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Functional health literacy and quality of life of high-school adolescents in state schools in Belo Horizonte

Letramento funcional em saúde na adolescência: associação com determinantes sociais e percepção de contextos de violência

ABSTRACT

Purpose: To investigate the association between functional health literacy and sociodemographic factors, quality of life, self-perception of health, and perception of contexts of violence in adolescents in state schools in Belo Horizonte. **Methods:** This is a cross-sectional analytical observational study with a probabilistic sample of 384 adolescents between 15 and 19 years old. Data collection was carried out in schools and included self-reporting questionnaires to assess the functional health literacy, socioeconomic classification, self-perceived health, and quality of life. The reliability of internal consistency of the functional health literacy instrument was determined by calculating Cronbach's alpha coefficient. A multivariate logistic regression analysis was performed using hierarchical data entry according to the level of determination of the theoretical model established. In order to evaluate the association, a significance level of 5% was considered, while the Odds Ratio used as a measure of the magnitude of the associations. **Results:** The functional health literacy instrument presented a coefficient of 0.766, indicating adequate internal consistency. More than half of teenagers presented good functional health literacy. In the final model of multivariate analysis, the variables not practicing a religion ($p = 0.006$; $OR = 2.108$); social domain of quality of life ($p = 0.004$; $OR = 1.022$); and educational domain of quality of life ($p = 0.009$; $OR = 1.019$) remained associated with functional health literacy. **Conclusion:** Not practicing a religion and the increase in the scores of social and educational domains of quality of life increased the chances of better functional health literacy.

RESUMO

Objetivo: Investigar a associação entre letramento funcional em saúde e fatores sociodemográficos, qualidade de vida, autopercepção da saúde e percepção de contextos de violência em adolescentes de escolas estaduais de Belo Horizonte. **Método:** Trata-se de estudo observacional analítico transversal com amostra probabilística estratificada composta por 384 adolescentes entre 15 e 19 anos. A coleta de dados foi realizada em 16 escolas e incluiu questionários autoaplicáveis de avaliação do letramento funcional em saúde, classificação socioeconômica, autopercepção de saúde e de qualidade de vida. A confiabilidade da consistência interna do instrumento de letramento funcional em saúde foi determinada por meio do cálculo do coeficiente de Alfa de Cronbach. Foram realizadas análises descritivas, bivariada e de regressão logística múltipla com entrada hierarquizada dos dados segundo o nível de determinação do modelo teórico estabelecido. Foi considerado o nível de significância de 5% e utilizada como medida de magnitude das associações o Odds Ratio. **Resultados:** O instrumento de letramento funcional em saúde apresentou coeficiente de 0,766, indicando consistência interna aceitável. Mais da metade dos adolescentes apresentou letramento funcional em saúde Good. No modelo final da análise multivariada, permaneceram associadas ao letramento funcional em saúde as variáveis: No praticar religião ($p = 0,006$; $OR = 2,108$); Domain social da qualidade de vida ($p = 0,004$; $OR = 1,022$); e Domain escolar da qualidade de vida ($p = 0,009$; $OR = 1,019$). **Conclusão:** Adolescentes com melhor percepção do convívio social e da inserção escolar tendem a apresentar melhor letramento funcional em saúde. A presença da prática de religião na vida do adolescente também interfere no letramento funcional em saúde.

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INTRODUCTION

Adolescence is an important cycle for the development of an individual's life, in which they go through several changes. Thus, it is extremely important to develop strategies for health promotion at this stage, with the possibility of introducing healthy habits that can remain throughout life⁽¹⁾.

Notwithstanding this observation, national health policies are still insufficient in encompassing this cycle of life, so that adolescents are referred to policies turned to children and adults, where the actions aimed at this public are restricted to curative aspects. Health professionals describe the lack of time and training as barriers to a comprehensive care system for adolescents. Furthermore, the difficulty in interfacing with other spheres, such as the educational and cultural sphere, and the communication difficulties between adolescents and adults also represent a problem for this service⁽²⁾.

