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Translation, cross-cultural adaptation and psychometric evaluation of Brazilian Portuguese version of the 14-item Health Literacy Scale

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Abstract *We evaluated the psychometric properties of the Health Literacy Scale – 14 (HLS-14), the Brazilian Portuguese version. In the methodological study with a cross-sectional design, the following were performed: translation, cross-cultural adaptation and evaluation of the psychometric properties. After being subjected to a committee of experts, translated and adapted, the instrument was pre-tested with 52 adults and applied to 143 adults and older people of Piracicaba-SP. Internal consistency was assessed based on the Kendall correlation coefficient and Cronbach's alpha (>0.70), and the confirmatory factor analysis (CFA) was conducted using the chi-square test, the Standardized Residual Mean Square Root (SRMR), the Root Mean Square Error of Approximation (RMSEA) (<0.05), the Comparative Fit Index (CFI) (>0.95) and the Tucker-Lewis Index (TLI) (>0.95). The analysis of operational equivalence showed agreement between most of the questions, exception questions 6, 8, 9 and 14. Cronbach's alpha was 0.82. There was reasonable adjustment in the CFA: CFI=0.886, TLI=0.86, RMSEA=0.085 (90%CI: 0.065-0.105), SRMR=0.071, chi-square (74 degrees of freedom) = 149.510, p<0.001. The exclusion of question 5 increased the adjustment level to satisfactory. The Brazilian Portuguese version of HLS-14 can be considered a valid health literacy assessment instrument.*

Key words *Validation Studies, Health Literacy, Epidemiologic Measurements*

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Introduction

Health literacy can be defined as the set of social and cognitive skills that determine the motivation and ability of individuals to access, understand and use information to promote and maintain their good health[1,2]. It has been related to empowerment due to its association with autonomy in healthcare[3], therefore becoming an important health promotion strategy[4]. Thus, studies evaluating the measurement of health literacy are of great relevance, and a challenge due to the complexity of its dimensions.

Research show that individuals with higher health literacy are likely to adopt healthier behaviors[5-7], as they are able to understand the guidelines received, such as prescriptions, appointments, package inserts and other self-care instructions[8]. However, a low level of health literacy is associated with higher rates of hospitalization, use of emergency services, errors in medication intake in relation to dosage, less knowledge about self-care and greater risk of mortality. It has been shown in the literature that individuals with low literacy seek preventive care less and have a less adequate management of chronic diseases[5,7,9-11].

Health literacy can be approached from a functional, communicative and/or critical perspective. Functional literacy consists in having basic reading and writing skills for everyday situations, such as mastering information about health risks and the use of health services. Communicative literacy represents more advanced cognitive skills, along with social skills that allow people and communities to act independently. It is the ability to extract information from different media and apply it to personal situations, changing the current circumstances. Critical literacy assesses the ability to critically analyze the information available and use it to exercise greater control over life events and situations, empowering individuals[4].

Although there is a diversity of instruments in the literature, most evaluate only functional literacy, also known as health literacy, with a predominant focus on reading and writing[12], as is the case with the Rapid Estimate of Adult Literacy in Medicine (REALM)[13] and its short version, REALM-R[14], the Test of Functional Health Literacy in Adults (TOFHLA)[7] and its short version (S-TOFHLA)[15], and the Rapid Estimate of Adult Literacy in Dentistry (REALD-30)[16], among others.

One of the few instruments related to health literacy that measures the critical and communicative dimensions is the one developed by Ishikawa et al.[6], which was later modified and expanded by Suka et al.[17] and called the 14-item Health Literacy Scale(HLS-14). HLS-14 is the only questionnaire that assesses the three levels of literacy: functional, communicative and critical. The original version was validated in a study with Japanese adults[17], and it also has a version that was validated in Holland[18].

In view of the great relevance of using an instrument capable of assessing health literacy at its three levels, the objective of this study was to evaluate the psychometric properties of the Brazilian Portuguese version of the 14-item Health Literacy Scale when applied to a population of Brazilian adults and older people.

