

ORIGINAL ARTICLE

Association between health literacy and sociodemographic characteristics of rural workers: a cross-sectional observational study

HIGHLIGHTS

1. The rural population predominantly showed low HL.
2. Educational level was significantly associated with HL level.
3. Functional HL was lower than communicative and critical HL.
4. Nurses are essential to strengthen HL.

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ABSTRACT

Objective: To assess health literacy and its association with the sociodemographic characteristics of rural workers. **Method:** Observational, quantitative, descriptive, and analytical study conducted with 101 rural workers in the municipality of Arapiraca, Alagoas, Brazil, between 2022 and 2023. A sociodemographic questionnaire and the Health Literacy Scale-14 instrument were used to assess health literacy. Individuals aged 18 years or older, living in rural areas, users of the selected Primary Health Care units, and engaged in agricultural activities were included. Descriptive and inferential data analysis was performed using the Statistical Package for the Social Sciences, applying the chi-square test. **Results:** Low health literacy predominated, corresponding to 56 cases (55.4%). Functional literacy presented the lowest levels, whereas the communicative and critical domains presented higher scores. A statistically significant association was observed between health literacy and educational level ($p=0.007$). **Conclusion:** Low health literacy may influence the health choices of the rural population, highlighting the importance of the nurse in developing these skills.

DESCRIPTORS: Health Literacy; Rural Population; Rural Health; Health Behavior; Nursing.

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INTRODUCTION

The concept of health literacy (HL) was introduced in the 1970s¹. Since then, the term has attracted growing interest among researchers and public administrators, especially after 1998, when the World Health Organization (WHO) defined it as the set of cognitive and social skills that determine the motivation and ability of individuals to access, understand, and use information in ways that promote and maintain good health. In this study, the concept established in 2000 is adopted¹.

HL can be classified as basic/functional HL, which refers to basic reading and writing skills sufficient to enable effective functioning in everyday situations; communicative/interactive HL, which refers to more advanced cognitive and literacy skills that, together with social skills, can be used to actively participate in everyday activities, obtain information, and use it to change health¹. Critical HL addresses the more advanced cognitive skills that, together with social skills, can be applied to critically analyze information and use it to exert greater control over life events and situations¹.

It is worth noting that the classification of HL is related not only to the ability to read and write but also to greater autonomy and personal empowerment. However, individuals who have not had opportunities to develop reading and writing skills are more likely to act less effectively when faced with the health information they receive².

There are several factors that influence the HL of a population, such as advanced age, low income, and low educational level³, which result in negative impacts on individuals' health outcomes. Low HL is directly associated with higher mortality rates and worse overall health status², increased costs, and a greater number of hospitalizations in health services. In addition, health disparities may lead to a lack of knowledge about the disease, deficits in self-care, low adherence to therapeutic regimens, and reduced individual autonomy³.

The scenario of the rural population is even more aggravating, as this is a group that potentially presents lower HL, owing to limited access to health information and difficulty in accessing health services⁴. Rural-area residents experience significant health inequities and tend to be older, less financially advantaged, and less educated than adults in urban areas⁵. Recent international studies indicate that urban populations have higher HL than rural populations, this discrepancy being more evident in developing countries, demonstrating the relevance of the associated sociodemographic factors, which reinforce the vulnerability of these groups⁶⁻⁷.

In Brazil, studies on the HL of the rural population are scarce, notably the research conducted in a rural settlement in Pernambuco, which analyzed farmers' knowledge and perceptions of basic care from a health-promotion perspective, following a community HL intervention⁸. In addition, a study developed with riverside residents who used primary health care in the Amazon context identified predominant levels of inadequate or limited functional HL, associated with low educational level and vulnerable socioeconomic conditions, evidencing weaknesses in these individuals' ability to understand and use health information in rural contexts⁹.

Assessing HL is essential to understand the difficulties and potential of the rural population in accessing, understanding, and using health information. This enhances nursing care and guides individualized care. In addition, nurses must be attentive to the HL specificities of the rural population, especially those working in Primary Health Care (PHC), the ideal setting for developing interventions that are accessible to the community¹⁰. In this context, this study aims to assess health literacy and its association with the sociodemographic characteristics of rural workers.

METHOD

This is an observational, quantitative, descriptive study with a cross-sectional and analytical approach. This study followed the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist for observational studies¹¹.

The study was conducted in the rural area of the municipality of Arapiraca, located in the Agreste region of Alagoas. The municipality is the second largest in the state, with 234,696 inhabitants in 2022, and is of great importance to the interior of Alagoas and strongly linked to agricultural production¹².

