

Functional Health Literacy in chronic cardiovascular patients

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Abstract *Functional Health Literacy (FHL) is the ability to retrieve, process and understand information in order to make appropriate decisions regarding self-care, defined by the World Health Organization as a social determinant of health. Its evaluation is important especially between patients with noncommunicable chronic diseases, given the need of permanent health care. This paper aims to evaluate the FHL in patients with chronic cardiovascular diseases and possible implications to the understanding of the disease and medical instructions and adherence to the measures proposed by health professionals. This is a cross-sectional and quantitative study with the application of tool S-TOFHLA and a structured questionnaire on 345 patients of a cardiovascular disease outpatient service in Juiz de Fora. Less than a half (49.3%) of the sample showed adequate FHL. Satisfactory FHL was associated with lower age and higher schooling. Lower FHL evidenced that it can influence the impaired comprehension of the disease and medical instructions and the rare habit to question professionals. A high prevalence of inadequate FHL was identified in our sample and was associated with the impaired understanding of the disease and medical instructions, showing the need to streamline medical communication in this group.*

Key words *Health literacy, Cardiovascular diseases, Chronic disease, Health promotion*

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Introduction

Barriers that commonly prevent effective communication are found in the doctor-patient relationship. Such hurdles stem from two poles: due to difficulties of health professionals in providing instructions in an adequate and clear language and patients' incorrect or incomplete absorption of imparted orientations. Both factors significantly affect the development of health problems and adherence to the proposed medical measures. Thus, there are still considerable obstacles to the understanding of important medical recommendations to practice self-care due to a possibly impaired Functional Health Literacy (FHL) of the population¹.

FHL is an emerging field within the area of health promotion², defined as the ability to retrieve, process and understand basic information and services in order to make appropriate decisions about health and health care³. The term "health literacy" was first addressed in 1974 by Simonds⁴ and was only rewritten by the American Medical Association (AMA) in 1999 as "Functional Health Literacy", recognizing it as a set of skills that encompass "reading, understanding and acting on health information"⁵.

In practical terms, individuals with satisfactory literacy tend to have better health conditions, since they would be more aware of the importance of preventive measures or easier understanding of medication instructions^{1,6}. The World Health Organization (WHO), through the Commission on Social Determinants of Health, identified FHL as one of the social determinants of health, establishing its relationship with the quality of life of the population, considering it as fundamental to self-care⁷.

However, FHL is not restricted to the individual schooling, since people can have a good level of formal education and still not understand the medical instructions regarding their disease⁸. Surveys corroborate this idea by demonstrating similar results in developed and developing countries⁹. In a broad approach, therefore, it encompasses the ability to apply skills such as reading, writing or calculations in the field of health⁸.

One of the largest studies in this field has shown that in the United Kingdom, the United States, Australia and Canada, 20% to 50% of the population has low FHL skills, which can compromise individual and collective health status¹⁰. In Brazil, research is still incipient and there are scarce recent national studies that show how this phenomenon affects health care by the Brazilian

population, since Brazilian researchers have only recently awakened to this factor^{1,8}.

The relevance of FHL evaluation is especially evident among patients with chronic non-communicable diseases (CNCD)^{11,12}. Considering the permanent care required in this group, such as medical follow-up, pharmacological and non-pharmacological prescriptions (diet and physical exercises, for example), these patients require an adequate follow-up regarding health orientations for correct self-care^{8,12}. Among CNCDs, cardiovascular diseases are highlighted as chronic conditions that are highly prevalent in Brazil and in the world^{13,14}. Therefore, it is necessary to address FHL in a particular way in this group, since the understanding of health information can interfere in clinical outcomes¹².

The importance of further research on FHL in our country is notorious, since health professionals' knowledge of the subject can potentially broaden patients' understanding of the instructions, allowing them to better manage their health, with remarkable individual and social benefits.

This study therefore evaluates FHL among patients with chronic cardiovascular diseases, as well as the possible implications for understanding the disease, the medical instructions and the implementation of pharmacological and non-pharmacological measures proposed by health professionals.

