Relação do letramento digital em saúde e a covid-19

Relationship of digital health literacy and covid-19

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ABSTRACT

Digital health literacy represents an individual's ability to analyze, understand, and apply health concepts to oneself and the community. This study aims to identify the level of digital health literacy in relation to the occurrence of COVID-19. It is a cross-sectional study that used the validated version of the eHEALS instrument, sociodemographic questions, and questions related to coping with this pandemic. Digital social networks such as WhatsApp, Facebook, and email were used to invite users to participate in the study and subsequently classify them into two groups: 1) COVID and 2) non-COVID, analyzing them individually and relating them to the level of literacy. It was observed that digital health literacy and prevention of contagion did not have significant points in the level of health literacy, something justified by the increase in transmission of fake news, the incorrect use of preventive measures, the lack of government support in a state of emergency, and the population's insecurity towards an emergency vaccine. Finally, it is noted that the majority of the research participants consider it important to have access to health information on the internet, but a minority feel confident in using this information to make decisions. Thus, digital literacy can help promote health and improve the population's quality of life.

Keywords: Health education. Pandemic. Health promotion.

RESUMO

O letramento digital em saúde representa a capacidade do indivíduo em analisar, compreender e aplicar os conceitos para a saúde e a comunidade. Esse estudo objetiva identificar o nível desse letramento com a ocorrência da COVID-19. Trata-se de um estudo transversal que utilizou a versão validada do instrumento eHEALS, questões sociodemográficas e questões relacionadas ao enfrentamento dessa pandemia. Utilizou-se redes sociais digitais: WhatsApp, Facebook e e-mail para convidar usuários a participarem do estudo para posteriormente classificá-los em dois grupos: 1) COVID e 2) Não-COVID, analisando-os particularmente e relacionando ao nível de letramento. Observou-se que o letramento digital em saúde e a prevenção do contágio não tiveram pontos expressivos no nível de literacia em saúde, algo justificado pelo aumento da transmissão de notícias falsas, o uso incorreto das medidas preventivas a falta de apoio governamental em um estado de emergência, além da insegurança da população frente a uma vacina emergencial. Por fim, nota-se que dos participantes da pesquisa a maioria considera importante ter acesso sobre saúde na internet, porém uma minoria sente-se confiante para usar essas informações para tomada de decisões. Sendo assim, o letramento digital pode auxiliar na promoção da saúde e melhora na qualidade de vida da população.

Palavras-chave: Educação em saúde. Pandemia. Promoção da saúde

INTRODUCTION

The COVID-19 pandemic spread very quickly, bringing 31,153,069 infections and 666,997 deaths registered in Brazil[1] since its beginning. Along with this panel, this disease brought many changes in social and health contexts, since isolation implied the need for a behavioral readjustment as fast as the disease's evolution. As a result, media communication means were used to expand the dissemination of information[2].

In the context of the need to disseminate information simultaneously with the disease's evolution, the World Health Organization launched a new platform aimed at using amplifiers to disseminate news in specific target groups, called the WHO Information Network for Epidemics (EPI-WIN)[3]. However, the large amount of information available demands that citizens have skills that go beyond instrumental mastery of technological devices. In addition to the need to inform, it is necessary to have the assurance of understanding, and it is important for users to be able to differentiate unreliable from reliable sources and interpret them. In the face of such a situation, a new emerging problem arises: infodemic, which is a form of health illiteracy, making digital literacy an essential tool for actions, especially in COVID-19[4].

Health literacy is a multidimensional construction that involves obtaining information through reading, writing, and interpreting texts, with the goal of evaluating the individual's comprehension of news interpretation, applying them correctly, and providing an improvement in quality of life. Through this process, the individual becomes able to make pertinent decisions about their own health, actively influencing the health of others. In the digital realm, this term applies to the dissemination of information online about a topic, aiming at health promotion[5]

Therefore, seeking to integrate the period of the COVID-19 pandemic and digital information sources, the present study used the eHEALS instrument (The Electronic Health Literacy Scale) designed by Norman and Skinner[6] This scale consists of 8 items that identify the level of electronic health literacy through active knowledge-seeking, seeking to integrate it into reality, as well as applying it daily to meet individual health needs. It was translated for use in Brazil by Barros (2020)[7] and is a self-completed questionnaire originally answered by a 5-point Likert scale, where 5 represents the highest health literacy and 1 the lowest. The final score is the sum of all answers filled in through self-knowledge of the individual-health-digital environment relationship[6] The objective of the study is to analyze if there is a difference in the level of health literacy between study participants who have already had the disease and those who have not contracted COVID-19, as well as to identify sociodemographic characteristics that interfere with this process. It is understood that the present study provides an analysis of how digital literacy aids in reducing health risks.