The study was carried out in two Primary Health Care units (Unidades Básicas de Saúde, UBS) of PHC, intentionally selected, in two villages, both located in the rural area of the municipality. The sample was a convenience sample composed of 101 users of these units.

Participants aged 18 years or older, living in the rural area of the municipality, users of the selected units, and engaged in agricultural activities were included. No participants were excluded.

Data collection was carried out from October 2022 to March 2023, with users who were waiting for care on the premises of the units. Participant recruitment took place in person at the units, through individual approach in the waiting room, before care was provided. Potential participants were invited to take part in the study and were informed about its objectives, procedures, and the voluntary nature of the research. Those who agreed to participate were included after signing the Informed Consent Form.

The interviews were conducted by four previously trained nursing students, through in-person meetings lasting 4 hours each, in which the objectives of the study, the application of the instruments, and the standardization of the approach to participants were addressed, aiming at uniformity of collection and reduction of biases. Considering the participants' different educational levels, especially those with limited reading and writing skills, data collection was carried out through a structured interview, and the questions were read and the responses recorded by the researchers in a standardized manner. The interviews lasted approximately 30 minutes.

To characterize the participants, a questionnaire developed by the researchers was used, covering sociodemographic variables (age, sex, educational level, and income). The variables of interest were categorized for statistical analysis. Age was grouped into three age ranges (20–39 years, 40–59 years, and 60 years or older). Sex was classified as female and male. Educational level was categorized as: never attended school, incomplete elementary education, complete elementary education, incomplete secondary education, and complete secondary education. Monthly income was stratified as: no income, up to one minimum wage, one minimum wage, and two minimum wages.

The level of health literacy was assessed using the Health Literacy Scale (HLS-14), an instrument developed in Japan¹³, which aims to assess HL across three dimensions (functional, communicative, and critical), and was validated for use in Brazil in 2020¹⁴.

The HLS-14 has fourteen items, five referring to functional HL, five referring to the communicative dimension, and four referring to the critical dimension, arranged on a five-point Likert scale. The summed responses make up the respondents' HLS-14 score, which can range from 14 to 70 points. Thus, the higher the total HLS-14 score, the higher the HL¹⁴.

To classify HL as high or low, the median of the total HLS-14 scores of the studied population was considered as the cutoff point, as in the study in which the instrument was developed¹³ and in the national study that also used the same instrument¹⁵. The variable obtained from the total score used the median of the HL values (44) as the reference point, so that scores of 44 or higher points were considered high HL. The quantitative data were stored in the Excel program.

Subsequently, for the descriptive analysis of the data, the International Business Machines – Statistical Package for the Social Sciences (SPSS IBM) software, version 23.0, was used. Categorical variables were expressed as absolute and relative frequency, and continuous variables as mean±standard deviation. For the inferential analysis, the Kolmogorov-Smirnov test was performed to assess normality, and the chi-square test was used to assess the association between the sociodemographic variables (age, sex, educational level, and income) and the HLS-14 score. Statistical significance was set at $p < 0.05$. The internal consistency of the HLS-14 was assessed using Cronbach's alpha coefficient, obtaining a value of 0.784, indicating adequate reliability in the studied population.

This study is part of the larger project entitled "Biomonitoramento e detecção de agrotóxicos na população rural: uma avaliação clínica, laboratorial e ambiental" (*Biomonitoring and Detection of Pesticides in the Rural Population: A Clinical, Laboratory, and Environmental Assessment*), under opinion number 4,482,481, approved by the Research Ethics Committee of the Universidade Federal de Alagoas – UFAL.

RESULTS

Table 1 presents the sociodemographic data of the 101 research participants, as well as the association with HL level. There was a predominance of female participants, with 67 participants (66.5%), and ages between 40 and 59 years, with 54 participants (53.5%). Regarding the association between HL and sociodemographic characteristics, statistical significance was evidenced only for the variable educational level, using the chi-square test ($p = 0.007$).

Table 1. Sociodemographic data and association between HL level and sociodemographic variables. Arapiraca, AL, Brazil, 2023

(continue)

VARIABLES	HLS-14	
	N (%)	P-value
Age group		
20–39 years	13 (12.8)	0.415
40–59 years	54 (53.5)	
60 years or older	34 (33.7)	
Sex		
Female	67 (66.5)	0.950
Male	34 (33.5)	

Table 1. Sociodemographic data and association between HL level and sociodemographic variables. Arapiraca, AL, Brazil, 2023

(conclusion)

HLS-14		
VARIABLES	N (%)	P-value
Educational level		
Never attended school	21 (20,8)	0.007
Incomplete elementary education	59 (58,4)	
Complete elementary education	3 (3)	
Incomplete secondary education	7 (6,9)	
Complete secondary education	9 (8,9)	
Did not answer	2 (2)	
Income		
No income	18 (17,8)	0.293
<1 minimum wage	38 (37,6)	
1 minimum wage	41 (40,6)	
2 minimum wages	4 (4)	

Legend: HLS-14: Health Literacy Scale; p-value: refers to the chi-square test; the minimum wage at the time of collection was 1,212 reais. Source: The authors (2023).