Methodology

This is a cross-sectional study, in which factor and outcome are measured concomitantly, and that estimates the prevalence of the outcome variable, which in this study corresponds to the level of Functional Health Literacy among chronic cardiovascular patients.

It is an applied, original, quantitative and descriptive research carried out in the city of Juiz de Fora, Minas Gerais, Brazil, covering the five most densely populated demographic regions (north, south, central, east and west)¹⁵. The research was carried out at the cardiovascular diseases outpatient clinic of the Department of Specialized Clinics (DCE), PAM-MARECHAL of the Unified Health System (SUS), a reference center that meets of the secondary care demands of Juiz de Fora's population and that receives patients from different regions of the municipality, making the sample in question a representative one.

The S-TOFHLA (Test of Functional Health Literacy in Adults – simplified) was used as the

main data collection tool, a validated FHL evaluation test for the Portuguese language, composed of a reading comprehension stage and a numbering stage. The first step consists of a text with medical instructions (such as information about an examination, guidelines on fasting and contact with the hospital) in order to evaluate the understanding of health information. This text has 36 gaps that must be completed by the correct choice among the four multiple-choice alternatives provided. Each correct answer adds 2 points to the score, totaling 72 points. This subtest is timed for 7 minutes without the respondent being informed and is interrupted if this time is exceeded. Next, the numbering step is applied, in which four cards are shown to evaluate the ability to calculate the time of a medication after 6 hours, the recognition of a normal a glycaemic rate given the reference values, date of the next consultation and calculation of the time of a medication given while fasting. Each successful answer in this stage adds 7 points to the total. Thus, in addition to the points of the two steps, the total FHL score is obtained, which reaches the maximum value of 100 points. According to the score obtained, FHL can be classified as inadequate (0-53 points), minimal (54-66 points) or adequate (67-100 points)¹⁶. After this tool, a structured questionnaire consisting of eight questions was also applied and socioeconomic data such as gender, income and schooling were obtained.

In the elderly patients (≥ 60 years) addressed in the study, we initially applied the Mini-Cog (Mental Status Assessment of Older Adults), a cognition level screening test, as a form of screening, minimizing confounders due to the increase in the prevalence of dementia-related conditions among the patients of this age group¹⁷, which would compromise study's data. This test is based on the rapid memorization of three words, associated to the clock test. In this screening, the elderly who remembered the three words were deemed as normal, regardless of the result of the clock test, or one word or two with a normal clock test¹⁸. Thus, only the elderly whose Mini-Cog evidenced preserved cognition participated in the study.

The Mini-Cog was not used in the population under 60 years of age, because it did not show a prevalence as important as in the elderly population¹⁹. The recognition of the possible failing cognition was made through pre-interview questioning about the evidence of any comorbidity, not including in the study patients with reports

of psychiatric or neurological conditions that interfere in the cognitive capacity. For the patients who did not have this reporting, direct observation was used in the interview itself, and researchers were instructed to interrupt it if they noticed signs of participant's cognitive impairment.

In order to calculate the sample size for research on health outcomes, the prevalence of inadequate FHL was estimated at 33.3%, based on data from the literature⁸. The maximum desired error was 4.7% and the confidence level was 95% for finite populations. Thus, the sample size was initially estimated at 342 people. Subsequently, 15% were added for possible losses by refusal or questionnaires with errors, finalizing 394 individuals to be approached. This sampling spectrum met the criteria and statistical needs.

Inclusion criteria defined for the study were age ≥ 18 years, residing in Juiz de Fora/MG, being a patient with chronic cardiovascular disease for more than 6 months in follow-up at the outpatient clinic where the research was performed, above one year schooling and no visual impairment that would make it impossible to read the tool applied, as well as the elderly patients (≥ 60 years) approved in the Mini-Cog and patients < 60 years without reports of psychiatric or neurological diseases compromising cognitive functions. Regarding sample loss, criteria were interruption of the interview for any reason (including probable cognitive impairment perceived during the interview for patients < 60 years) and incomplete structured questionnaire or S-TOFHLA.

Participants were approached in a standardized way by trained researchers, receiving basic knowledge about the study and invited to participate in it, voluntarily consenting by signing the ICF. Researchers were trained to apply the research by conducting a pilot study with 20 individuals (not included in the study sample) in order to identify problems in understanding the questions as a way of ensuring the quality of data collection and better adherence of respondents.