Methodology

Study design and location

This is a methodological study with a cross-sectional design, in which the translation, cross-cultural adaptation and evaluation of the psychometric properties of the 14-item Health Literacy Scale (HLS- 14) were performed in the city of Piracicaba, São Paulo, Brazil.

Ethical Aspects

The process of evaluating the psychometric properties of the Brazilian Portuguese version of the HLS-14 instrument was previously authorized by the instrument's authors[17]. This study was approved by the Research Ethics Committee of the School of Dentistry of Piracicaba (CEP-FOP/UNICAMP).

Instrument

The Health Literacy Scale-14 (HLS-14) created and validated by Suka et al.[17] contains fourteen questions answered on a five-point Likert scale, and assesses three dimensions of literacy: functional (FL) and communicative (CoL) with 5 items each, and critical (CrL) with 4 items.

The process of cross-cultural adaptation and assessment of its psychometric properties[19-21] considered 4 stages: conceptual equivalence, item and semantic equivalence, operational equivalence and measurement equivalence.

Conceptual equivalence

In this stage, the design and conceptual equivalence of the original 14-item Health Literacy Scale (HLS-14) were studied based on the application of the instrument of Ishikawa et al. at the study baseline[6]. The questionnaire was measured on a 5-point Likert scale, with answer options that varied from totally agree to strongly disagree. It is worth noting that the score for the first five questions, related to functional literacy, is inverted, since agreeing with the statements is associated with low literacy, while for the other nine questions, related to communicative and critical literacy, agreeing with the statement is associated with high literacy. The scores of the items were added up for each volunteer, and then the final score was obtained, which indicates the level of health literacy. The higher the score, the higher the literacy level[17].

Item and semantic equivalence

For item and semantic equivalence, meetings between the researchers in the committee of experts took place so that the concepts of the original HLS-14 construct and the relevance of its application in a Brazilian population could be discussed. The committee was composed of four researchers, two of whom are fluent in English.

For semantic equivalence, the original questionnaire was literally translated from English into Brazilian Portuguese. This step was performed by two translators with proficiency in both languages, English and Portuguese, one of whom was a native speaker of English with proficiency in Brazilian Portuguese, while the other was a native speaker of Brazilian Portuguese with proficiency in English, both not aware of the research objectives.

The four researchers reached a consensus on the translation of each word after this stage, so the semantic and item equivalence could then be performed. The researchers concluded that it would be necessary to reformulate and adapt some terms to make the questionnaire easier to understand. After the modifications, the authors sent the back-translated questionnaire to the first author (and corresponding author) of the original study that validated the questionnaire in Japan, for them to properly analyze it and issue an opinion. Following the semantic analysis of the HLS-14 instrument's questions, a version translated into and adapted to Brazilian Portuguese was obtained.

Operational equivalence

The questionnaire was applied to an initial sample of 52 volunteers from the Boa Esperança I Health Unit in the city of Piracicaba-SP, selected at random, to verify their understanding of the questions and answers. After the volunteers had reported on their understanding of the instrument, it was reapplied to the same individuals, and a Kendall Correlation Test was performed between the two moments to assess the reliability of the results.

In order to ensure the preservation of the cultural and conceptual adaptation, the final version was back-translated by another independent translator who was a native speaker of English, with proficiency in both languages, to verify if the original meanings had been maintained.

Measurement equivalence

For this stage, the translated and adapted questionnaire was applied to a population of adults and older people that was part of a prospective cohort study called *Coorte de Saúde Bucal de Adultos de Piracicaba-SP* [Cohort Study of the Oral Health of Adults in Piracicaba-SP][22], conducted in 2011 (baseline) with a representative sample of adults aged between 20 and 64 living in the municipality of Piracicaba, located in the countryside of São Paulo, stratified by differences in the oral health conditions in the different age groups: young adults (20 to 44 years old) and older adults (45 to 64 years old), using two calculations. A design effect (deff) of 1.5, margin of error of 10%, confidence interval of 95%, and the data on the prevalence of caries in each age group (70.2% and 90.9%, respectively) were adopted.