Based on the assessment of HL using the HLS-14, it was evidenced that most of the participating population (55.4%) had low HL. The mean total HLS-14 score was 43.9 points, and the standard deviation was ± 7.6 points.

Table 2 presents the distribution of HL across the three assessed dimensions. Functional HL had the lowest mean (11.62 ± 4.37), whereas communicative HL had the highest (18.54 ± 3.54). Difficulties in reading, seeking information, and assessing veracity stood out.

Table 2. Functional, communicative, and critical HL of the research participants. Arapiraca, AL, Brazil, 2023

(continue)

HEALTH LITERACY DIMENSIONS	Strongly agree n(%)	Agree n(%)	Neither agree nor disagree n(%)	Disagree n(%)	Strongly disagree n(%)	Mean	Standard deviation
Functional HL						11.62	4.37
I come across words I cannot read	32 (31.6%)	47 (46.5%)	4 (3.9%)	15 (14.8%)	3 (2.9%)		
The font size is too small for me	32 (31.6%)	45 (44.5%)	8 (7.9%)	15 (14.8%)	1 (0.9%)		
The content is too difficult to understand	31 (30.6%)	40 (39.6%)	14 (13.8%)	14 (13.8%)	2 (1.9%)		
It takes me a long time to read (the instructions)	29 (28.7%)	34 (33.6%)	15 (14.8%)	19 (18.8%)	4 (3.9%)		
I need someone to help me read	24 (23.7%)	24 (23.7%)	5 (4.9%)	34 (33.6%)	14 (13.8%)		

Table 2. Functional, communicative, and critical HL of the research participants. Arapiraca, AL, Brazil, 2023

						(conclusion)	
HEALTH LITERACY DIMENSIONS	Strongly agree n(%)	Agree n(%)	Neither agree nor disagree n(%)	Disagree n(%)	Strongly disagree n(%)	Mean	Standard deviation
Communicative HL						18.54	3.54
I look for information in various places	16 (15.8%)	59 (58.4%)	8 (7.9%)	11 (10.8%)	7 (6.9%)		
I find the information I need	13 (12.8%)	55 (54.4%)	20 (19.8%)	7 (6.9%)	6 (5.9%)		
I understand the information I find	9 (8.9%)	59 (58.4%)	18 (17.8%)	10 (9.9%)	5 (4.9%)		
I express my opinion about my illness to my doctor and family	23 (22.7%)	68 (67.3%)	2 (1.9%)	6 (5.9%)	2 (1.9%)		
I put the information I find into practice	19 (18.8%)	50 (49.5%)	13 (12.8%)	16 (15.8%)	3 (2.9%)		
Critical HL						13.97	2.55
I know when information is true	9 (8.9%)	36 (35.6%)	25 (24.7%)	26 (25.7%)	5 (4.9%)		
I take into account whether information is true	15 (14.8%)	64 (63.3%)	17 (16.8%)	4 (3.9%)	1 (0.9%)		
I have the knowledge to judge whether information is reliable	5 (4.9%)	32 (31.6%)	25 (24.7%)	31 (30.6%)	8 (7.9%)		
I gather information to make decisions to improve my health	21 (20.7%)	63 (62.3%)	5 (4.9%)	10 (9.9%)	2 (1.9%)		

Source: The authors (2023).

DISCUSSION

This study was conducted in two UBS located in the Agreste region of Alagoas, an area strongly associated with family farming¹². A predominance of female participants was observed, which may be associated with the study's research setting, since women use health services more and more easily perceive health risks, as they have greater access to health information than men¹⁶.

Regarding the assessment of health literacy, a predominance of low health literacy was observed among the respondents, which corroborates a study that found that the rural population potentially presented lower HL, since it has limited access to health information and difficulty in accessing health services⁴. However, despite lower levels of HL in rural areas, rurality by itself is not a determining factor, since factors such as educational level, income, social support, and frequency of health service use have a significant impact⁶.