Variables investigated were divided into two groups: continuous quantitative (age) and dichotomous qualitative, which are gender, income, schooling and level of FHL. Next, a descriptive and exploratory statistic of data was performed using absolute frequencies (n) and relative frequencies (%). Median statistics were used for group stratification in association analyses.

For the comparative analysis of the characteristics of the dichotomous qualitative variables, 2X2 contingency tables containing the absolute (n) and relative (%) frequencies were generated.

The Chi-Square Test of Independence (without adjustment) was performed to verify association between variables. The significance level for this test is $p\text{-value} \leq 0.05$ for a 95% confidence interval.

We use the term “odds” to “estimate the risk” through prevalence data. A measure of association and/or an effect measure is often used to translate the association between exposure and disease; theoretically, these indicators measure the strength of an association between epidemiological variables.

In this study, with regard to data analysis with binary outcomes, the logistic regression was used to estimate risk (odds).

In this technique, the dependent variable (outcome) is a random dichotomous variable that assumes the value “1” if the event of interest occurs, or “0” if otherwise. The measure (estimator) that expresses the risk is the prevalent odds ratio (POR) or odds ratio (OR), which evaluates the relationship between the odds of an exposed individual with the condition of interest, compared to that of the unexposed. It is a well-known method available in several statistical packages and has good statistical properties.

Research was developed in the following months after CEP/UFJF approved the project. Participation in the research implied minimal risk to the participants, that is, there was no interference of the researcher in any aspect of the physical, psychological and social well-being as well as intimacy, according to the parameters contained in Resolution 466/12 of the National Health Council/Ministry of Health, which deals with research involving human beings.

The Research Ethics Committee of the Federal University of Juiz de Fora (CEP/UFJF) approved the protocol. SPSS Statistical Software Version 15.0®, 2010 was used for the statistical treatment and assembly of the database.

Results

Three hundred ninety-four individuals were treated. Of these, 43 refused to participate in the survey (10.91%). Of the 351 respondents, six met the criteria of sample loss (1.71%), resulting in a sample of 345 individuals. Regarding the statistical analysis, the study variables were grouped as follows: stratified age (under 56 years and 56 years and over); gender (female or male); income (under 1 minimum wage or more than 1 minimum wage) and schooling (under 4 years

of schooling or 4 years of schooling and over), Functional Health Literacy (adequate or minimal/inadequate).

The mean age of the analyzed population was 55 ± 12.5 years and the median age was 56 years. There was a predominance of females (67.5%) in relation to males (32.5%) in the sample in question. Regarding income, 38.3% of respondents earned under one minimum wage; 44.3% of them had a level of schooling between first and fourth year of primary school (Table 1).

There was a higher prevalence of patients with more than 10 years of disease diagnosis, who were 56.2% of respondents. When questioned whether they clearly understood their health condition, 26.7% of the participants said they did not understand it and 62% said they felt they needed more information about their disease. Meanwhile, one-third (33.3%) of the sample said they had difficulties in understanding the medical guidelines, a percentage similar to those who reported difficulties in controlling their medication schedules (35.7%). Regarding adherence to non-pharmacological measures oriented by health professionals, 28.7% stated that they did not follow them because they did not understand them very well, while 24.9% referred to non-compliance because they did not consider them important. An expressive share of the sample (86.7%) said they asked health professionals questions for clarification purposes and to better understand their condition (Table 2).

The mean FHL of the sample was 65.18, with a mean of 44.32 in the reading comprehension portion and 20.9 in numbering. Less than half (49.3%) of the sample had adequate FHL, 30.1% of the patients had inadequate FHL and 20.6% had minimal literacy, which confirms data from the national and international studies on the subject. The sample obtained a better result in the numbering section, in which 39.4% were correct on four cards, and 31.6% missed only one, with only 6 subjects (1.7%) not scoring in this section.