It is necessary that actions to promote adolescent health include, in addition to information and knowledge, social and personal skills, self-knowledge and life skills, so that they can make appropriate choices for their health⁽³⁾.

Functional health literacy can be understood as the individual's ability to seek, understand, and use information on health to promote and maintain their health throughout life⁽⁴⁾. Developing this ability during the life cycle of adolescence can contribute to their capacity to better manage their health throughout their lives, since adolescence is an important stage in the elaboration of future decisions concerning self-care⁽⁵⁾.

Functional health literacy is related to the individual's social vulnerability and schooling⁽⁶⁾. During adolescence, individuals present intrinsic social vulnerability due to their developmental condition and may be exposed to risks related to health, education, family, and society in general⁽⁷⁾. Thus, developing functional health literacy in this life cycle may represent a factor of health protection for individuals at risk, as their ability to better cope with these circumstances makes them less vulnerable.

Another fundamental axis in the adolescence period also worth considering is quality of life. This term is subjective, multidimensional, and contemplates self-assessment of several aspects of an individual's life. The literature addressing perception of quality of life by the adolescent public is still incipient⁽⁸⁾. Studies associating quality of life with functional health literacy in the adolescent population have not been found in the literature, which reinforces the importance of research in this vein.

In this way, the objective of this study was to investigate the association between functional health literacy and socio-demographic factors, quality of life, self-perception of health and perception of violent contexts in adolescents from public schools in Belo Horizonte.

METHODS

This is a cross-sectional observational study with random probabilistic sample stratified by administrative region of the city of Belo Horizonte, and composed of 384 individuals aged between 15 and 19 years, 11 months, and 29 days, who are high-school students in state schools of Minas Gerais.

The research was carried out in 16 schools within the nine administrative regions of the city of Belo Horizonte, Minas Gerais. One school from each region was initially selected; others were included as the first sample was insufficient.

The sample calculation was defined considering the absence of estimations of the expected percentage for the variables of interest. Thus, it was assumed that this percentage was 50%, a value that maximizes the sample size. A 95% confidence level and 5% error margin were also considered.

The study included students aged between 15 and 19 years who agreed to participate and signed the Informed Consent Term themselves, while a copy was signed by their legal guardians for those aged up to 17 years, 11 months and 29 days. The 18 and 19 year-old adolescents were responsible for signing their own Informed Consent Terms.

Five research instruments were used: a questionnaire to characterize the adolescents, a questionnaire on functional health literacy, the Paediatric Questionnaire on Quality of Life (PedsQL Version 4.0), a questionnaire on self-perception of violence, and a questionnaire on self-perception of health.

The instrument for adolescent characterization consisted in a self-administered questionnaire, composed of closed questions that aimed to outline the socioeconomic, cultural, and demographic profile of the sample. It contains an identification profile (age, gender, school year) and a socioeconomic and cultural profile (housing situation, habit of watching television, going to the theatre and cinema, presence of work, religious practice, and the Brazilian Economic Classification Criterion (CCEB)).

For the analysis of fundamental health literacy, a structured, self-administered questionnaire was used. It consisted in 10 closed questions that aimed to evaluate the participants' perception, understanding, and use of prior health information to promote and maintain their own health. The reliability of the instrument's internal consistency was determined by calculating the Cronbach Alpha coefficient, which was 0.766, indicating acceptable internal consistency. Thus, a simple score was created with the sum of the items answered, with values ranging from 0 to 30. The score was then divided in two categories using the average 22 as the cut-off point: <22 points (poor functional health literacy) and ≥ 22 points (good functional health literacy).

To evaluate quality of life, we used the Paediatric Quality of Life Questionnaire – PedsQL Version 4.0, which is multidimensional and characterized by four axes: physical, emotional, social and academic, amounting to a total of 23 questions⁽⁹⁾.

The evaluation of self-perception of violence was carried out using three yes or no questions: "Have you ever committed any act of violence?", "Have you ever suffered any violence?", and "Does violence have an impact on your health?".

Evaluation of self-perception of health was made through the individual's own classification of his health with the question "How would you rate your health?". The response options were "very bad, bad, regular, good, and excellent."

