] UFPE - Universidade Federal de Pernambuco, Programa de Pós-Graduação em Odontologia, Recife, PE, Brasil

[d] UFPE - Universidade Federal de Pernambuco, Centro de Ciências da Saúde, Departamento de Anatomia, Recife, PE, Brasil

How to cite:

Oliveira MMF, Oliveira JS, Gaudencio KC, Lima TMP, Lins CCSA. Level of digital health literacy among dental students. Rev Odontol UNESP. 2026;55:e20260034. https://doi.org/

Resumo

Objetivo: Este estudo teve como objetivo avaliar o nível de letramento digital em saúde de estudantes de Odontologia da Universidade Federal de Pernambuco e verificar sua associação com características sociodemográficas e ciclo de graduação. **Material e método**: Trata-se de um estudo transversal, descritivo e quantitativo, realizado entre setembro de 2024 e agosto de 2025. O letramento digital em saúde (LDS) refere-se à capacidade de reconhecer e avaliar criticamente informações sobre saúde provenientes de diferentes formatos e fontes digitais. Para avaliação, foi utilizada a eHealth Literacy Scale, composta por oito itens com pontuação total de 8 a 40 pontos, classificando os participantes em níveis baixo, moderado ou alto. As variáveis independentes incluíram dados sociodemográficos e ciclo de graduação (básico ou profissional). A análise estatística foi realizada por meio do teste Qui-quadrado e cálculo do odds ratio, com nível de significância de 5%. **Resultado:** A amostra foi composta por 325 estudantes, dos quais 56% apresentaram nível moderado de letramento digital em saúde. O ciclo da graduação apresentou associação significativa com os níveis de letramento digital em saúde ($p<0,001$). Os estudantes do ciclo básico apresentaram menores chances de apresentar níveis moderado (61,4%) ou alto (81,3%) de letramento digital em saúde em comparação com

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

aqueles do ciclo profissional. **Conclusão**: Uma parcela expressiva dos estudantes apresenta nível moderado de letramento digital em saúde e a progressão na formação acadêmica pode contribuir positivamente para o desenvolvimento do LDS.

Descritores: Letramento em saúde; uso da intenet; estudantes de odontologia; universidades; saúde pública digital.

Abstract

Objective: This study aimed to evaluate the level of digital health literacy among dental students at the Federal University of Pernambuco, Brazil, and to verify its association with sociodemographic characteristics and program cycle (basic or professional). **Material and method:** This cross-sectional, descriptive, quantitative study was conducted between September 2024 and August 2025. Digital health literacy (DHL), refers to the ability to recognize and critically evaluate health information from different digital formats and sources. It assessed the participants with the eHealth Literacy Scale, composed of eight items with a total score of 8 to 40 points, classifying them into low, moderate, or high levels. The independent variables included sociodemographic data and program cycle (basic or professional). Statistical analysis was performed using the chi-square test and odds ratio calculation, with a 5% significance level. **Result:** The sample consisted of 325 students, of whom 56% had a moderate literacy level. The program cycle was significantly associated with the levels of digital health literacy ($p<0.001$). Students in the basic cycle had lower odds of having moderate (61.4%) or high (81.3%) levels of digital health literacy compared with those in the professional cycle. **Conclusion:** A significant portion of students had a moderate level of digital health literacy, and the program cycle was associated with the level of digital health literacy, showing that progression in academic training can contribute positively to DHL development.

Descriptors: Health literacy; internet use; students, dental; universities; digital public health.

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

INTRODUCTION

A large part of the present-day population is known to use the Internet for entertainment through social media, for work, and for news and information on various topics[1]. The number of users in Brazil is estimated to be near 152 million, contributing to a change in the population's lifestyle, since daily activities have become digitized[1-3]. Within this context, individuals have gained the ability to produce messages with mass reach, including content related to health, which is shared through various platforms such as blogs, websites, and applications, through texts, photos, and videos[4,5]. People can also use these media to gain access to health information and promote their cognitive, social, and emotional well-being. It has become the largest source of information for university students[4].

On the other hand, widespread information sharing is also associated with an increase in the spread of fake health news[5,6]. As an example, we can cite the infodemic (a term used by the World Health Organization to designate the excess of information about a particular topic) during the COVID-19 pandemic, which made it difficult for users to identify the accuracy and veracity of the content disseminated on the Internet[1,5,7]. In this context, the role of health literacy (HL), and particularly digital health literacy (DHL), in society should be wmphasized, as low levels of both have been associated with greater vulnerability to health misinformation across different media, including the internet[8].