The mean total HLS-14 score obtained in the present study was below that found in the study conducted in Japan, which obtained a mean of 50.3 points¹³. However, it is worth noting that, according to the 2021/2022 human development report¹⁷, Japan had a Human Development Index (HDI) of 0.925, ranking 19th globally, whereas Brazil had

an HDI of 0.754, ranking 87th. This index is composed of life expectancy, educational level, and income indicators, evidencing the disparities between the two countries, which have an impact on the HL of a population. In the national context, the mean was similar to the study conducted with adults and older adults in the municipality of Piracicaba, SP¹³, which presented a mean of 45.1 points.

When categorizing HL as high or low, without addressing the dimensions, the potential, preferences, and characteristics of certain populations are ignored¹. Understanding the strengths and limitations included in the dimensions (functional, communicative, and critical) of HL is fundamental to adapting to the singularities and needs of a population.

Illiteracy is a problem that affects the population throughout the Brazilian territory; however, a higher occurrence is observed in the North and Northeast regions of the country, with worse indicators when compared with race and income factors¹⁸. A high number of years of schooling is a consistent predictor of better HL levels, so that individuals with university or higher education presented a significantly higher probability of high HL¹⁹. The concentration of participants with a monthly income of up to one minimum wage is also noteworthy. Socioeconomic vulnerability may impact low HL, which constitutes a risk for the rural population, which suffers from socioeconomic disparities when compared with the urban population⁶.

The results of the present study demonstrated that low HL was not associated with age range, sex, and income. These data diverge from the study conducted with the rural and urban population in the United States of America⁷, in which an association, even if small, was found with such variables. Furthermore, a national study observed that women with low income are more susceptible to low HL, as are older women, evidencing the association between HL, age, and income of a population²⁰.

On the other hand, an association of low educational level with low HL was observed, as had already been demonstrated in another study²¹, conducted with a rural population in Kazakhstan, in which the participants' educational level was found to be directly associated with HL, corroborating other studies in the literature^{19,20}.

However, it is worth noting that HL is a multifaceted and multidimensional concept, involving not only reading and writing skills but also the cognitive, communicative, and critical abilities needed to access, understand, evaluate, and use health information in everyday life¹. Thus, although educational level is frequently associated with HL and may help in screening more vulnerable individuals²⁰, by itself it does not guarantee adequate levels of health literacy. Therefore, assessing HL based solely on educational level constitutes a reductionist approach, since social, cultural, and communicational factors and life experiences also influence the development of HL-related skills²⁰.

The strategies used to develop the literacy of a population, despite the difficulties presented, such as low educational level and low income, can be strengthened, for example, by understanding how the population acquires information and knowledge, whether through traditional knowledge, technology, or even the influences of the community itself²². In this context, nursing plays a fundamental role in strengthening HL, especially in Primary Health Care, through educational actions, qualified listening, and the development of communication strategies adapted to the sociocultural needs of the rural population.

Strengthening the community's HL is a powerful strategy to share, reflect on, and, when necessary, adapt health information²³. Dialogues, conversation circles, and interactions among family members, friends, colleagues, and the community are essential for promoting HL, healthy behaviors, and the community's health outcomes²³.

In addition, it is important to highlight that some studies have used the results obtained by HL instruments to plan educational interventions and strengthen self-

care in people with chronic diseases. One study observed that the application of the SKILLD and HLA-8 instruments allowed the identification of knowledge gaps in people with type 2 diabetes mellitus, supporting nursing-led interventions such as individual consultations, group activities, and telephone follow-up. After this, a significant increase in knowledge about the disease and an improvement in self-management skills were observed²⁴.

The functional HL of the interviewed population was configured as low, differing from a study conducted in Japan¹⁴ and a study conducted in the Netherlands²⁵, but similar to the national study¹⁵. This disparity may perhaps be explained by the socioeconomic characteristics of the studied population, in contrast with those of the studies from developed countries.

In this scenario, stigma may be present, since individuals with lower HL may try to hide their limitations when interacting with health professionals²⁶. In rural populations, health information sources directly influence the way individuals interpret guidance and make care-related decisions⁷. Thus, difficulties related to understanding and using this information may foster feelings of insecurity and embarrassment during contact with health services.

Difficulties related to functional HL may lead to the incorrect use of prescribed medications and to abandonment of the care plan². The findings corroborate a study that used the same instrument to assess the functional HL of adults and older adults in Piracicaba, SP, in which most participants were found to have difficulty reading words and took a long time to read the package insert and the medical prescription, with an impact on the understanding of the disease and on the quality of communication between the health professional and the patient²⁷.