Data collection was carried out in the schools with the students in their classroom during class time. On the day before collection, the Informed Consent Term was distributed for authorization and signature by students and their legal

guardians, when applicable. Only students who had signed the Term answered the research instruments.

Descriptive analyses of all the variables of the study were carried out by means of absolute and relative frequency distribution of the categorical variables and numerical synthesis of the continuous variables, organized according to the blocks defined by the researchers.

For the association analysis, we considered the response variable, the Health Literacy classification with two categories - bad and good -, and other explanatory variables. Based on the 10 questions on health literacy, a simple score was constructed by adding the possible answers: 0 - always; 1 - often; 2 - sometimes; 3 - never. In this way, scores ranging from 0 to 30 were obtained.

The score was then divided in two categories using the average 22.0 as a cut-off point, namely: <22 points = poor literacy, and ≥ 22 points = good literacy. This variable was used in all subsequent analyses.

The following variables were considered as explanatory and divided into five blocks to be hierarchically input into the multivariate analysis model:

1. demographic and socioeconomic characteristics (gender, age, school year, housing situation (with whom they live), housing (owned/rented), health insurance, and economic classification, work);
2. cultural aspects (time spent watching television, reading newspapers/magazines, visiting museums, going to the theatre/cinema, practicing a religion);
3. context of violence (whether has committed these acts, suffered any of these acts, and the impact of violence on health);
4. quality of life (Peds_QL) (physical, emotional, social, and educational domains);
5. self-perception of health (self-evaluation of one's own health).

The following explanatory variables were reclassified to reduce the categories with fewer data and improve the estimates in the analyses: housing situation/who do you live with (the original variable presented seven categories that have been grouped in two, "parents and siblings" and "other relatives and friends"); CCEB (the original variable presented seven categories that have been grouped in three, "A, B and C-D", so that "A" includes "A1 and A2", "B" includes "B1 and B2" and "CD" includes "C" and "D"); water treatment (the original variable had three categories and has been re-categorized in two, "filtered" and "chlorinated", since the "no treatment" response was only given by one participant); and self-assessment of health (the original variable presented five categories that have been grouped in two, "bad", which includes the options "very bad, bad, and regular", and "good", which includes the options "good and excellent").

For the categorical variables, Pearson's chi-square test was used to analyze the associations. In the case of continuous variables, the T test was used to compare means, or the non-parametric

Mann Whitney test was used for the variables with asymmetric distribution.

Models were constructed with hierarchical input of blocks according to their level of determination established in the theoretical model. The variables at a statistically significant association at 20% in the bivariate analysis ($p < 0.20$) were considered in the multiple logistic regression models.

For the evaluation of the associations in the logistic regression models, a significance level of 5% was considered. Thus, associations with a probability of significance ($p\text{-value} \leq 0.05$) were considered as statistically significant associations. As a measure of magnitude of the associations, the Odds Ratio and its respective 95% confidence interval were used. The suitability of the models was evaluated by the Hosmer and Lemeshow test.

This study project was submitted to the Research Ethics Committee of Universidade Federal de Minas Gerais and was approved by CAAE: 14897013.4.0000.5149.

RESULTS

A total of 384 adolescents were evaluated, where 70.3% were female. It was verified that 24.7% of the students were in their 1st year, 19.3% were in their 2nd year, and 56%, in their 3rd year. The mean age of participants was 17.1 years, ranging from 15 to 19 years; 99.2% declared single marital status; 55.3% has health insurance coverage. The majority (90.9%) lives with their parents and siblings, or only with their parents. The remainder resides with grandparents, alone, or with other relatives. Ninety-nine point five per cent (99.5%) of participants declared to have basic sanitation, and 99.7% have electricity in their homes; 89.7% reported to have filtered water, 10%, chlorinated water, and 0.3% reported to have untreated water supply. It was found that 51.3% were currently working or had already worked. With regard to economic class, the following distribution was found: A1 (0.3%), A2 (5.2%), B1 (20.1%), B2 (32.6%), C1 (33.9%), C2 (7%), and D (1%).