The term health literacy consists of a broad concept that refers to an individual's ability to obtain, understand, evaluate, and apply health-related information in their lives[2,3,9]. This information can be obtained from various sources and contexts, such as consultations with healthcare professionals, educational materials, and prescriptions. HL encompasses the social and cognitive skills required to critically interpret information and use it in an ethical, reflective and safe manner[3,9,10], thereby contributing to the promotion of individual and collective

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

health[3,9].

With the advancement of digital technologies and the increasing search for health information on the internet, the concept of HL has evolved by incorporating additional skills to encompass competencies specific to digitalized environments[3]. In this context, digital health literacy emerges as an extension of HL, which refers to the user's capacity and ability to recognize truthful information in various digital formats and sources[3,9,11].

HL and DHL are pillars of public health, as studies show that low levels are associated, for exemple, with late detection of diseases, maintenance of an unhealthy lifestyle, and greater resistance to the use of medications for the treatment of chronic diseases[9,11]. In an increasingly digitalized society, digital literacy is fundamental to educating citizens with analytical and critical thinking, who question the information they find[3].

Therefore, the DHL level must be known and evaluated at schools and universities to direct curricular efforts towards the use of technologies, fostering literacy and bringing digital culture into the teaching and learning process[1,3]. In the context of dental education, for example, knowledge can be effectively used to enable students and future professionals to access scientific evidence, support clinical decision-making, solve health problems and instruct and guide the population better, including patients, about the diagnosis and treatment of oral health conditions[1].

Furthermore, the integration of digital health literacy by dental professionals is essential for the development of skills in digital information and communication technologies in health (DICTH), such as eletronic health records, which are currently also part of the Brazilian Unified Health System (SUS)[8].

DHL is considered a social determinant of health directly related to the users' education level and age group, being more frequent especially among those aged 18 to 30 years, due to greater connection in social media[5,12]. It is also associated with factors such as socioeconomic

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

and education level, school and home environments, political and social variables, and greater or lesser use of the health system[13]. Promising tools have emerged to measure DHL in different societies and contexts[12,14]. For instance, the eHealth Literacy Scale (eHEALS), developed in English by Norman and Skinner in 2006, had its psychometric properties tested in various groups, including adolescents, adults, older adults, and university students[7,11,14,15].

Thus, measuring the DHL level among dental students is essential, since these professionals frequently use digital resources in their daily practice. However, despite its relevance, the literature is still scarce in studies that associate DHL among university students in dental programs[14,16]. Therefore, the justification of this study is to contribute to expand knowledge about the DHL level in this population and to provide new data that can be used to develop new educational strategies involving digital technologies. Thus, promoting the safe use of digital media to search for and disseminate health knowledge, education and communication with patients, as well to support evidence-based dental pratice. Therefore, this study aimed to evaluate the DHL level of dental students at the Federal University of Pernambuco, associating it with sociodemographic aspects and the students' program cycle.

MATERIAL AND METHOD

Study Type and Ethical Considerations

This is a cross-sectional, descriptive, quantitative study conducted at the Dental program at the Federal University of Pernambuco (UFPE), Recife, Pernambuco, Brazil, in which students from the program's 1st to 10th terms were interviewed. This study was submitted to UFPE's Human Research Ethics Committee and approved under opinion number 7.225.389, complying with Resolution No. 466/12 and its complementary resolutions of the National Health Council. Participants received informed consent forms and were instructed about the risks and benefits of the project.

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

Sample Size and Eligibility Criteria

The mean of a finite and known population was calculated to determine the minimum sample size, since the main outcome of the study corresponds to the total eHEALS score (a continuous quantitative variable). The population of 628 students regularly enrolled in UFPE's Dental program at the beginning of the research (September 2024) was used as a reference. The sample size calculation was performed using an online sample size calculator developed by the University of São Paulo, by Lauris, Brega[17](2026), adopting a confidence level of 95% (Z = 1.96), a maximum desired error of 1, and a population standard deviation of 12, obtained from a pilot study conducted prior to data collection. Thus, the minimum sample size was estimated at 294 students. Participants were recruited among students who had taken coursesin the second semester of 2024 and the first semester of 2025. Eligibility criteria included individuals of both sexes over 18 years of age and excluded those who did not agree to participate in the research. A total of 347 students were initially recruited, of whom 22 were excluded, resulting in a final sample of 325 students.

Study Variables

The independent variableswere obtained from a questionnaire developed by the authors, covering the following information: a) age (considering full years, from the date of birth to the date of data collection); b) sex (male or female); c) self-declared race/color (White, multiracial, Black, Indigenous Brazilian); d) monthly family income (in current minimum wages: 1/2 to 1; 1 to 3; 3 to 5; 5 to 10; 10 to 15 and 15 to 20); e) marital status (with a partner [married or in a domestic partnership]; without a partner [single, widowed, separated, or divorced]); and f) program cycle, divided into basic cycle (1st to 4th term) and professional cycle (5th to 10th term). Monthly family income was categorized into current minimum wage ranges to allow for statistical analysis and comparison among different socioeconomic strata. The academic cycle

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

was categorized into basic and professional, considering the curricular organization of the Dental program at the Federal University of Pernambuco, in which the initial terms predominantly comprise basic subjects, while the subsequent terms include clinical and professional training activities.