The population of Piracicaba in 2000 was 368,836 in total, with 202,131 individuals between 20 and 64 years old. The sample size was 172 for adults aged between 20 and 44, and 68 for those aged between 45 and 64, totaling 240 individuals. Eleven households were randomly selected in each of the 30 census sectors. The sample selection was planned based on data from the 2000 census provided by IBGE, which were the most recent at the time of the study. In the 2000 census, the mean number of residents in the age group per household was 2.49, and the mean number of households by sector was 177.75. The probabilistic sampling technique was used to select 30 census sectors, plus 2 alternates. In each sector, 11 households were randomly selected,

according to a fraction that varied based on the number of households. One adult per household was examined, and there were 248 participants at the baseline.

In 2015, there was a follow-up, and HLS-14 was applied for the assessment of the psychometric properties. The study's inclusion criteria for this stage were individuals who had participated in the 2011 study, living in one of the households in the city of Piracicaba-SP selected via probabilistic sampling, and aged between 20 and 64 at the time. The sample in the 2015 longitudinal study was 143 adults between 23 and 69 years old[22].

Data collection took place in the households between June and September of 2015. The clinical oral examination, an interview and the application of the HLS-14 instrument were performed. The instrument's application lasted approximately 15 minutes. In addition to this questionnaire, each volunteer provided other information related to demographic and socioeconomic factors.

Statistical Analysis

Excel® and the Statistical Package for the Social Sciences (SPSS), version 20.0, were used for the statistical analysis. Kendall's correlation coefficient and Cronbach's α were estimated, according to which the instrument may be considered adequate if its internal consistency is greater than or equal to 0.70[23]. Confirmatory factor analysis was performed to evaluate the factorial structure's validity using the Mplus software, based on the structure presented in the model proposed by Suka et al.[17]. Robust maximum-likelihood estimation was considered given that the categorical variables were measured on a Likert scale of 4 or more[24]. The model's goodness of fit was verified using the chi-square test and the following indices: the standardized residual mean square root (SRMR), for which the cut-off point adopted was < 0.80[25], the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the Tucker-Lewis index (TLI). In general, RMSEA < 0.05 indicates a good fit, but values between 0.05 and 0.08 are reasonable. CFI and TLI values > 0.95 indicate a good fit[25].

The convergent validity of the factors was obtained with the measures of Average Variance Extracted (AVE) and Composite Reliability (CR). AVE ≥ 0.50 and CR ≥ 0.70 were considered adequate. To assess the discriminant validity, the AVE of each factor was compared with the square of the correlation between factors (ρ_{ij}^2). Discriminant validity is considered when AVE_i and $AVE_j \geq (\rho_{ij}^2)$[26]. To assess possible ceiling/floor effects, the sum was estimated and its distribution was evaluated, after which the different distributions of sex and age in the items' responses were identified, using the analysis of variance to compare the means and the Levene test to compare the variances of the sum of the items.

Results

The questionnaire was translated by two translators, and after this stage, an evaluation was carried out by the committee of experts so the four researchers involved could reach a consensus. After the researchers' evaluation, the back-translated and adapted questionnaire was sent to the author of the original one, who suggested changes to questions 10, 12 and 14. Adjustments to avoid possible difficulties in the understanding of some of the questions were made, as shown in Box 1.

Changes to the statement preceding the communicative literacy factor were needed to improve its understanding. The sentence was rewritten as follows: "*Quando você lê bulas de remédio, responda*" [If you read medication package inserts, please answer]. In question 1, the term *caracteres* (characters) was replaced by *palavras* (words), as it better expressed the meaning intended. In question 6, the term "*diversas fontes*" [different sources] was replaced by *"em vários lugares*" [in several places].Likewise, in question 7, the word *"extraio*" [extract] was replaced by *"encontro*" [find], without changing its meaning. Sequentially, in question 8, the word "*obtive*" [obtained] was replaced by "*encontrada*" [found], while in question 9, the word "*informo*" [inform] was replaced by "*falo*" [speak]. In question 10, the word "*aplico*" [apply] was replaced by "*coloco emprática*" [put into practice], and also, the word "*obtive*" [obtained] was replaced by "*encontrada*" [found]. In the twelfth question, the term *"levo em conta*" [take into account] was replaced by the word *"sei*" [know]. Similarly, in question 14, the expression *"Eu junto informações em que posso basear minhas informações sobre saúde*" [I gather information on which I can base my health-related knowledge] was replaced by "*Eu pego informações gerais que me ajudam a tomar decisões de como melhorar minha saúde*" [I gather general information that helps me make decisions on how to improve my health].