Regarding gender (Table 3), of the 112 men participating in the research, 45.5% reported difficulty in understanding their disease effectively. Among women, only 27.5% reported similar difficulties. This difference was statistically significant ($p = 0.001$) and it was observed that men were 102.8% more likely of having an impaired understanding of their pathology (POR = 2.208). The result in the numbering subtests was also statistically significant for gender ($p = 0.001$). In this regard, 70.3% of the male sample had scores under 21 points. Among the female portion, 54.8%

Table 1. Percentages of socioeconomic data of 345 respondents.

	Frequency	Percentage (%)
Gender		
Male	112	32.5
Female	233	67.5
Income		
Under 1 minimum wage	132	38.3
1 to 2 minimum wages	168	48.7
3 to 4 minimum wages	38	11.0
5 to 15 minimum wages	7	2.0
Schooling		
1st to 4th year primary school	153	44.3
5th to 9th year primary school	90	26.1
Secondary School	89	25.8
Higher Education	13	3.8
Region		
North	109	31.6
South	65	18.8
East	99	28.7
West	39	11.3
Central	33	9.6

achieved this score. Thus, belonging to males was associated with a 94.8% higher probability of achieving a lower score in the numbering section.

As for age, it should be noted that, for statistical analysis, it was divided into 2 categories based on the median (56 years). Thus, 42.1% of individuals under 56 years of age had inadequate or minimal FHL according to the S-TOFHLA result. Among those older than 56 years, a higher proportion had below-adequate FHL, corresponding to 59.9% of this age group. This difference was highly significant ($p = 0.001$), leading to the conclusion that younger age is a protection factor of 51.2% of having higher levels of FHL (POR = 0.488).

Regarding income (Table 4), when questioned about the difficulty of controlling schedules of the medicines they use, 43.2% of those with earning under 1 minimum wage answered affirmatively, as opposed to 31% of those who earned more than 1 minimum wage ($p = 0.022$). This difference resulted in 69.3% greater probability (POR = 1.693) of those with lower income having problems in controlling the schedule of their medications. Regarding compliance with non-pharmacological recommendations (diet and physical exercises), 37.9% of low-income in-

Table 2. Question evaluated in the questionnaire.

Questions of the questionnaires	Frequency	Percentage (%)
How long have you been diagnosed with your disease?		
> 10 years	194	56.2
7 to 10 years	45	13.0
5 to 7 years	38	11.0
3 to 5 years	27	7.8
1 to 3 years	15	4.3
Under 1 year	26	7.5
Do you clearly understand your disease?		
Yes	253	73.3
No	92	26.7
Do you need to obtain more information about your disease?		
Yes	214	62.0
No	131	38.0
Do you have difficulty understanding the directions given by your doctor?		
Yes	115	33.3
No	230	66.7
Do you have difficulty controlling the schedules of the medicines you use?		
Yes	123	35.7
No	222	64.3
Do you not follow recommendations related to diet or physical exercise because you do not understand them very well?		
Yes	99	28.7
No	246	71.3
Do you fail to follow any medical advice because you feel it is not important to improve your condition?		
Yes	86	24.9
No	259	75.1
Do you ask health professionals questions to better understand your health situation?		
Yes	299	86.7
No	46	13.3

dividuals stated that they did not follow them because they did not fully understand them, against only 23% of those who earned more than one

Table 3. Results for the gender variable.

Gender	Total	By affirmative answers *		P	POR	CI 95%
		N	%			
Q2 – Do you clearly understand your disease?						
Male	112	76	67.9	0.111	0.668	0.406 – 1.099
Female	233	177	76.0			
Q3 – Do you need to obtain more information about your disease?						
Male	112	74	66.1	0.283	1.294	0.808 – 2.072
Female	233	140	60.1			
Q4- Do you have difficulty understanding the directions given by your doctor?						
Male	112	51	45.5	0.001	2.208	1.380 – 3.533
Female	233	64	27.5			
Q5 – Do you have difficulty controlling the schedules of the medicines you use?						
Male	112	41	36.6	0.797	1.063	0.665 – 1.700
Female	233	82	35.2			
Q6 – Do you not follow recommendations related to diet or physical exercise because you do not understand them very well?						
Male	112	38	33.9	0.136	1.448	0.889 – 2.359
Female	233	61	26.2			
Q7 – Do you fail to follow any medical advice because you feel it is not important to improve your condition?						
Male	112	25	22.3	0.438	0.810	0.476 – 1.379
Female	233	61	26.2			
Q8 – Do you ask health professionals questions to better understand your health situation?						
Male	112	97	86.6	0.982	0.992	0.512 – 1.925
Female	233	202	86.7			
S-TOFHLA						
Gender	total	Minimal or inadequate FHL		P	POR	CI 95%
		N	%			
Male	112	60	53.6	0.463	1.184	0.754 – 1.860
Female	233	115	49.4			
Gender	total	Successful in three questions or less regarding the numbering		P	POR	CI 95%
		N	%			
Male	112	78	70.3	0.001	1.948	1.201 – 3.158
Female	233	125	54.8			