As a dependent variable, the students' DHL level was assessed using eHEALS-Br (Brazilian version), previously translated, cross-culturally adapted, and validated for Brazilian adults.The instrument demonstrated satisfactory psychometric properties, showing internal consistency, validity, and reliability for its use in the Brazilian context Mialhe et al.[15](2021).

The questionnaire has eight questions: 1. Do I know what health resources are available on the Internet?; 2. Do I know where to find useful health resources on the Internet?; 3. Do I know how to find useful health resources on the Internet?; 4. Do I know how to use the Internet to clarify my health-related questions?; 5. Do I know how to use the health information I find on the Internet to help me?; 6. Do I have the skills I need to evaluate the health resources I find on the Internet?; 7. Can I differentiate between high-quality and low-quality health resources on the Internet?; 8. Do I feel confident using information from the Internet to make health-related decisions?

Each answer is presented on a Likert-type scale ranging from 1 to 5, where 1. I strongly disagree; 2. I partially disagree; 3. I'm not sure; 4. I partially agree; 5. I totally agree. The minimum score totals 8 points, while the maximum is 40; the higher the score, the higher the person's DHL level, being: below 24 points, low level; between 25 and 32, moderate level; and above 33, high level.

Data collection

Participants were recruited through consecutive non-probability sampling, in which the researchers visited classrooms across different terms of the Dental program and invited the

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

students present to participate in the study until the previously calculated sample size was reached. The researchers initially explained the study to the participants and asked about their interest in participating. Next, the eligibility criteria for the volunteers were verified; after being considered eligible, they gave their consent by completing the informed consent form. Then, they answered, in a self-administered manner, the sociodemographic questionnaire, followed by the DHL instrument. Both were completed in the Google Forms research management application. During completion of the questionnaire, the researchers remained available to clarify any questions that arose.

Statistical analysis

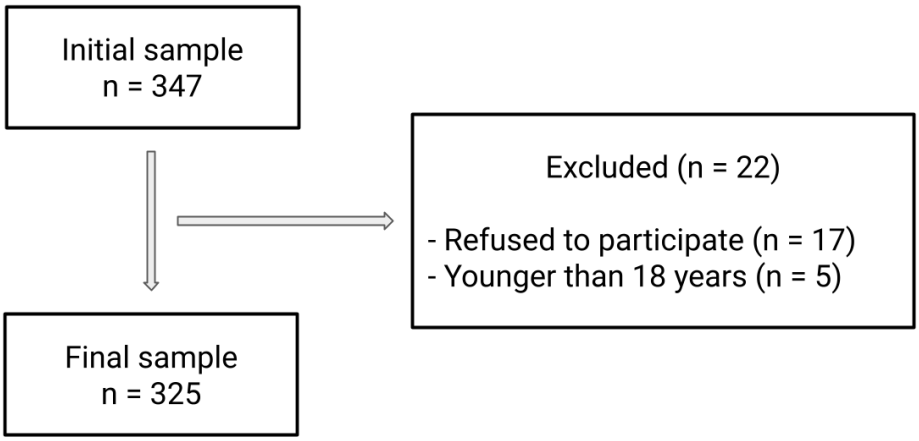
After collecting data and applying the eligibility criteria, the sample included in this study was categorized regarding sociodemographic aspects, dental program cycle, and DHL. Descriptive data analysis was performed in Excel 2019 using means and frequency values to characterize the sample. In addition, the mean and standard deviation were calculated for each response to the e-HEALS questionnaire. The chi-square test (X^2) was applied to verify the associations between the independent variables and the DHL level. Furthermore, a multinomial logistic regression was performed for the significant variables, with the model fitted to the logit link function, estimating coefficients (B), standard error, statistical significance (p-value), odds ratio (OR), and confidence intervals (95%). To facilitate the interpretation of the results, when the OR was less than 1, the magnitude of the association was expressed as the percentage reduction in the odds, calculated as $(1 - OR) \times 100$. All analyses were conducted using SPSS software (IBM® SPSS® Statistics, version 29.0.0.0 (241), Chicago, IL, USA) with a 5% significance level ($\alpha = 0.05$). The figures were created using GraphPad Prism version 10.5.0 (GraphPad Software, San Diego, CA, USA).

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

RESULT

A total of 347 forms were completed by students during data collection. After excluding those who did not meet the eligibility criteria, the final sample consisted of 325 participants (Figure 1).