According to the volunteers' general report, the instrument was considered important to as-

Chart 1. HLS-14 instrument in its original version, translated and cross-culturally adapted. Piracicaba-SP, Brazil, 2015.

Q1	Original version: I find characters which I cannot read. Translated version: Eu encontro caracteres que não consigo ler. Adapted version: Eu encontro palavras que não consigo ler.
Q2	Original version: The print is very small for me (although I use glasses). Translated version: A impressão é muito pequena para mim (apesar de eu usar óculos). Adapted version: O tamanho da letra é muito pequena para mim (apesar de eu usar óculos)
Q3	Original version: The content is very difficult for me to understand. Translated version: O conteúdo é difícil demais para eu entender. Adapted version: O conteúdo é muito difícil de entender.
Q4	Original version: It takes a long time to read (the instructions). Translated version: Leva muito tempo para ler (as instruções). Adapted version: Demoro muito para ler (as instruções).
Q5	Original version: I need someone to help me reading them. Translated version: Eu preciso que alguém me ajude a ler. Adapted version: Eu preciso que alguém me ajude a ler.
Q6	Original version: I look for information at various sources. Translated version: Eu procuro informações em diversas fontes. Adapted version: I look for information at several sources.
Q7	Original version: I extract information that I want. Translated version: Eu extraio a informação que eu quero. Adapted version: Eu encontro a informação que preciso.
Q8	Original version: I understand the information I get. Translated version: Eu entendo a informação que obtive. Adapted version: Eu entendo a informação encontrada.
Q9	Original version: I pass on my opinion about my illness, to the doctor, family and friends. Translated version: Eu informo a minha opinião sobre a minha doença, ao meu médico, familiares ou amigos. Adapted version: Eu falo minha opinião sobre a doença ao meu médico, familiares ou amigos.
Q10	Original version: I apply the information I receive, through self-assessment, to my lifestyle and daily routine. Translated version: Eu aplico as informações que obtive à minha vida no dia a dia. Adapted version: Eu coloco em prática as informações encontradas no meu dia a dia.
Q11	Original version: I take into account if the information is applicable to me. Translated version: Eu levo em conta se as informações se aplicam a mim. Adapted version: Eu sei quando as informações são boas no meu caso.
Q12	Original version: I take into account if the information is acceptable. Translated version: Eu levo em conta se as informações são verdadeiras. Adapted version: Eu levo em conta se as informações são verdadeiras.
Q13	Original version: I verify if the information is valid and reliable. Translated version: Eu verifico se as informações são válidas e se posso confiar. Adapted version: Eu tenho conhecimento para julgar se as informações são confiáveis.
Q14	Original version: I put together information on the basis of my decisions about health. Translated version: Eu junto informações em que posso basear minhas decisões sobre saúde. Adapted version: Eu pego informações que me ajudam a tomar decisões de como melhorar minha saúde

sess their ability to understand the instructions given by health professionals.

The instrument's final version was applied in a pre-test with 52 patients of health units. After the Kendall correlation test, all questions were associated in the comparison between the first and second applications of the questionnaire, exception questions 6, 8, 9 and 14 ($p < 0.05$).

When the literacy questionnaire was applied to a sample of adults and older people from Piracicaba (n = 143), the majority of those examined were women, between 49 and 69 years old,

with more than 11 years of schooling (Table 1). The internal consistency of the instrument was 0.82, estimated using Cronbach's α coefficient. For each dimension, there was a different value of Cronbach's α coefficient. For functional literacy, α = 0.66; for communicative literacy, α = 0.90; and for critical literacy, α = 0.81.