Note: * (answered “yes” in the questionnaire)

minimum wage ($p = 0.003$). Thus, earning under one minimum wage increases the probability of not following non-pharmacological recommendations because of their impaired understanding by 104.1% (POR = 2,041).

Regarding non-compliance with medical guidelines because they did not consider them important, earning up to 1 minimum wage increased the probability of this conduct by 68.2% (POR = 1.682, $p = 0.038$). In addition, the income also had a strong statistical correlation with asking health professionals for a better understanding of the disease, appearing as a protection

factor of 53.2% (POR = 0.468). Around 90.1% of respondents with more than one monthly minimum wage reported having this habit, contrasting with 81.1% in the lowest salary group ($p = 0.016$).

When the S-TOFHLA score was evaluated, only the numbering section showed statistical significance for income ($p = 0.001$). Around 71.3% of individuals with up to one minimum wage obtained 21 points (3 correct answers) or less, while in the best salaried group, this percentage was significantly lower (52.9%). Thus, earning a lower salary was associated with a 121.8%

Table 4. Results for the variable income.

Income	total	By affirmative answers *		P	POR	CI 95%
		N	%			
Q2 – Do you clearly understand your disease?						
Under 1 minimum wage	132	88	66.7	0.027	0.582	0.359 – 0.944
> 1 minimum wage	213	165	77.5			
Q3 – Do you need to obtain more information about your disease?						
Under 1 minimum wage	132	83	62.9	0.798	1.060	0.677 – 1.660
> 1 minimum wage	213	131	61.5			
Q4- Do you have difficulty understanding the directions given by your doctor?						
Under 1 minimum wage	132	54	40.9	0.019	1.725	1.093 – 2.724
> 1 minimum wage	213	61	28.6			
Q5 – Do you have difficulty controlling the schedules of the medicines you use?						
Under 1 minimum wage	132	57	43.2	0.022	1.693	1.079 – 2.656
> 1 minimum wage	213	66	31.0			
Q6 – Do you not follow recommendations related to diet or physical exercise because you do not understand them very well?						
Under 1 minimum wage	132	50	37.9	0.003	2.041	1.269 – 3.281
> 1 minimum wage	213	49	23.0			
Q7 – Do you fail to follow any medical advice because you feel it is not important to improve your condition?						
Under 1 minimum wage	132	41	31.1	0.038	1.682	1.026 – 2.757
> 1 minimum wage	213	45	21.1			
Q8 – Do you ask health professionals questions to better understand your health situation?						
Under 1 minimum wage	132	107	81.1	0.016	0.468	0.250 – 0.876
> 1 minimum wage	213	192	90.1			
S-TOFHLA						
Income	total	Minimal or inadequate FHL		P	POR	CI 95%
		N	%			
Under 1 minimum wage	132	70	53.0	0.500	1.161	0.752 – 1.794
> 1 minimum wage	213	105	49.3			
Income	total	Successful in three questions or less regarding the numbering		P	POR	CI 95%
		N	%			
Under 1 minimum wage	132	92	71.3	0.001	2.218	1.389 – 3.541
> 1 minimum wage	213	111	52.9			

Note: * (answered “yes” in the questionnaire)

increase in the probability of obtaining a low score in the numbering stage (POR = 2,218).