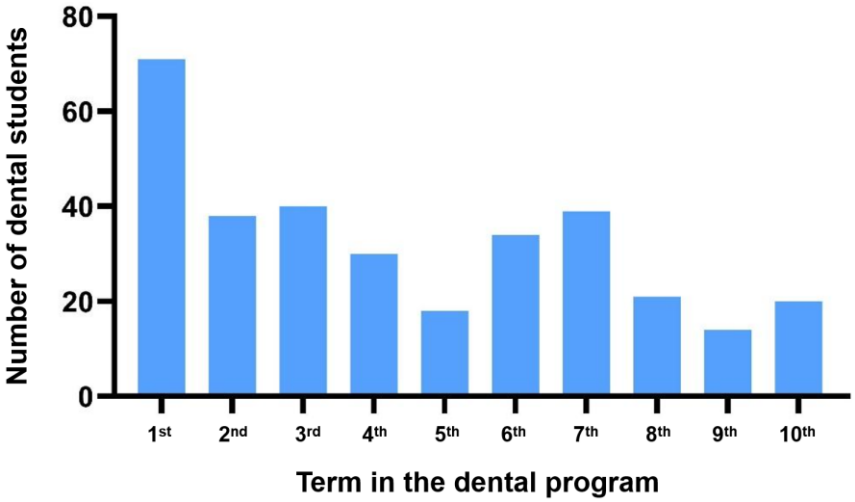
Figure 1. Study flowchart for final sample selection. Recife-PE, 2025.



The university students' sociodemographic aspects showed that 87% were 18 to 25 years old, 71% were female, 47% self-identified as White, 62% had an income of less than three minimum wages, 89% did not have a partner, and 55% were in the basic cycle of their undergraduate studies. Regarding the latter, there was a predominance of students in the basic cycle and, specifically, a greater participation of students in their first term (Figure 2).

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

Figure 2: Sample distribution per term of undergraduate dental studies. Recife-PE, 2025.



Regarding the DHL level assessed with eHEALS, it was found that 56% of students presented a moderate level, 35% a high level, and 9% a low level. The evaluation of responses to the eHEALS questions found an overall average score of 30.72 (corresponding to a moderate level of DHL) for the sample and a significant variation in student responses when comparing questions 4 and 8. The highest average response was observed for question 4 (4.30), demonstrating that students know how to use the Internet to clarify their health-related questions. Conversely, they do not feel confident using Internet information to make health-related decisions, as indicated by question 8, which has the lowest average response (3.19).

Table 1 presents the association analysis between sociodemographic data, program cycles, and DHL levels. "Program cycle" was significantly associated ($p < 0.0001$) with DHL.

Multinomial logistic regression revealed that the program cycle is significantly associated with the DHL level. Students in the basic cycle had a 61.4% reduction in the odds of belonging to the moderate level, compared with the low level of digital health literacy, when compared with students in the professional cycle (OR = 0.386, 95% CI = 0.150–0.994; p = 0.049). In addition, students in the basic cycle had an 81.3% reduction in the odds of belonging

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

to the high level, compared with the low level of digital health literacy, when compared with students in the professional cycle (OR = 0.187, 95% CI = 0.071–0.494; p = 0.001) (Table 2).

Table 1. Association of sociodemographic data and program cycles with the level of digital health literacy. Recife – PE, 2025

Variables	**DIGITAL HEALTH LITERACY**				***p-value****
Sex	**Low**	**Moderate**	**High**	**Total**	
Females	24	128	80	**232**	0.357
Males	5	53	35	**93**	
Total	**29**	**181**	**115**	**325**	
Age	**Low**	**Moderate**	**High**	**Total**	
18-25 years	26	158	97	**281**	0.671
> 25 years	3	23	18	**44**	
Total	**29**	**181**	**115**	**325**	
Rent	**Low**	**Moderate**	**High**	**Total**	
< 3 minimum wages	20	111	71	**202**	0.729
> 3 minimum wages	9	70	44	**123**	
Total	**29**	**181**	**115**	**325**	
Self-declared race	**Low**	**Moderate**	**High**	**Total**	
White	11	90	52	**153**	
Multiracial	13	71	46	**130**	0.593
Black	5	18	17	**40**	
Indigenous Brazilian	0	2	0	**2**	
Total	**29**	**181**	**115**	**325**	
Marital status	**Low**	**Moderate**	**High**	**Total**	
No partner	26	159	104	**289**	0.780
With a partner	3	22	11	**36**	
Total	**29**	**181**	**115**	**325**	
Program cycle	**Low**	**Moderate**	**High**	**Total**	
Basic cycle	23	108	48	**179**	***< 0.0001***
Professional cycle	6	73	67	**146**	
Total	**29**	**181**	**115**	**325**	