With regard to cultural aspects, 87.7% declared going to the cinema/theatre; 78.4% practice a religion; 59.2% reported reading newspapers/magazines; and 23.6% attended museums.

The findings regarding functional health literacy of the adolescents participating in this research can be seen in Table 1 – 51.56% present good functional health literacy.

Regarding quality of life, the means of the physical, emotional, social, and educational domains were calculated, as well as the total. The results are presented in Table 2. It can be observed that the emotional and educational domains present lower means.

The findings concerning self-perception of violence showed that 61.9% reported having committed some act of violence; 72.3% reported having already suffered an act of violence; and 85.6% considered that violence has an impact on health.

In the evaluation of self-perceived health, 0.5% of the sample classified their own health as "very poor"; 0.5%, as "bad"; 20.1%, as "regular"; 53.7% as "good"; and 25.1%, as "excellent".

Table 1. Frequency distribution of the variables related to functional health literacy

How often do you:	N	%
Have difficulties reading/understanding leaflets with guidance about health		
Always / Often	9	2.3
Sometimes	172	45.0
Never	201	52.6
Have difficulties reading/understanding/filling out forms containing data about your health		
Always / Often	13	3.4
Sometimes	181	47.3
Never		
Have difficulties reading/understanding medical or other health professional written instructions		
Always / Often	68	17.8
Sometimes	178	46.6
Never	136	35.6
Have difficulties understanding health care professionals' oral instructions		
Always / Often	14	3.6
Sometimes	155	40.6
Never	213	55.8
Ask questions to your doctor/other health care professional to clear doubts when you don't understand their instructions (written or verbal)		
Always / Often	183	48.2
Sometimes	146	38.4
Never	51	13.4
Have difficulties making an appointment for exams or consultations because you didn't understand the guidelines (written or verbal) given by your doctor/other health care professionals well		
Always / Often	42	11
Sometimes	140	36.6
Never	201	52.5
Have difficulties understanding your medical condition because you didn't understand the explanations given by your doctor/other health care professionals		
Always / Often	19	5
Sometimes	160	42.0
Never	202	53.0
Need help from someone to understand the guidelines received for your treatment/therapy, such as use of medicines, returns, check-ups, etc.		
Always / Often	61	16
Sometimes	182	47.5
Never	140	36.6
Have difficulties finding information that will help you to take care of your health		
Always / Often	31	8.1
Sometimes	174	45.5
Never	177	46.3
Leave a consultation/therapy session with questions about your own health		
Always / Often	21	5.5
Sometimes	164	42.7
Never	199	51.8

Table 2. Numerical synthesis of the PedsQL results

	PedsQL				Total Score
	Physical Domain	Emotional Domain	Social Domain	Educational Domain	
Mean	81.4	57.1	85.9	68.0	74.1
Median	84.4	55.0	90.0	70.0	75.0
Standard deviation	15.1	18.0	16.0	16.2	11.4
Minimum	34.4	10.0	0.0	10.0	33.7
Maximum	100.0	100.0	100.0	100.0	100.0

Caption: PedsQL = Paediatric Questionnaire about Quality of Life

Table 3. Bivariate analysis of the association between functional health literacy and sociodemographic characteristics

Characteristics	Health literacy		p-value*
	Bad	Good	
Gender			
Male	52 (28.0)	62 (31.3)	0.472
Female	134 (72.0)	136 (68.7)	
Total	186 (100.0)	198 (100.0)	
School grade			
1st. Year	44 (23.7)	51 (25.8)	0.447
2nd. Year	32 (17.2)	42 (21.2)	
3rd. Year	110 (59.1)	105 (53.0)	
Total	186 (100.0)	198 (100.0)	
Living with			
Parents and siblings	166 (89.7)	181 (92.3)	0.370
Others	19 (10.3)	15 (7.7)	
Total	185 (100.0)	196 (100.0)	
Housing conditions			
Own house	144 (77.4)	158 (81.0)	0.385
Rented house	42 (22.6)	37 (19.0)	
Total	186 (100.0)	195 (100.0)	
CCEB			
Class A	10 (5.4)	11 (5.6)	0.705
Class B	94 (50.5)	108 (54.5)	
Class C and D	82 (44.1)	79 (39.9)	
Total	186 (100.0)	198 (100.0)	
Health Insurance			
Yes	91 (52.0)	106 (58.6)	0.213
No	84 (48.0)	75 (41.4)	
Total	175 (100.0)	181 (100.0)	
Working / Has worked			
Yes	102 (54.8)	95 (48.0)	0.179
No	84 (45.2)	103 (52.0)	
Total	186 (100.0)	198 (100.0)	