By applying confirmatory factor analysis to the model of Suka et al.[17], it was found to have reasonable goodness of fit for all indices: CFI = 0.886, TLI = 0.86, RMSEA = 0.085 (90%CI: 0.065-0.105), SRMR = 0.071, chi-square (74 degrees of freedom) = 149.510, p < 0.001. High correlation (0.80) between ComL and CrL was observed. The exclusion of question 5 in the analysis of the instrument raised the adjustment indexes to satisfactory levels: CFI = 0.930, TLI = 0.912, RMSEA = 0.075 (90%CI: 0.046-0.093), SRMR = 0.064, chi-square (64 degrees of freedom) = 104.288, p < 0.001. Therefore, the usual CFA criteria were met. FL corresponded to 26%, CoL to 74%, and CrL to 53% of the model's variance. The standardized estimates, the correlations between factors and the standard deviations of the errors are shown in Figure 1.

According to the measures of Average Variance Extracted (AVE) and Composite Reliability (CR) obtained, factors F2 (ComL) and F3 (CrL) showed convergent and discriminant validity, while factor F1 (LF) showed problems of discriminant validity (Table 2).

The sum of the items varies between 14 and 62, with 25, 50 and 75 percentiles (42, 46, 50). The asymmetry value (-0.86) indicated that there was not much symmetry, and kurtosis (4.53) suggested that the tails are heavier. There were no differences in the distribution of the items according to sex (Anova: p = 0.5064, Levene: p = 0.6912). For age, there were no differences in the items' variances according to age quartiles (p = 0.1773), but there was a difference in means (p = 0.004): up to 32 years of age, scores tended to be higher (mean = 48, 58) and decreased according to age; between 33 and 45 years, the mean was 46.44; between 46 and 54 years, it was 44.17; and above 55 years, it was 42.38.

The mean total score of HLS-14 was 45.16, and the standard deviation (SD) was 7.8 in this sample of adults. A total of 53.8% (n = 77) of this sample was highly literate. It can be noted that 43.4% (n = 62) of the interviewees reported difficulty understanding the words contained in the package inserts, 46.2% (n = 66) considered the inserts' print to be too small, and 60.1% (n = 86) of the volunteers affirmed that they do not seek additional information to make better decisions about their health (Table 3).

Table 1. Demographic and socioeconomic characteristics of adults and older people living in Piracicaba-SP, Brazil, 2015.

Variables	n	%
Family income		
High (≥ 4 MW)	48	33.6
Average (2-3 MW)	33	23.1
Low (≤ 1 MW)	47	32.9
Sexo		
Woman	40	28.0
Man	103	72.0
Age		
23 to 48 years old	68	47.6
49 to 69 years old	75	52.4
Education level (years)		
11 or more	78	54.5
5 to 10	34	23.8
Up to 4	31	21.7

Discussion

Knowing a population's health literacy is extremely important, as it has been identified as a health promotion strategy by WHO[1]. Despite representing a challenge, the measurement of health literacy has brought advances to public health in Brazil, which has recently been developing studies in this field. In the country, most evaluations of the psychometric properties of health literacy instruments measure the population's understanding and reading ability, whereas the present study evaluated an instrument that proposes the measurement of health literacy at its three levels: functional, communicative and critical. Health literacy should be understood as an aspect that goes beyond reading ability, extending to social and political issues that imply the exercise of citizenship[27]. In this study, the Brazilian Portuguese version of the HLS-14 instrument was proven to be valid, although some adjustments are necessary to assess the Brazilian adult population's health literacy in a more appropriate manner. The instrument's application is simple and quick, lasting about fifteen minutes, and it can thus be used in clinical environments or in collective strategies.