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

Table 2. Estimated coefficients (B), standard errors, 95% confidence intervals, and odds ratios for presenting a higher level of digital health literacy, obtained by multinomial logistic regression for the level of digital health literacy (reference: low level). Independent variable: program cycle (reference: professional cycle). Results of the multinomial logistic regression analysis of the association between the program cycle and the level of digital health literacy. Reference category for the dependent variable: low level of digital health literacy. Reference category for the independent variable: professional cycle

Comparison (vs. Low)	Coefficient B	Standard error	OR (Exp(B))	95% CI	*p-value*
Moderate vs. Low	-0.952	0.483	0.386	0.150-0.994	***0.049***
High vs. Low	-1.677	0.496	0.187	0.071-0.494	***< 0.001***

OR: *Odds Ratio*. CI: Confidence Intervals.

DISCUSSION

The present research found a moderate DHL level among dental students, and a significant association was observed between DHL and the program cycle. Students in the professional cycle had higher DHL levels than those in the basic cycle, suggesting that progression through academic training may contribute to the development of these skills.

This finding of moderate levels of digital health literacy is unlike studies with samples of young people residing in developed countries, such as Portugal[18] and Hungary[19], which presented higher levels of literacy. Although this interpretation should be made with caution due to differences among the populations investigated, it is worth noting that the difference in literacy levels may be explained by the sociodemographic characteristics, educational level, and academic context of the samples.

Regarding students with a high DHL level, it is evident that they give importance to health resources on the Internet, corroborating the study by Francisco, Arriaga[13](2023),

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

showing the ability to associate information and have a critical perspective on it, and transforming it into knowledge[3].

Although it was not very expressive compared to the other levels, a considerable number of students had a low DHL level. A possible explanation for this finding is that, despite using technologies daily, higher education students do not receive specific training to critically evaluate the health information they find online[13]. Thus, the need for greater investment in promoting these students' digital literacy is evident, especially because higher education is a strategic opportunity for it, for instance, through courses that develop digital skills[13]. This becomes particularly relevant in the case of health programs, whose students can also apply this acquired knowledge to their patients.

The literature on digital health literacy among dental students is still scarce, however, a Brazilian study that evaluated DHL among medical and nursing students highlighted the importance of implementing an explicit digital health learning approach through the implementation of a curricular framework[1]. These strategies to improve the DHL level of students in health programs are extremely important for increasing confidence in the use of information for health-related decision-making[1], which was also an important issue identified in the present study. Thus, contributing to increased access to digital platforms with high-quality scientific content, facilitating their performance in an increasingly digitalized healthcare system, and also assisting their patients in searching for reliable information[20].

Discrepancies were observed between two questions answered by the students: question 4 (Do I know how to use the Internet to clarify my health-related questions?) and question 8 (Do I feel confident using information from the Internet to make health-related decisions?). This means that students are able to find information on the Internet but have difficulty critically evaluating this information and using it in health-related decision-making.

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

This contributed to what was described by Mialhe et al.[15](2021) and Macedo et al.[1](2022), demonstrating that, despite considering that they know what resources are available on the Internet, students do not feel completely safe to use this information in their daily lives[15]. This is because it is easy to disseminate health information, making it difficult to verify its quality and distancing it from clinical guidelines or scientific evidence[1], which are extremely important for dental practice. This contributes to misinformation and increases the difficulty for users to judge what is fake news or not, decreasing their safety and confidence in using and applying the knowledge obtained through the Internet[15].

Regarding sociodemographic data, this research found no significant associations with DHL. However, some studies have found associations with sex, with female students having the lowest scores, although with not such a significant difference[1,21]. Furthermore, data regarding age, another study also contrasted, demonstrating that younger individuals have more digital skills and, consequently, tend to have higher DHL levels[13]. Such differences should be interpreted cautiously due to variations in the sociodemographic characteristics of the samples and sociocultural context, which may influence the results found.

As for the self-declared race/color, monthly family income, and marital status, no associations with DHL levels were found in the present study. In the literature studied,reviewed, these associations are still poorly explored, present inconsistent results, especially among university students, or did not address the same variables as this research.

Although educational attainment was not a factor compared among the participants in this study, academic training and exposure to the university environment may contribute to the development of skills related to digital health literacy[22-24]. Enrollment in higher education strongly influences the frequency of access to networks and the search for health-related content, especially among current generations[22,23]. These findings reinforce the evidence found

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

in the present study, since university students, for the most part, access the Internet daily and use it to obtain health information[6].

There is a significant association between students in the professional cycle having better literacy than those starting the course. Entering higher education, coupled with academic performance and future expectations regarding life and professional success, leads to greater searches to improve their scientific knowledge on digital platforms and media[24]. This agrees with the study by Macedo et al.[1](2022), who demonstrated that due to repeated demands for online search, judgment, and application of information to solve clinical problems, students improve their level of digital literacy[1]. It was also found that this association exists due to the increased use of the Internet throughout the years of the course and the various possibilities that universities can offer, such as computer science courses, improving students' digital skills[25,26].