METHODOLOGY

The sampling design was random, with the population being the general public who use digital social media (Facebook, Instagram, WhatsApp) and email. The inclusion criteria were men and women over 18 years of age who agreed to the online acceptance of the Free and Informed Consent Term (FICT), and as an exclusion criterion, forms that were not completed in full or were repeated.

Data were collected in a single stage from April to June 2022, through an online platform: Google Forms, by sending the link: :https://docs.google.com/forms/d/e/1FAIpQLSeuuAfpXZE1nuo_brcZCqfYA4nNCwYRpbcVL via social media. Online data collection allowed for the inclusion of people from different regions of Brazil.

Participants answered the questionnaire that evaluates the level of digital health literacy of social media users using the eHEALS scale, validated for use in Brazil by Barros (2020)[7]. The average score per respondent was calculated in relation to health literacy. This score ranged from 0 (indifferent) to 5 (fully agree). The effect of digital literacy was tested in relation to infection (yes/no) and number of infections (0-2).

Regarding preventive behaviors, a weight of 1 was assigned to each behavior, and these were summed to obtain values ranging from 0 to 3. Tests were performed to verify whether the level of health literacy or preventive measures had an effect on the occurrence of COVID-19 or number of infections. For the first case, a generalized linear model (GLM logistic model) with deviation analysis was performed. In the second case, an Analysis of Variance (ANOVA) test was performed. The R program was used for result analysis[8]

Among the generalized linear models (GLM), the logistic model is the most appropriate to verify the cause and effect relationship when the response is a binary variable of type 0 or 1 (yes or no) and the predictor is a categorical data (0, 1, 2, 3). In this situation, a measure based on the method of ordinary least squares as applied to linear models is not appropriate. In these cases, an analysis of deviation from the logistic model can be used as a measure of model fit, obtaining a p-value with interpretation similar to that of ANOVA[8].

Data collection was formulated through a structured online questionnaire containing four parts: I. Free and Informed Consent Term. II. Sociodemographic profile questions (gender, age, marital status, education, income); III. eHEALS Instrument, IV Questions about coping behaviors related to the COVID-19 pandemic, related to the use of masks, hand washing and use of alcohol gel, and social distancing. The filled documents were coded in order to preserve the anonymity of the interviewees. Based on the key question about whether the disease was contracted or not,

the population of contributors was divided into two distinct groups: COVID Group and Non-COVID Group.

Responses were tabulated in Excel spreadsheets, which were subjected to statistical tests for data analysis. A descriptive analysis of the results was performed to obtain frequency graphs and tables in order to characterize the research participants. Absolute frequency and percentage were used for categorical variables. A non-parametric Spearman's rank correlation test was used to verify the possible relationship between the scores of each test.

The project was approved by the Permanent Committee on Ethics in Research with Human Beings of Unicesumar University according to the approved opinion and CAAE: 56391322.5.0000.5539. Participants were informed about the study's objectives and their rights, in accordance with Resolution 466/12 of the National Health Council and its complements, and at this time, they signed TCLE online

RESULTS

Regarding the social determinants of health, 107 responses were included, predominantly composed of females (71.96%), and the average age was 23-28 years (31.78%).

The tests performed indicate that there are no significant differences between the average number of infections based on the health literacy score (ANOVA: $p=0.729$, $F=0.808$). There are also no changes in the frequencies of COVID occurrence (0 or 1) based on the score for digital literacy ($p=0.283$) (Figures 1 and 2).