For the educational variable (Table 5), we found that 81.85% of those interviewed with education higher than the fourth year of elementary school mentioned a clear understanding of their health situation and, in the lower schooling group, this percentage was significantly lower (62.7%), with p-value = 0.001 (POR = 0.375). Regarding the understanding of medical instructions, 45.8% of those with low schooling showed difficulties in understanding them, with almost twice as high probability (POR = 2.755) than the

group with higher schooling, in which 23.4% reported difficulties (p = 0.001).

There was also a significant correlation between schooling and non-adherence to non-pharmacological orientations due to non-comprehension, achieving 36.6% among individuals with a few years of schooling, against 22.4% of individuals with higher schooling (p = 0.004). Therefore, the likelihood of showing such behavior increased by 100% among patients who attended the fourth year of elementary school (POR = 2.000). In addition, 57.9% of the patients with lower educational level stated that they did not

follow any medical advice because they dismissed their importance, in contrast to 30.7% of the respondents with higher education ($p = 0.026$). There was a 73.9% increase in non-adherence to medical instructions among individuals with less years of schooling because they did not take into account their importance (POR = 1.739).

The correlation between higher schooling and greater questioning was also statistically significant ($p = 0.002$), with a protection factor of 62.7% (POR = 0.373), since among those interviewed with over four schooling years, 91.7% reported asking health professionals questions,

compared to 80.4% of the participants with low schooling. The total FHL also correlated with the level of schooling, with statistical significance for the reading comprehension and numbering part, which showed PORs of 3.427 and 3.100, respectively. Around 66.7% of low schooling patients had inadequate or minimum FHL. On the other hand, this percentage was only 38% for those interviewed with a higher level of schooling. Thus, this result is statistically significant ($p = 0.001$), with a 226% probability increase (POR = 3.260).

There were also significant correlations between FHL and some study variables. We ob-

Table 5. Results for the variable schooling.

Schooling	total	By affirmative answers *		P	POR	CI 95%
		N	%			
Q2 – Do you clearly understand your disease?						
Under 4 years	153	96	62.7	0.001	0.375	0.230 – 0.614
> 4 years	192	157	81.8			
Q3 – Do you need to obtain more information about your disease?						
Under 4 years	153	97	63.4	0.640	1.110	0.716– 1.721
> 4 years	192	117	60.9			
Q4- Do you have difficulty understanding the directions given by your doctor?						
Under 4 years	153	70	45,8	0.001	2.755	1.737 – 4.369
> 4 years	192	45	23,4			
Q5 – Do you have difficulty controlling the schedules of the medicines you use?						
Under 4 years	153	60	40,5	0.092	1.463	0.939 – 2.279
> 4 years	192	61	31,8			
Q6 – Do you not follow recommendations related to diet or physical exercise because you do not understand them very well?						
Under 4 years	153	56	36,6	0.004	2.000	1.247 – 3.209
> 4 years	192	43	22,4			
Q7 – Do you fail to follow any medical advice because you feel it is not important to improve your condition?						
Under 4 years	153	47	30,7	0.026	1.739	1.064 – 2.844
> 4 years	192	39	20,3			
Q8 – Do you ask health professionals questions to better understand your health situation?						
Under 4 years	153	123	80,4	0.002	0.373	0.195 – 0.713
> 4 years	192	176	91,7			
S-TOFHLA						
Schooling	total	Minimal or inadequate FHL		P	POR	CI 95%
		N	%			
Under 4 years	153	102	66,7	0.001	3.260	2.090 – 5.087
> 4 years	192	73	38,0			
Schooling	total	Successful in three questions or less regarding the numbering		P	POR	CI 95%
		N	%			
Under 4 years	153	114	75,5	0.001	3.427	2.145 – 5.475
> 4 years	192	89	47,4			

Note: * (answered "yes" in the questionnaire)

served in the sample that a low FHL is related to an impaired understanding of the disease ($p = 0.003$), insofar as 64.1% of patients with minimal or inadequate literacy reported not understanding, whereas in the group with adequate FHL, this proportion reached 35.9%. Regarding understanding medical instructions, there was also a statistical significance ($p = 0.048$), since 58.3% of patients with low literacy said they did not fully understand them, compared to only 41.2% among patients with adequate FHL.