The literature reviewed had a scarcity of DHL studies among university students that could be compared with those found in this study, especially among dental students. However, there is a consensus that possessing good DHL levels is fundamental for greater discernment when making health decisions, impacting public health as a whole[6]. In view of the results, one of the critical targets to consider when planning interventions to adapt and improve DHL levels is to address students' self-confidence in the use of information and empower them digitally[1]. This requires university strategies that allow greater opportunities for access to digital platforms with high-quality scientific content[1,3].

Furthermore, there were limitations in conducting this study, especially related to the questionnaire application methods, since it was online (depending on Internet availability and mobile devices) and self-administered (whose answers depended directly on the participant's effort and/or understanding of the questions). Another limitation refers to the occurrence of selection bias, as the sample was selected through consecutive non-probability sampling, since

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

participants were recruited in classrooms across different terms of the program rather than through random selection. Further studies should encompass other health programs to obtain a comprehensive overview of DHL among university students.

CONCLUSION

This study revealed that a significant portion of dental students had a moderate DHL level, which may compromise their ability to understand and apply essential health information. It also demonstrates a lack of confidence among these students in making correct use of the resources available online. The program cycle was associated with DHL, showing that progression in academic training can contribute positively to DHL development.

AUTHORS' CONTRIBUTIONS

Marcela Macedo de Freitas Oliveira: Methodology, Investigation, Data Curation, Formal Analysis, Writing - Original Draft, Writing - Review and Editing.

Jonatas Silva de Oliveira: Formal Analysis, Writing - Review and Editing, Supervision, Validation.

Kildson Costa Gaudencio: Investigation, Writing - Original Draft.

Tarciana Maria Pereira de Lima: Investigation, Data Curation, Writing - Original Draft.

Carla Cabral dos Santos Accioly Lins: Conceptualization, Methodology, Data Curation, Writing - Review and Editing, Supervision, Project Administration.

REFERENCES

1. Macedo BSP, Yamaguchi MU, Santos ER, Dias KM, Aprile DCB, Lopes CT. Letramento digital em saúde de estudantes de enfermagem ou medicina: fatores relacionados. Acta Paul Enferm. 2022;35:eAPE02647. https://doi.org/10.37689/acta-ape/2022AO02647.
2. Azevedo ICM, Gasque KCGD. Contribuições dos letramentos digital e informacional na

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

sociedade contemporânea. Transinformação. 2017 Ago;29:163–73. https://doi.org/10.1590/2318-08892017000200004.

3. Ferreira SC, Silva ARS, Suzart LC, Oliveira FV. Ambientes interativos e o letramento digital de discentes na área da saúde. Educação UFSM. 2022;47. https://doi.org/10.5902/1984644453311.
4. Flauzino KL, Pimentel MGC, Batistoni SST, Zaine I, Vieira LOB, Rodrigues KRH, et al. Letramento digital para idosos: percepções sobre o ensino-aprendizagem. Educ Real. 2020;45(4):e104913. https://doi.org/10.1590/2175-6236104913.
5. Raquel CP, Ribeiro KG, Alencar NES, Souza DFO, Barreto ICHC, Andrade LOM. Os caminhos da ciência para enfrentar fake news sobre covid-19. Saúde Soc. 2022;31(4):e210601. https://doi.org/10.1590/S0104-12902022210601pt.
6. Figueiredo LF, Souza ECG, Kiepper Hary BHDL. E-Literacia em saúde em estudantes universitários e consumo de informações sobre nutrição. Série Ciências da Saúde. SciELO Preprints. 2022. https://doi.org/10.1590/SciELOPreprints.4963.
7. Mialhe FL, Moraes KL, Sampaio HAC, Brasil VV, Rebustini F. Normatização dos escores da escala eHealth literacy scale para avaliação do letramento digital em saúde. Revista Enferm UERJ. 2023;31:e74812–2. https://doi.org/10.12957/reuerj.2023.74812.
8. Mendonça AVM, Sousa MF. Desafios contemporâneos para a saúde digital: letramento, educação midiática e prevenção à desinformação. Rev Panam Salud Pública. 2025 Apr;49:e14. https://doi.org/10.26633/RPSP.2025.14.
9. Oliveira LP, Souza RCB, Barros JK, Moura GM, Yamaguchi MU. Evidência de validade da escala de literacia em saúde e eHEALS para idosos. Saúde Debate. 2022 Dez;46(spe 6):135–47. https://doi.org/10.1590/0103-11042022E612.
10. Guimarães CCV, Santos MR, Velasque LS, Alencar MSM. Promovendo o letramento em saúde: uma reflexão na gestão da saúde. Online Braz J Nurs. 2024;22(suppl

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

2):e20246716. https://doi.org/10.17665/1676-4285.20246716.