Figure 1: shows the means and standard deviations of the health literacy score by number of infections.
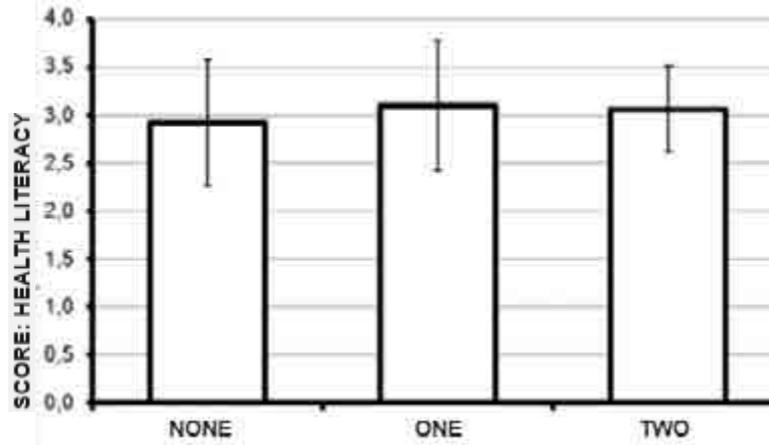
SOURCE: Author, 2022

Figure 2. Mean and standard deviation of health literacy scores according to occurrence of infection.
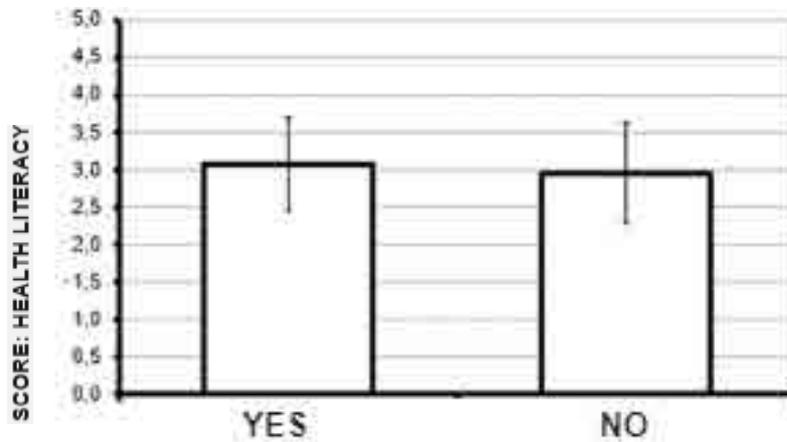
SOURCE: Author, 2022

Regarding preventive measures, no effect was found on the occurrence of infection (GLM: $p = 0.691$) or number of infections (ANOVA: $p = 0.363$, $F = 0.836$) (Figures 3 and 4).

Figure 3. Mean and standard deviation of preventive measures scores according to occurrence of infection.
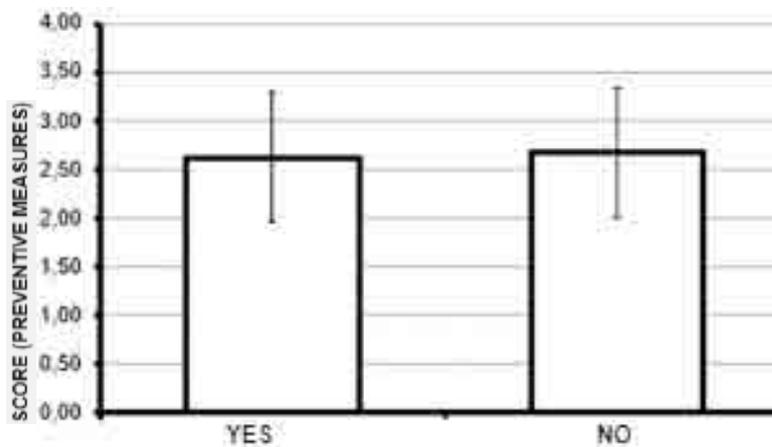
SOURCE: Author, 2022

Figure 4. Mean and standard deviation of preventive measures scores by number of infections.
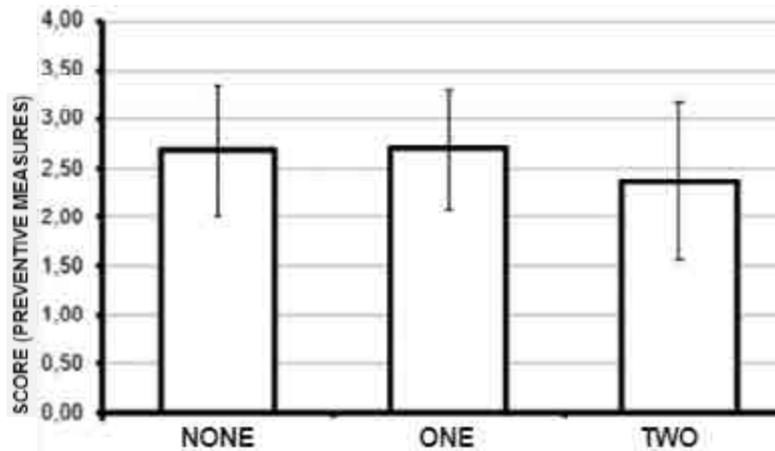
SOURCE: Author, 2022