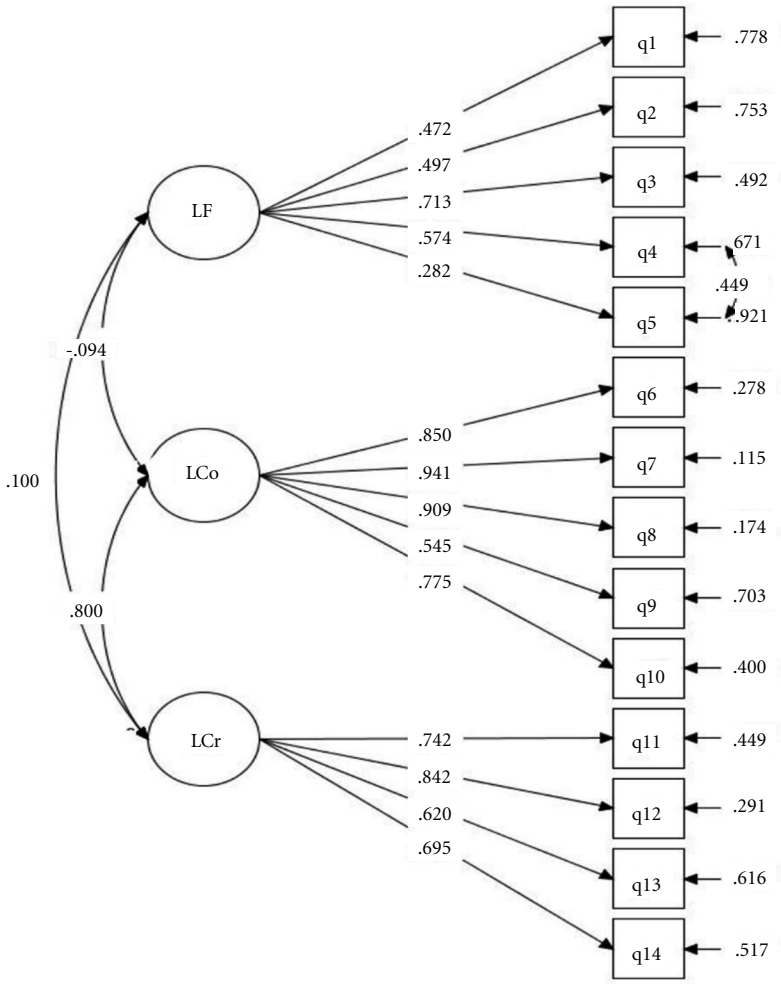

Figure 1. Confirmatory factor analysis of the health literacy model.

LF/FL - Functional Literacy; LCol/CoL - Communicative Literacy; LCr/CrL - Critical Literacy; q - Question (1 to 14).

The authors of the validation study of the HLS-14 instrument's Dutch version[18] pointed to a lack of instruments capable of assessing literacy at its three levels and with applicability in different populations. This fact influenced the choice of this instrument in the present study, where it was proven to be applicable to the Brazilian population after undergoing semantic adaptations that improved the sample's understanding of the questions.

In the present study, there was disagreement concerning the operational equivalence of four questions (6, 8, 9 and 14) within the communicative and critical dimensions. This fact was also pointed out in the Dutch study[18], where questions 6, 9 and 14 also showed problems related to the sample's understanding of the meanings intended, demonstrating that even in two different cultures, the difficulties were similar. Thus, future studies on the instrument should review the semantics of said questions.

The Brazilian Portuguese version of the HLS-14 instrument demonstrated good internal consistency, since according to Kline[23], Cronbach's

Table 2. Measures of Average Variance Extracted (AVE) and Composite Reliability (CR).