11. Barros JK, Oliveira LP, Souza RCB, Yamaguchi MU. Adaptação transcultural e evidências da validade da eHealth literacy scale para uso no Brasil. Rev Enferm Referência. 2022;6(1):e21066. https://doi.org/https://doi.org/10.12707/RV21066.
12. Souza NFML. Literacia digital em saúde: convergências, divergências e possíveis caminhos para um campo em evolução. RECIIS. 2024;18(3):695-715. https://doi.org/10.29397/reciis.v18i3.3746.
13. Francisco R, Arriaga MT. Literacia em saúde nos estudantes do ensino superior: que relações com o uso de redes sociais? Physis. 2023 Sep 8;33:e33031. https://doi.org/10.1590/S0103-7331202333031.
14. Norman CD, Skinner HA. eHealth literacy: essential skills for consumer heakth in a networked world. J Med Internet Res. 2006;8(2):e9. https://doi.org/10.2196/jmir.8.2.e9.
15. Mialhe FL, Moraes KL, Sampaio HAC, Brasil VV, Vila VDSC, Soares GH, et al. Evaluating the psychometric properties of the eHealth literacy scale in brazilian adults. Rev Bras Enferm. 2021 Sep 6;75(1):e20201320. English, Portuguese. https://doi.org/10.1590/0034-7167-2020-1320. PMid: 34495134.
16. Chaves LV. Literacia em saúde digital. Servir. 2023 Jun;2(ed espec 1):22-26. https://doi.org/10.48492/servir021e.
17. Lauris JRP, Brega JR. Cálculo Amostral. Bauru: USP/UNESP. Disponível em: http://estatistica.bauru.usp.br/calculoamostral/.
18. Tomás CC, Queirós PJP, Ferreira TJR. Análise das propriedades psicométricas da versão portuguesa de um instrumento de avaliação de e-Literacia em Saúde. Rev Enferm Referência. 2014 Maio-Jun;4(2):19-28. http://dx.doi.org/10.12707/RIV14004.
19. Zrubka Z, Hajdu O, Rencz F, Baji P, Gulácsi L, Péntek M. Psychometric properties of the Hungarian version of the eHealth Literacy Scale. Eur J Health Econ. 2019 Jun;20(Suppl

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

1):57-69. https://doi.org/10.1007/s10198-019-01062-1. Epub 2019 May 16. PMid: 31098883.

20. Silva JPS, Klefenz GG, Mialhe FL. Digital health literacy in dentistry: a critical review. Pesqui Bras Odontopediatria Clín Integr. 2026;26:e240114. https://doi.org/10.1590/pboci.2026.063.
21. Dadacznski K, Okan O, Messer M, Leung AYM, Rosario R, Darlington E, et al. Digital health literacy and web-based information-seeking behaviors of university students in Germany during the COVID-19 pandemic: cross-sectional survey study. J Med Internet Res. 2021 Jan 15;23(1):e24097. https://doi.org/10.2196/24097. PMid: 33395396.
22. Hong YA, Zhou Z. A profile of eHealth behaviors in China: results from a national survey show a low of usage and significant digital divide. Front Public Health. 2018 Sep 26;6:274. https://doi.org/10.3389/fpubh.2018.00274. PMid: 30320054.
23. Pereira Neto A, Barbosa L, Muci S. Internet, geração Y e saúde: um estudo nas comunidades de Manguinhos (RJ). Comunicação & Informação. 2016;19(1):20-36. https://doi.org/10.5216/ci.v19i1.35602.
24. Reis M, Ramiro L, Matos MG. Worries, mental and emotional health difficulties of Portuguese university students. Advances in Social Sciences Research Journal, 2019 Jul;6(7):558-569. https://doi.org/10.14738/assrj.67.6818.
25. Shiferaw KB, Mehari EA, Eshete T. eHealth literacy and internet use among undergraduate nursing students in a resource limited country: a cross-sectional study. Informatics in Medicine Unlocked. 2020;18:100273. https://doi.org/https://doi.org/10.1016/j.imu.2019.100273.
26. Osei Asibey B, Agyemang S, Boakye Dankwah A. The internet use for health information seeking among ghanaian university students: a cross-sectional study. Int J Telemed Appl.

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

2017;2017:1756473. https://doi.org/10.1155/2017/1756473. Epub 2017 Oct 31. PMid: 29225620.

CONFLICTS OF INTERESTS

The authors declare no conflicts of interest related to this study.