There was an association between low FHL and a lower habit of questioning health professionals about own disease ($p = 0.001$). Around 76.8% of the patients with poor health literacy admitted not asking questions about their health condition. On the other hand, in the group of patients with adequate FHL, this rate was only 23.9%.

Finally, an interesting fact was that, specifically in the S-TOFHLA numbering item, there was a correlation between this score and the medication schedule control capacity ($p = 0.001$). This is because among the respondents with a median or lower performance (21 points, i.e. 3 cards), 76.4% reported having difficulties in managing the schedules of the different drugs. For those patients achieving a perfect result in this subtest, only 25.4% reported having this problem. Thus, we can see that, when asking questions related to the ability of correctly understanding intervals between doses and administration of drugs, the numbering section detected such patients with difficulties in the adequate handling of their medication schedules.

Discussion

The knowledge of the level of health literacy of the population is an extremely important information to ensure health promotion. However, this is a recent issue in Brazil, with few national studies addressing the influence of this factor on patients' health management. Thus, this research brings significant inputs and its approach is innovative since it focuses the assessment of FHL on the group of patients with chronic cardiovascular diseases, with emphasis on understanding the disease and medical instructions and on the practice of self-care. Two other current Brazilian studies were performed with diabetic patients, one of whom had only 19- to 59-year-old patients and the other only the elderly^{2,8}. This study covers both age groups.

Several factors affect individual FHL level, so that in both our study and others, age was set as one of them²⁰. Thus, we observed that more advanced ages are related to lower FHL levels. This relationship is clearly influenced by variables such as schooling years and reading habits, which shows that most individuals of this age group have low levels of schooling². Authors point out that this can probably be justified by the poor and less accessible educational situation in our country in the past²¹.

The influence of social and demographic determinants^{2,20} on FHL is noted, among which the socioeconomic level stands out. Thus, our study found an association of low income with lower scores in the numbering section of the S-TOFHLA instrument, which warns us about the difficulty of controlling medication schedules among patients with lower socioeconomic status we interviewed. This finding corroborates the WHO reports that evidence that the limited FHL follows a social gradient and further strengthens existing inequalities in a country¹⁴.

Schooling is also a social determinant linked to FHL, so that the results of this study showed a significant relationship between lower schooling and low ability to understand medical instructions. This association can be explained by the fact that literacy is closely related to skills that are worked on and taught at school, such as reading, writing and calculations and understanding mathematical symbols^{1,2}.

The association between gender and literacy level is frequently observed in studies on the subject, with low health literacy commonly associated with males^{20,22}. This relationship, however, is not constant, with some studies indicating that it is not significant², or even higher literacy in males²³. Divergence between the relationship of literacy level and gender may be due to sociocultural differences of the places where the research was performed²⁰. Our research follows the most frequent pattern, evidencing a lower FHL level among men and, therefore, greater difficulty in the clear understanding of their health situation.

Our research follows the tendency found in other studies while observing an association between low FHL level and low socioeconomic level, advanced age, low level of schooling and male gender^{2,20}. Other studies also demonstrate an association of low FHL with minority and immigrant ethnic groups, an aspect that we did not evidence, but whose evaluation is equally important².

It is known that the quality of health care and the success of its management by the patient

go through their level of understanding the disease¹. However, previous studies have suggested that low FHL hinders the retrieval and capture of health information, which is fundamental for a full understanding of the disease by its carriers²⁴. A study carried out with diabetics revealed that their understanding of the disease was closely associated with the level of their FHL and, for example, no very significant association was found for glycemic control capacity⁸. Likewise, our study showed that the understanding of cardiovascular conditions was associated with the level of FHL, since more than half (64.1%) of patients with inadequate literacy reported not fully understanding their disease.

It is also worth noting that, in our study, many respondents stated that they had difficulties with the schedule of their medications. This was confirmed by the low score of 76.4% of those interviewed in the S-TOFHLA numbering section, which evaluated, among other aspects, the patients' understanding of what it would be like to take a fasting medication, as well as the ability to calculate intervals between doses. Thus, it was observed that the adequate or inadequate management of medications stems largely from the understanding of the administration times proposed by the physician and from the application of basic mathematical concepts, sometimes not dominated by those with low FHL¹. A similar impaired understanding was also found by other authors, who demonstrated that 25.4% of respondents did not understand the schedule of use of prescribed medication, while 2% had very little knowledge and 8.6% had little knowledge²⁵.