*Mann Whitney's test

Caption: CCEB = Economic Classification Criterion of Brazil

Table 3 describes the association between the response variable and the sociodemographic characteristics of the participants of this study.

Among the variables related to sociodemographic characteristics, only the "work or have worked" variable was associated with functional health literacy at a level of 20%, and it was the only one considered for the multiple logistic regression model.

Table 4. Bivariate analysis of the association between health literacy and cultural aspects

Characteristics	Health literacy		p-value*
	Bad	Good	
Time spent watching TV			
Less than 2 hours	98 (55.4)	93 (51.1)	0.418
More than 2 hours	79 (44.6)	89 (48.9)	
Total	177 (100.0)	182 (100.0)	
Reads newspapers/magazines			
Yes	108 (58.7)	117 (59.7)	0.843
No	76 (41.3)	79 (40.3)	
Total	184 (100.0)	196 (100.0)	
Goes to museums			
Yes	46 (24.9)	44 (22.3)	0.560
No	139 (75.1)	153 (77.7)	
Total	185 (100.0)	197 (100.0)	
Goes to the theatre/cinema			
Yes	158 (85.4)	178 (89.9)	0.180
No	27 (14.6)	20 (10.1)	
Total	185 (100.0)	198 (100.0)	
Religious practice			
Yes	153 (82.7)	145 (74.4)	0.048
No	32 (17.3)	50 (25.6)	
Total	185 (100.0)	195 (100.0)	

*Mann Whitney's test

The relation between functional health literacy and the variables of cultural aspects are described in Table 4.

With regard to the variables related to cultural aspects, two of these were associated with functional health literacy at a significance level of 20%: "going to the theatre or cinema" and "practice of any kind of religion", both of which are considered in the multivariate model.

The association between functional health literacy and the variables of the context of violence is described in Table 5.

Two variables of the context of violence were associated with functional health literacy at a level of 20% and, therefore, were considered for the multivariate model: "has committed some act of violence" and "has suffered some act of violence."

The association between functional health literacy and variables of quality of life is described in Table 6.

All variables related to quality of life were associated with functional health literacy at a significance level of 20% and were used in the multiple logistic regression model.

The association between functional health literacy and the variable of self-perception of health is described in Table 7.

In the final model of the multivariate analysis presented in Table 8, it can be observed that: not practicing any religion ($p = 0.006$; OR = 2.108); the social domain of quality of life ($p = 0.004$; OR = 1.022); and the educational domain of quality of life ($p = 0.009$; OR = 1.019) remain associated to good functional health literacy (Table 8).

Table 5. Bivariate analysis of the association between functional health literacy and violence contexts

Characteristics	Functional health literacy		p-value*
	Bad	Good	
I have committed an act of violence			
Yes	119 (65.4)	113 (58.5)	0.173
No	63 (34.6)	80 (41.5)	
Total	182 (100.0)	193 (100.0)	
I have suffered acts of violence			
Yes	139 (76.4)	132 (68.4)	0.085
No	43 (23.6)	61 (31.6)	
Total	182 (100.0)	193 (100.0)	
Violence has an impact on health			
Yes	157 (86.3)	164 (85.0)	0.722
No	25 (13.7)	29 (15.0)	
Total	182 (100.0)	193 (100.0)	

*Mann Whitney's test

Table 6. Bivariate analysis of the association between functional health literacy and quality of life (PedsQL)