In terms of health literacy, it is noteworthy that the majority of participants in the survey consider it important to have access to health information on the internet, but a minority feel confident in using such information to make decisions about their health (Table 1).

Table 1. Mean and standard deviation of health literacy questions

DESCRIPTION OF THE COMPONENTS OF DIGITAL HEALTH LITERACY	Avarage	DP
1- Do you consider the internet useful to help you make health decisions?	3,18	0,80
2- Do you consider important to have acess to health information on the internet?	3,46	0,69
3- I know what health content is available on the internet	2,99	0,83
4- I know how to find useful health content on the internet	3,18	0,88
5- I know where to find useful health conten on the internet	3,18	0,83
6- I know how to use the internet to answer my health-related questions	3,08	0,98
7- I know how to use the health information I find on the internet to help myself	3,12	0,94
8- I am able to evaluate the health content i find on the internet	2,90	1,15
9- I know how to distinguish reliable health content from questionable ones on the internet	2,90	1,23
10- I feel confident using information from de internet to make health decisions	2,18	1,48

SOURCE: Author, 2022

DISCUSSION

A new transdisciplinary concept in the Brazilian academic scenario, health literacy (HL), or health literacy, has been attracting growing interest from researchers from various fields[9]. Nowadays, we deal with constant health information, but in order to make use of this resource, it is necessary for the individual to have the ability to judge, competence, and motivation

to make the correct decisions for themselves and assist in the health-disease process[8,9].

HL is the ability of an individual to access information, understand it, manage it from the social context in which they are inserted, and from there think about ways to use all this knowledge to invest in promoting their health. This conception ratifies the autonomy of the subject so that they can establish choices and build perspectives in the context of promoting health, quality of life, and healthy lifestyles, without losing sight of the social determinants of health[9].

Individuals with reduced HL tend to recognize disease manifestations late, do not choose a healthy lifestyle, and have low adherence to drug treatment for chronic diseases. These facts provide an increase in hospitalizations and mortality[10].

The word 'literacy' in Portuguese is not among the health descriptors of the Virtual Health Library (VHL), which uses the expression health literacy, a fact due to the translation of the term Health Literacy to Brazilian Portuguese.

The idea of health literacy is very much linked to a functional perspective: it would be the preparation of the individual to deal with specific and necessary questions for their daily life, without requiring them to think critically or even position themselves regarding those issues[9]. Health literacy has helped many people in the management of self-care, providing autonomy and improvement in the quality of life in various pathologies[11]. However, as the population has a higher level of health literacy, it also has a greater capacity and interest in social participation, and recognizes itself as a subject of rights[9].

However, it is a topic that has been little addressed in Brazil, providing an opportunity for this research during the troubled period experienced by the pandemic, in this still scarce area in national studies.

A higher level of health literacy ensures greater protection and control of various diseases, as evidenced in various non-communicable chronic diseases[7,10]. As these diseases require intense self-care, in addition to their increasing prevalence, there is a need to develop self-skills that go beyond basic disease knowledge.

Diseases tend to become complicated according to the understanding level of the carrier in avoiding complications[11]. Supporting this statement, a study analyzed patients with cardiovascular diseases regarding health literacy. Among the analyzed population, less than half of the participants had adequate literacy, with 26.7% reporting not understanding their health condition, and more than a third of the sample did not understand medical instructions, which justifies the low adherence to medication and non-medication treatment. Thus, it was observed that patients with a lower level of understanding had less disease control and consequently developed associated comorbidities[12]. Another study related the level of understanding of diabetic patients and their glycemic control. The results are consistent with the above, in which laboratory tests of participants with inadequate literacy showed high levels of fasting blood glucose, representing inadequate disease control[13].