Model	AVE	CR	Root (AVE)	F1 (FL)	F2 (ComL)	F3 (CrL)
F1	0.525	0.813	0.725	1.000		
F2	0.664	0.927	0.815	0.002	1.000	
F3	0.668	0.829	0.817	0.020	0.561	1.000

FL: Functional Literacy; ComL: Communicative Literacy; CrL: Critical Literacy.

alpha values greater than 0.70 are considered adequate among instruments intended for testing skills. In studies with a heterogeneous sample, higher reliability coefficients are expected, especially those with population groups living in the same city or country[28], for example, as is the case of our study. For the dimensions of communicative and critical literacy, these findings were similar to those of the validation study of the HLS-14 instrument's original English version, conducted in Japan[17], and of its Dutch version[18], where said dimensions showed satisfactory internal consistency. However, in the present study, functional literacy was below 0.70, a fact that did not occur in Japan and Holland[17,18], despite showing substantial values. It was also observed that only FL(F1) had problems with its discriminant validity. This difference in the instrument's application to the Brazilian population in relation to the Japanese and Dutch populations may be due to the sample's socioeconomic characteristics, mainly in the area of education. Studies have shown that formal education in Brazil is lagging behind developed countries. This fact could interfere with the assessment of health literacy, as the education level in Brazil is not equivalent to the education level in Holland and Japan.

Most of the sample in the present study had graduated high school, which corresponds to eleven years of schooling, and even so, in the questionnaire applied to adults from Piracicaba, the highest percentage of low health literacy was associated with the questions in the FL dimension, concerning the population's difficulty reading package inserts and understanding the meaning of words; in addition, the majority reported difficulty understanding the package inserts' contents.

The model initially showed reasonable adjustment of all indexes: CFI = 0.886, TLI = 0.86, RMSEA = 0.085 (90%CI: 0.065-0.105), SRMR = 0.071, chi-square (74 degrees of freedom) = 149.510, $p < 0.001$. The usual AFC criteria were met, being close to those found in the validation of the construct's original version in Japan[17], and below those found for the Dutch version[18].

In the functional literacy dimension, a relationship between questions 4 and 5 was found despite not being detected by the mathematical model, possibly indicating variation in the questions' interpretation by those who answered. In the original version, a correlation between questions 3 and 5 was found[17]. These questions refer to the time taken (question 4) and to whether the respondents needed help to read package inserts (question 5). The removal of the latent variable represented in question 5 raises the adjustments considerably in the analysis [CFI = 0.930, TLI = 0.912, RMSEA = 0.075 (90%CI: 0.046-0.093), SRMR = 0.064, chi-square (64 degrees of freedom) = 104.288, $p < 0.001$]. "Help to read" may cause confusion, as it could mean that the person needs help to read due to physiological issues rather than to him/her not understanding what is written or lacking the ability to read, which may also have interfered with the question's discriminant validity. This ambiguity was also reported in the validation of the Dutch version[18]. These questions should be reviewed for a next application, as in the initial phase of semantic equivalence, they were not changed or adapted. Addressing the dimensions of literacy and their abstract concepts in a quantitative construct is a challenge due to the complexity of assessing an individual's understanding of health information, as well as his/her communication and judgment skills in these situations.

Regarding symmetry, it was found to be low, as answers were mostly concentrated in the higher levels of the scale. Kurtosis suggests that the tails are heavier, with non-normal distribution. In the version's validation, however, there was no symmetry or kurtosis, except in the functional dimension[18].

In the present study, there were no differences in health literacy between men and women, which did not occur in the evaluation of the version validated in Japan, where men had higher literacy scores than women according to age groups; however, in older adults, whose scores were lower than those of the younger population, this statistical difference disappears[17]. In the present study, younger people also had higher literacy levels.

One of the limitations of the present study is that the committee of experts was composed of four researchers in the field of health, and not of a multidisciplinary team. It should be noted that the first author of the HLS-14 questionnaire val-

Table 3. Distribution of health literacy for each question among adults and older people living in Piracicaba-SP, Brazil, 2015.