Characteristics	Health Literacy		p-value*
	Bad	Good	
Physical Domain			
Mean	81.3	87.5	0.014
Median	79.3	83.3	
Standard deviation	15.8	14.2	
Emotional Domain			
Mean	55.0	60.0	0.004
Median	54.6	59.4	
Standard deviation	17.6	18.1	
Social Domain			
Mean	85.0	95.0	<0.001
Median	82.9	88.7	
Standard deviation	17.1	14.3	
Educational Domain			
Mean	65.0	75.0	<0.001
Median	64.6	71.1	
Standard deviation	16.0	15.8	

*Mann Whitney's test

Table 7. Bivariate analysis between functional health literacy and self-perception of health

Characteristics	Health Literacy		p-value*
	Bad (<22 points)	Good (≥22 points)	
Self-perception of health			
Bad	46 (25.1)	34 (17.4)	0.067
Good	137 (74.9)	161 (82.6)	
Total	183 (100.0)	195 (100.0)	

*Mann Whitney's test

Thus, not practicing any religion increased the chance of having better functional health literacy by 2.11 times. In addition, the one-point increase in the score of the social and educational domains of quality of life increased the chance of adolescents having good functional health literacy by 2.2% and 1.9%.

Table 8. Intermediate and final models of the factors associated to good functional health literacy

Intermediate Models	Gross OR	Adjusted OR	CI 95%	p-value*
Block 1 – Socio-demographic Characteristics				
Not working	1.317	1.317	0.881 - 1.967	0.179
Block 2 – Cultural Aspects				
Does not go to the theatre/cinema	0.66	0.68	0.362 - 1.257	0.215
No religious practice	1.65	1.65	0.997 - 2.714	0.050
Block 3 – Context of Violence				
Hasn't committed any violence	1.34	1.21	0.731 - 2.002	0.458
Hasn't suffered any violence	1.49	1.26	0.727 - 2.178	0.411
Block 4 – Quality of Life				
Physical Domain	1.018	1.01	0.990 - 1.021	0.523
Emotional Domain	1.015	1.01	0.992 - 1.018	0.458
Social Domain	1.024	1.02	1.004 - 1.036	0.012
Educational Domain	1.026	1.02	1.001 - 1.033	0.032
Block 5 – Health Perception				
Good self-perception of health	1.59	1.378	0.802 - 2.368	0.246
Final Model				
Working	–	1.326	0.866 - 2.029	0.194
Practices a Religion	–	2.108	1.235 - 3.600	0.006
Social Domain	–	1.022	1.007 - 1.038	0.004
Educational Domain	–	1.019	1.005 - 1.034	0.009

Caption: OR = Odds Ratio; CI = Confidence Interval

DISCUSSION

In the present study, the probabilistic sample was characterized as mostly female, enrolled in the 3rd year, being 18 years old (average 17.1), and with economic classification between B1 and C1 according to the CCEB. More than a half of the sample was working or had worked before. With regard to the economic classification, the highest concentration in the population of Belo Horizonte is between C1 and C2, indicating that the sample of the present study tends to a slightly higher economic level⁽¹⁰⁾. In Brazil, 40% of individuals between 15 and 19 years old are currently working. This study indicated a higher portion of the sample is currently economically active.

The data analysis revealed that most of the individuals presented good functional health literacy, corroborating other studies with samples from different age groups and using other previously validated evaluation instruments, such as the Rapid Estimate of Adult Literacy in Medicine (REALM)⁽¹¹⁾ and the Test of Functional Health Literacy - TOFHLA^(12,13), which have shown adequate functional health literacy scores for most individuals. A study that used the Newest Vital Sign – NVS⁽¹¹⁾ as an instrument of evaluation verified adequate functional health literacy in about one third of the sample evaluated. It is worth mentioning that the majority of individuals in such samples were female, a percentage that is similar to the present study. However, they studied a population with a wider age range: from 17 to 93 years. The REALM test evaluates the recognition of words related to the human body; TOFHLA evaluates reading and numbering comprehension of health-related excerpts; SAHLSA also evaluates word recognition and reading comprehension, and the NVS analyses numeracy skills and reading comprehension⁽¹⁴⁾. In the questionnaire prepared for the present study, the objective was to evaluate the individual's perception regarding functional

health literacy, which differs from the other tests mentioned, which measure their comprehension.