DATA AVAILABILITY

After publication the data will be available on demand to authors - a condition justified in the manuscript.

*CORRESPONDING AUTHOR

Marcela Macedo de Freitas Oliveira, Curso de Odontologia, Centro de Ciências da Saúde, UFPE - Universidade Federal de Pernambuco, Av. Prof. Moraes Rego, 1235, Cidade Universitária, 50670-901 Recife, PE, Brasil, e-mail: marcelamfreitas15@gmail.com, https://orcid.org/0000-0002-5157-5651

Received: June 17, 2026

Accepted: Outubro 30, 2026

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

Critérios SciELO Brasil

Formulário sobre Conformidade com a Ciência Aberta

versão 29 de junho de 2020

Por meio deste formulário os autores informam o periódico sobre a conformidade do manuscrito com as práticas de comunicação da Ciência Aberta. Os autores são solicitados a informar: (a) se o manuscrito é um preprint e, em caso positivo, sua localização; (b) se dados, códigos de programas e outros materiais subjacentes ao texto do manuscrito estão devidamente citados e referenciados; e, (c) se aceitam opções de abertura no processo de avaliação por pares.

Preprints

Depósito do manuscrito em um servidor de preprints reconhecido pelo periódico.

O manuscrito é um preprint?	
( )	Sim - Nome do servidor de Preprints: DOI do Preprint:
(x)	Não

Disponibilidade de Dados de Pesquisa e outros Materiais

Autores são encorajados a disponibilizar todos os conteúdos (dados, códigos de programa e outros materiais) subjacentes ao texto do manuscrito anteriormente ou no momento da publicação. Exceções são permitidas em casos de questões legais e éticas. O objetivo é facilitar a avaliação do manuscrito e, se aprovado, contribuir para a preservação e reuso dos conteúdos e a reprodutibilidade das pesquisas.

Os conteúdos subjacentes ao texto do manuscrito já estão disponíveis em sua totalidade e sem restrições ou assim estarão no momento da publicação?	
( )	Sim: ( ) os conteúdos subjacentes ao texto da pesquisa estão contidos no manuscrito ( ) os conteúdos já estão disponíveis ( ) os conteúdos estarão disponíveis no momento da publicação do artigo Segue títulos e respectivas URLs, números de acesso ou DOIs dos arquivos dos conteúdos subjacentes ao texto do artigo (use uma linha para cada dado):
(x)	Não: ( ) dados estão disponíveis sob demanda dos pareceristas (x) após a publicação os dados estarão disponíveis sob demanda aos autores – condição justificada no manuscrito ( ) os dados não podem ser disponibilizados publicamente. Justifique a seguir:

Aberturas na avaliação por pares

Os autores poderão optar por um ou mais meios de abertura do processo de *peer review* oferecidos pelo periódico.

Quando oferecida a opção, os autores concordam com a publicação dos pareceres da avaliação de aprovação do manuscrito?	
(x)	Sim
( )	Não
Quando oferecida a opção, os autores concordam em interagir diretamente com pareceristas responsáveis pela avaliação do manuscrito?	
(x)	Sim
( )	Não

SciELO Preprints - This document is a preprint and its current status is available at: https://doi.org/10.1590/SciELOPreprints.18753

DECLARAÇÃO DE USO DE INTELIGÊNCIA ARTIFICIAL

Durante a preparação do manuscrito, os autores não utilizaram a Inteligência Artificial.

This preprint was submitted under the following conditions:

- The authors declare that the necessary Terms of Free and Informed Consent of participants or patients in the research were obtained and are described in the manuscript, when applicable.
- The authors declare that the preparation of the manuscript followed the ethical norms of scientific communication.
- The authors declare that they are aware that they are solely responsible for the content of the preprint and that the deposit in SciELO Preprints does not mean any commitment on the part of SciELO, except its preservation and dissemination.
- The authors declare that the data, applications, and other content underlying the manuscript are referenced.
- The deposited manuscript is in PDF format.
- The authors declare that the research that originated the manuscript followed good ethical practices and that the necessary approvals from research ethics committees, when applicable, are described in the manuscript.
- The authors declare that once a manuscript is posted on the SciELO Preprints server, it can only be taken down on request to the SciELO Preprints server Editorial Secretariat, who will post a retraction notice in its place.
- The authors agree that the approved manuscript will be made available under a Creative Commons CC-BY license.
- The submitting author declares that the contributions of all authors and conflict of interest statement are included explicitly and in specific sections of the manuscript.
- The authors declare that the manuscript was not deposited and/or previously made available on another preprint server or published by a journal.
- If the manuscript is being reviewed or being prepared for publishing but not yet published by a journal, the authors declare that they have received authorization from the journal to make this deposit.
- The submitting author declares that all authors of the manuscript agree with the submission to SciELO Preprints.