Therefore, considering that various diseases that had a high mortality rate could be better controlled with effective personal measures, it was expected that COVID-19, being an emerging disease that is easily transmitted, would decrease its transmission if both parties collaborated for this. However, contrary to what was presented, this study found a low correlation between preventive measures and the number of infections.

In the present study, the applied models did not show significant results. Therefore, they are not better than average and are insufficient to provide a prediction (MLG) or causality (ANOVA) between literacy and having acquired COVID-19.

Some hypotheses have emerged from these results for the lack of a positive relationship between health literacy and the reduction in COVID-19 contagion: is it due to a lack of

knowledge about preventive hygiene measures? Dissemination of fake news about the disease? Myths about immunization? Difficulties in governance during the pandemic?

According to current knowledge, SARS-CoV-2 transmission occurs mainly between individuals when an infected person comes into close contact with another person. The extent to which the virus will be transmitted between coworkers depends on the amount of viable virus being spread and expelled by a person, the type of contact that person has with others, the location of exposure, and what preventive measures are in place[15,16,17,18]

The way people adopt inadequate prevention practices, such as not knowing how to use a mask effectively, covering the mouth and nose, or even washing their hands correctly, has been evidenced in various studies on handwashing adoption in healthcare professionals and required by the CCIH (Hospital Infection Control Commission)[16,17,18,19] It is important to highlight that the World Health Organization has emphasized that the adoption of non-pharmacological measures was considered an extremely effective criterion for reducing the number of SARS-CoV-2 infections.

Additionally, the second hypothesis relates to human behavior factors of false perceptions of an invisible disease with an imminent risk of death, underestimating individual responsibility and the adoption of general measures to prevent contagion.

Furthermore, according to the results of this study, it was observed that patients with higher digital literacy levels were also getting infected and acquiring the disease, with no significant difference from those who scored lower in literacy. This explanation possibly relies on the disease in question, since according to epidemiological indices, COVID-19 started and spread very quickly, being considered an outbreak. It began in December 2019 in Wuhan, China, and quickly reached Brazil. By August 2, there were more than 17 million cases and 680,000 deaths in 216 countries, with our country being the second with the highest number of cases and deaths in the world[15,16.]

Declared as a health emergency, researchers sought to understand how this virus could bring so many negative impacts so quickly. It was necessary to understand that the virus's high survival potential in the environment indicated that it could remain viable and infectious even after hours and days of contamination, transmitting the disease even when it was innocuous in the environment.

Additionally, due to the high percentage of asymptomatic individuals who acquired the disease, there was a high rate of silent contamination in which carriers remain in the community infecting others[13]

Therefore, in cases of emergency situations like a pandemic, it is necessary to expand the dissemination of information, and digital communication becomes an important ally. The media tried to produce hypotheses that explained the decrease in contagion, prevention, and treatment in an extremely fast manner, in poorly elucidated and correctly tested research[20] This massive dissemination of information, which often diverged from each other, created a dubious and error-prone environment, leading many people to disregard what they saw and heard and even question the credibility of the media[21].

Labeled as Fake News, these are characterized as messages with a high playful content that aims to attract the reader's attention. These can negatively interfere in various sectors of society such as politics, health, and security. In the health field, this process instilled fear and chaos among news receivers, who became discredited about the veracity of the information. This impact was so negative that South Africa published a series of laws in its official Gazette prohibiting anyone from publishing about the new coronavirus, and those who disobey are subject to penalties, ranging from fines to six

months in prison[22] Brazil also did not lag behind and through the Ministry of Health, made available a number that guaranteed the classification of news as true or false [23]

Therefore, it is necessary to understand the circulation and structural dynamics of these productions that occur primarily online, on social networks. It is known that cyber-democracy is a two-way street since, at the same time that it expanded the way information is disseminated, the effectiveness of the citizen protected by computerized screens brings a danger of increasing false ideas [22]Adapting to the current situation, digital literacy in health refers to the knowledge to operate in electronic media, such as the realization and understanding of commands visualized on a network. Moreover, it is the ability to decode and differentiate false information from true information through prior knowledge[24]

Another possibility for the relationship between health literacy and the COVID-19 pandemic not presenting a satisfactory response may be associated with the many doubts that arose regarding its immunization. Doubts about its efficacy and side effects were reasons for certain mistrust by the population.