The nurse, the users' main link with the health system, plays an essential role in perceiving these limitations and in providing support in the face of related needs, as well as in developing HL skills¹⁰. Encouraging/developing continuing education actions for health professionals is a strategy for raising awareness about the influences of HL on users' understanding and use of health information²⁸.

A better score was observed regarding the communicative and critical HL of the studied population. The study that used the HLS-14 instrument to assess the HL of adults in Japan¹³ evidenced differences among the functional, communicative, and critical dimensions of health literacy. According to the conceptual model proposed by Nutbeam¹, these dimensions are hierarchical and involve distinct skills, ranging from more basic reading and comprehension abilities regarding health information, in functional literacy, to more complex skills of communication, critical analysis, and decision-making. Thus, adequate levels of functional health literacy do not necessarily reflect satisfactory levels of communicative and critical literacy.

On the other hand, a national study that used the HLS-14 instrument demonstrated that there are difficulties in measuring communicative and critical HL, since they involve more advanced HL skills, becoming a challenge for the researcher¹⁵. These difficulties may be explained by the participants' embarrassment in showing that they do not seek or understand the health information necessary for their well-being, so that they omit their limitations for fear of possible reproach from the researchers¹⁵.

The stigma associated with low HL leads to the discouragement of individuals, so that they are ashamed to seek help and mask symptoms. In addition, when they feel embarrassed, a barrier is created regarding the recognition of health problems and obtaining care for these problems, with an impact on individuals' health²⁶. There may also be consequences for interpersonal relationships and for access to professionals and resources in health services, which, associated with low HL, limit individuals' autonomy and communication²⁶.

In the rural context, this understanding becomes especially important, since the development of HL is also influenced by popular knowledge, community experiences, traditional forms of care, and the social relationships established in the territory⁶. From this perspective, HL must be understood in a contextualized manner, considering the cultural and social singularities of populations, and not only formal indicators of educational level.

Regarding communicative HL, there was a predominance of participants who reported seeking, finding, understanding, and applying health information, indicating adequate levels in this domain. In contrast, in critical health literacy, there was a predominance of participants who reported not having sufficient knowledge to assess the reliability of the information accessed.

This finding is similar to that observed in a study that also assessed health literacy across the three dimensions²⁷, in which communicative literacy presented higher levels than critical literacy, evidencing greater ease in obtaining and understanding information, but with limitations in assessing its reliability and applying it to improve health. Thus, it is perceived that the more advanced HL skills, which refer to the ability to judge and evaluate the information found in order to put it into practice, were not well developed by the studied population.

This study has limitations, among them the absence of a sample size calculation. In addition, although strategies were adopted to favor the understanding of the questions, such as the application of the instrument through a structured interview, with reading by the researchers and recording of the responses, the possibility of comprehension difficulties on the part of some participants, possibly related to low educational level, cannot be ruled out. The limitation regarding the availability of instruments for assessing health literacy in the Brazilian context, especially those aimed at vulnerable populations, is also noteworthy.

Regarding the assessment of HL, through the HLS-14 instrument, which measures skills related to the topic, a predominance of low levels was observed among the respondents. However, despite part of the participants having reached higher levels, such results should be interpreted with caution, considering the possibility of concealment or masking of reading and comprehension difficulties. In addition, difficulty was found in comparing the levels of communicative and critical HL, since there is a scarcity of national studies that use the HLS-14.

CONCLUSION

The study evidenced a predominance of female participants, with low income and educational level, aged between 40 and 59 years, in addition to low levels of HL. When considering the dimensions of the instrument, it was observed that the respondents presented higher scores in the communicative and critical HL dimensions and low functional HL. On the other hand, this population may still be seeking strategies to compensate for low functional HL through communicative and critical literacy, since they stated that they seek and understand health information.

This study evidenced a higher frequency of participants presenting reduced levels of HL, which may hinder the understanding of health information and negatively influence decision-making related to self-care.

In view of the results, the fundamental role of the nurse is verified, the main link between the population and health services in rural areas, who must strengthen HL in nursing consultations, home visits, and the conduct of groups and health education actions with the population. The nurse can contribute to the development of the basic

and more advanced HL skills and, consequently, enhance the health outcomes of this population.

This study brings contributions to nursing practice, to rural workers, and to the academic community. Considering the importance and impact of HL, the need to assess and understand this construct in this population is evidenced, in order to support the development of interventions that are sensitive to HL. Furthermore, the findings of this study may guide future research, especially in the development and validation of instruments that are more sensitive to the context of vulnerable populations, as well as in the design and evaluation of educational strategies aimed at improving HL in this group.

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The authors declare that the data are available in an online repository: <https://ud10.arapiraca.ufal.br/repositorio/publicacoes/5478>

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