Patients with low FHL would also have difficulty understanding and assimilating medical guidelines, a fact demonstrated by the group's impairment in performing the necessary instructions for certain procedures or examinations, in the inadequate or incomplete follow-up of medical prescriptions and in other health tasks²⁶. This was observed in our study, since 58.3% of patients with chronic cardiovascular diseases of the sample with inadequate FHL said they did not understand the medical guidelines. According to other authors, this difficulty in understanding health instructions in unsatisfactory FHL holders seems to lead to a lack of self-confidence in the ability to practice self-care, which is another factor that impairs adherence to treatment²⁷.

Another hindrance to patients with low FHL is the ability to communicate. These are often reluctant to clarify their issues, express concerns and participate in the decision of the clinical

treatment to be adopted²³. This tendency was observed in the patients of our sample when questioning if they asked questions about their condition to health professionals. An expressive share of patients (76.8%) with unsatisfactory FHL admitted not having his habit.

It is important to emphasize that the lack of full understanding of the disease in patients with low FHL occurs due to inherent individual difficulties. However, these should not be singled out as the only determinants of impaired understanding. The inability of health professionals recognizing inadequate FHL levels and communicating through comprehensible language has already been alerted by other research, which shows the importance of their evaluation²⁸. The Heart Failure Society of America (HFSA) also suggests that the patient's FHL grade be obtained and recorded in the medical record, such is the importance of this factor in the physician-patient relationship²⁹.

Thus, the importance of the use of simple language by professionals when transmitting guidelines to patients, especially to those with lower levels of schooling, is a low FHL predisposing factor. Unaware of the low level of FHL of their patients, health professionals sometimes use specialized language, provide insufficient information and do not ensure whether they have been assimilated¹. It is known that, in general, health practices should also be designed to allow a better individual understanding and capacity for self-care, providing better quality of life for patients and lower morbidity over time.

Therefore, this study increases the knowledge about the level of FHL in chronic cardiovascular patients so that information is useful to cause a stir among health professionals vis-à-vis the health literacy of their patients, in order to ensure a more adequate and effective communication. However, it was limited in that it was restricted to a municipality and did not have a multicenter approach at regional or state level.

Conclusions

A low Functional Health Literacy was noted in the sample of patients with cardiovascular diseases was observed, with a statistically significant relationship with low income (under 1 minimum wage) and schooling equal to or under 4 years. In addition, the high prevalence of inadequate FHL was correlated with a lower knowledge about the disease, difficulties in understanding the medical instructions and lack of the habit of asking

health professionals for some clarifications. In turn, patients that evidenced impairment in the numbering test demonstrated clear difficulty in understanding the medication schedules.

Thus, considering the high statistical significance of low FHL results with reduced schooling and income, we suggest the introduction of methodologies that optimize physician-patient communication, especially in these groups. It is necessary to develop educational measures so

that health professionals can adjust their language, prescriptions and other communication tools to the needs and skills of patients most susceptible to impaired FHL.

Based on bibliographical research, we suggest stimulating awareness of the topic, which is poorly discussed in the medical community, as a means of coping with this reality, reducing negative impacts on patients' health conditions throughout the treatment years.

Collaborations

JA Chehuen Neto was the group's supervisor, responsible for the review and improvement of all stages of the research, from the definition of the theme to the final submission of the work, deepening of the discussion and stoning of the article as a whole. LA Costa, GM Estevanin and TC Bignoto assisted in the literature review, preparation of the Research Protocol, construction of the data collection instrument and the TCLE, application of the data collection instrument, introduction writing, discussion, conclusion and summary. CIR Vieira and FAR Pinto participated in the review of the literature, construction of the instrument for data collection and the TCLE, application of the instrument of data collection, tabulation of data, preparation of the introduction, discussion, conclusion and summary. RE Ferreira worked on the elaboration of the methodology and the results, construction of the results tables, statistical analysis / data crossing.

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