Another research that measured functional health literacy using the TOFHLA instrument on a sample with a mean age of 44.3 years, ranging from 18 to 92 years, in which more than a half were female and with more than 9 years of formal education, showed that most of them presented poor functional literacy levels⁽¹⁵⁾. This result is not corroborated by the present study. However, in the same study, participants were divided into age groups, and in the younger group – from 18 to 34 years old – the majority was classified as presenting adequate functional health literacy. An inverse relationship between age and functional health literacy was found. That is, the younger they were, the better their health literacy. It should be noted that the difference in findings might be due to the difference in age range of the samples of the aforementioned study and the present study, a characteristic that segregates even more the respective participating individuals.

A study that used two tests to measure functional health literacy, the REALM and the NVS, indicated several results, a finding that was justified by the different skills tested⁽¹¹⁾. Thereby, the test used to measure functional health literacy seems to influence the outcome, since they evaluate different abilities, such as reading comprehension and numeracy skills, so that the same individual can perform well in one test and have bad results at another. It should be noted that most of these studies were not conducted specifically with adolescent individuals and presented samples with broad age ranges, from 17 to 93 years old^(11-13,15).

It is worth mentioning that the only study we found in the literature that used a group with a similar age to the sample of the present study, in which the individuals were distributed between adults (from 18 to 91 years) and young people (between

13 and 20 years old), the instrument used was the NVS, their educational level ranged from primary to higher education. One of the inclusion criteria in the young people's group was being an athlete. Less than a half of this group (mean age of 15 years old) presented inadequate functional health literacy⁽¹⁶⁾, a result similar to this study's. In the group of adults, slightly more than half of the population presented inadequate functional health literacy. However, although results are similar between the group of young people and the present study, the type of evaluation differs between the two surveys, since the instrument and the sample characteristics, such as education and athletic skills, are different. Functional health teaching is an emerging topic in the scientific community, but little has been studied about this subject in the adolescent population⁽¹⁷⁾, which makes it difficult to promote strategies that aim to the development of functional health literacy for people in this cycle of life⁽¹⁸⁾.

In a qualitative study with a sample composed of low-income adolescents with mean age of 15.1 years old (ranging from 14 to 18 years), it was verified that the participants acknowledged their role in health care and their right to clear their questions. In addition, it was indicated that health prevention actions did not make sense in the adolescents' understanding⁽¹⁷⁾.

The studies were conducted in several countries, such as Turkey⁽¹¹⁾, the United Kingdom⁽¹²⁾, Brazil⁽¹³⁾ and Kosovo⁽¹⁵⁾, which represents wide cultural and social gaps among samples.

Thus, it is likely that the level of functional health literacy varies according to the characteristics of the sample, such as sociodemographic, cultural and age groups characteristics, and to the instrument used for evaluation, since the skills tested may be different.

Most of the studies point to better functional health literacy for women^(12,16,19). Only one study⁽¹¹⁾ indicated better functional health literacy in men and associated this finding with the lower educational level of the women who took part. Thus, the gender variable does not seem to be the differentiating factor between the groups as much as education is. The present study did not find a statistically significant association between functional health literacy and the gender variable – a result that does not corroborate the literature. Studies indicate an association between education and the level of functional health literacy^(11,12,16). This research does not corroborate these results, since there was no statistically significant association between the variables in question. This finding may be due to the fact that all of the individuals in the study sample are enrolled in high school. Since there are only three school years in this level of education, the narrow range makes them homogeneous in this aspect. In the studies cited, the educational level of sample participants varied from elementary to higher education.