The infodemic surrounding COVID-19 and vaccine hesitancy reflect the tension between scientifically validated risk and subjectively perceived risk, also influenced by the crisis of confidence in science. Perceptions of risk and adherence to health measures go beyond subjective and rational aspects and reflect values and beliefs shaped by political, economic, and sociocultural dimensions[25]

The emergence of myths that the vaccine was not safe, that there would be implantation of microchips, infertility, alterations in DNA, and use of fetal cells made many people not take the immunizer. In the face of so many untruths, the WHO attested to the safety and efficacy of vaccines several times[16]

Another hypothesis that may have impacted the results found in the study concerns the responsibility of the federal government in managing a pandemic situation.

As of March 2020, Brazil began to face difficulties related to the confrontation of the new coronavirus. Part of this problem may be associated with governmental action or the lack thereof A political-institutional crisis related to decision-making in the context of the COVID-19 crisis is established, a situation exposed by the multiple discussions that occurred between the federal government and subnational entities.

In a speech by the federal government, in addition to minimizing the effects of COVID-19 by comparing it to a "little flu or cold," the president also signaled to governors and mayors about restrictive measures: "a few state and municipal authorities must abandon the concept of scorched earth, the prohibition of transport, the closure of commerce and mass confinement."[26] This presidential pronouncement had a negative impact on the understanding of technical bureaucracy, aligned with WHO recommendations, and presidential understanding regarding the severity[27].

The lack of coordination between federal entities, the pseudo-contradiction between objectives (economy vs. health), and the underestimation of necessary resources (legitimacy) generated a series of conflicting messages and guidance to the population, greatly hindering more effective social isolation [28]

Therefore, this study did not show significant differences in the health literacy index during the pandemic period, due to the excessive circulation of fake news that reduces the credibility of information provided to the general public, as well as being a scientifically turbulent period due to the scarcity of hypothetical evidence about a subject so new to society. Furthermore, with regards to the disease pathology, the high level of uncontrolled dissemination of SARS-Cov2 contributed to the lack of adherence to protective measures because of the belief that they were not

effective, as mass contamination continued to be a reality.

Moreover, the research presented some limitations, such as the small number of responses obtained through the online platform, which represented a small sample size for analysis. It also highlighted that during the time of the study, there were not many elucidations and proven research on the power of the virus to affect humans pathologically, in terms of transmission, contamination, and prevention, which made it difficult to obtain favorable health literacy for the study. Therefore, it is possible to infer that this result may change with the elucidation of the disease, as has been proven with other chronic diseases that did not have significant levels of health literacy and acquired this parameter as the correct understanding of the subject was gained.

CONCLUSION

COVID-19 is a potentially fatal disease that has become a global pandemic due to its high transmission and infection rates, crossing various geographical and social barriers very quickly. Adapting to this new reality was not an easy task, and required a deep understanding of the pathology to prevent various comorbidities that accompanied it. In addition, considering that it is a disease with a high transmission rate through the respiratory route, it was expected that individuals' collaboration with society would significantly reduce cases. Therefore, to effectively control the disease, individuals need to be empowered to acquire information, understand it, and apply the knowledge acquired, something known as health literacy.

According to the present study, the proposed objectives of analyzing the sociodemographic profile of people who had and did not have COVID-19 and their level of digital health literacy relating both aspects were

achieved and analyzed individually, but the premise that more informed people who use information correctly are less contaminated was not true. This unsatisfactory result was explained based on a completely new disease, with a high transmission rate, combined with low adherence to preventive measures, in addition to the negative influence that the media was having in propagating important health information to control the disease, myths about vaccines, and issues of government management. In addition, it was understood that the level of social literacy depends on extensive analysis and parameters of proven scientific knowledge, something scarce during the period of the research, but which can raise several discussions when COVID-19 is elucidated.

Therefore, this research can increase public interest in the analysis of health literacy in various social spheres because through the understanding that health literacy enables an improvement in individual quality of life and health tends to reach higher levels of resolvability. This is increasingly recognized as an important factor that affects health outcomes and a relevant component to improve the quality of care and eliminate heterogeneities in health.

It is suggested that future studies, with larger and representative samples of the population, investigate these aspects in longitudinal studies with the purpose of improving the perception of quality of life with health literacy. This work should serve as a basis for raising various discussions on the topic.

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