Literacy	Question	Highly agree n (%)	Agree n (%)	Do not agree or disagree n (%)	Disagree n (%)	Highly disagree n (%)
Functional	I find words which I cannot read.	31(21.7)	62(43.4)	16(11.2)	28(19.6)	02(1.4)
	The print is very small for me.	32(22.4)	66(46.2)	11(7.7)	29(20.3)	01(0.7)
	The content is very difficult for me to understand.	22(15.4)	56(39.2)	29(20.3)	30(21)	01(0.7)
	It takes a long time to read (the instructions).	10(7)	43(30.1)	18(12.6)	62(43.4)	05(3.5)
	I need someone to help me reading them.	07(4.9)	20(14)	16(11.2)	70(49)	26(18.2)
Communicative	I look for information at several sources.	06(4.2)	17(11.9)	02(1.4)	89(62.2)	23(16.1)
	I extract information that I want.	05(3.5)	19(13.3)	11(7.7)	92(64.3)	10(7)
	I understand the information I get.	05(3.5)	20(14)	20(14)	88(61.5)	4(2.8)
	I pass on my opinion about my illness, to the doctor, family and friends.	04(2.8)	33(23.1)	8(5.6)	80(55.9)	13(9.1)
	I apply the information I receive, through self-assessment, to my lifestyle and daily routine.	05(3.5)	30(21)	12(8.4)	80(55.9)	10(7)
Critical	I take into account if the information is applicable to me.	04(2.8)	31(21.7	23(16.1)	72(50.3)	08(5.6)
	I take into account if the information is acceptable.	03(2.1)	25(17.5)	19(13.3)	79(55.2)	12(8.4)
	I verify if the information is valid and reliable.	07(4.9)	52(36.4)	27(18.9)	43(30.1)	09(6.3)
	I put together information on the basis of my decisions about health.	05(3.5)	18(12.6)	15(10.5)	86(60.1)	14(9.8)

Note: The data do not correspond to 100% of the sample due to nonresponses to the health literacy questionnaire.

idated in Japan participated in the evaluation after the back-translation, approving the Brazilian Portuguese version obtained.

Despite the sample of the present study being part of a longitudinal study, the measurement of health literacy by HLS-14 was evaluated in the cross-section, and has no association with its temporal dimension. The questionnaire applied at the baseline was the one prepared by Ishikawa et al.[6], which was the first version, with five questions focused on the communicative and critical dimensions of oral health literacy[11]. At this stage, functional literacy had not yet been incorporated. The questionnaire was easy to apply and associated with important social, behavioral and clinical oral health factors[11]. The Japanese research group[17] published a new questionnaire in a short period of time, which, in addition to being able to be used for various health conditions, measured the three dimensions of health literacy, and for this reason, it became the instrument of interest for this study. Due to the study's innovative character, it is necessary to (i) deepen it in order to verify the association between health literacy and health conditions, (ii) make the necessary adjustments to improve the construct's psychometric properties, and (iii) evaluate the criteria to better understand its behavior when applied to the Bra-

zilian population, none of which were the objective of the present research. The Dutch authors suggest incorporating practical examples in the questions to improve their understanding and consequently generate more reliable answers[18].

As defined in the theoretical model of Macek et al.[29], health literacy is associated with health decisions and conditions, hence the great relevance of the topic for the scientific community and health professionals. For this reason, we emphasize that it may be used as a decision-making strategy, with substantial impacts on preventive measures and health outcomes, helping to reduce disparities in oral health and empowering individuals to make appropriate decisions, thereby improving their quality of life and reducing costs for the health system[30]. Thus, the translation, cross-cultural adaptation and psychometric assessment of an instrument that measures literacy are essential steps to support future research and decision-making in health.

Conclusion

The Brazilian Portuguese version of a health literacy instrument was valid when applied to a Brazilian population of adults and older people but needs adjustments and a new assessment of its psychometric properties so it can be used to plan health promotion strategies.

Future studies considering health literacy as a decision-making strategy may be relevant to public health.

Collaborations

ACP Marques contributed to the study design, adaptation of the instrument, collection of the pilot data and writing of the scientific article. MF Silva-Junior contributed to the study design, adaptation of the instrument, collection of the data and writing of the scientific article. MJ Batista contributed to the study design, adaptation of the instrument, statistical analysis of the results and final review of the article. MLR Sousa contributed to the study design, adaptation of the instrument, supervision of all phases and final review of the article. GP Alencar contributed with statistical analysis, data interpretation and final review of the article.

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