The literature indicates an association between economic classification and functional health literacy^(11,12,20). In one of these studies⁽²⁰⁾, one third of the sample was classified as at the poverty threshold, according to the country's criteria, in this case, the United States. In another study⁽¹¹⁾, more than half of the sample was classified as middle-class. The present study does not corroborate this result, since it did not show a statistically significant association between these variables. However, the sample of this study presents a relative homogeneity in its

economic situation, since all of the individuals went to public schools and presented a similar economic classification, falling mostly into the B and C categories of the CCEB.

A study points to an association between low functional health literacy and poor self-perception of health, as well as less healthy life behaviors, with a sample aged between 18 and 90 years⁽¹²⁾. The present research did not find any statistically significant association between self-perception of health and functional health literacy. More than half of the sample has rated their health as good.

In the present study, no statistically significant relationship was found between self-perception of violence and functional health literacy. It is likely that assessment of this topic is still incipient, and that a more in-depth approach would point to different results, especially with the adolescent population, which is intrinsically linked to social vulnerability. In the literature lacks studies relating these variables.

The scores are better for the physical and social domains than for the emotional and educational ones with regard to the evaluation of quality of life. This result corroborates a study conducted with Norwegian adolescents aged between 13 and 15 years with the same evaluation instrument as the present study⁽²¹⁾.

The bivariate analysis showed a significance of 20% for the labor variables (block 1); going to the theater and/or cinema, and practicing a religion (block 2); having committed acts of violence and suffered acts of violence (block 3); physical, emotional, social, and educational domains of quality of life (block 4); and self-perception of health (block 5). These variables were used in the logistic regression intermediate models. However, considering the final model, not practicing a religion, the social and educational domains of quality of life remained associated with functional health literacy.

The results have demonstrated that not practicing any religion increases the chance of having better functional health literacy. Nothing in the literature was found to associate these variables, but a study indicates that the lower the educational level, the greater the religious involvement of the individual⁽²²⁾, and that religious practice can be a protective factor for health, since it encourages non-adherence or abandonment of harmful habits such as the use of drugs and alcohol^(23,24). These results may lead us to believe that religiosity contributes to the adoption of healthy behaviors, but without, necessarily, the individual's empowerment on his own health condition, which is the immediate consequence of a good level of functional health literacy. Health services and health care professionals must prepare themselves to recognize the importance of religiosity in patients' life and the impact it has on their health⁽²³⁾. This aspect should be taken into consideration in the elaboration of strategies for development of functional health literacy, seeking to positively associate these variables to achieve better results. The scientific production on religiosity and health is more prolific in the area of mental health, and evinces religion as an important network of social support for individuals suffering from mental conditions⁽²⁵⁾ and as a positive factor for their quality of life⁽²³⁾.

The present study indicated that a better quality of life in the social and educational domains increases the chance of better functional health literacy for adolescents. This result

demonstrates that individuals with better socialization with their peers and less difficulties in academic life have better functional health literacy. Another study⁽²⁶⁾, which used the summaries of the physical and mental domains of the instrument SF12/version 2.0, also indicated a positive association between quality of life and the level of functional health literacy in men diagnosed with primary prostate cancer, in both domains. The existing literature only addresses the topic of quality of life and functional health literacy under chronic conditions like asthma⁽²⁷⁾ and heart disease⁽²⁸⁾, or in specific areas such as oral health⁽²⁹⁾. Therefore, no studies have been found in the literature about the relationship between quality of life and functional health literacy without the presence of pathologies and specifically in the adolescent population.

For adolescents, the school universe represents a learning space for their relationship with the world. Social networks that provide opportunities of interaction and construction of knowledge to adolescents favor participation of the individuals in their own care, as well as the development of skills and autonomy⁽³⁰⁾.

The results of this research suggest the importance of providing adequate social and educational conviviality, promoting favorable environments for the adolescents to develop their functional health literacy. Likewise, religious practice should be considered in the individual's reality in the production of strategies for the development of the individuals' empowerment over their health condition.

The present study presents advances in the discussion on functional health literacy in Brazil, especially for having chosen adolescent individuals without associated pathologies as a sample. In addition, the association of functional health literacy with quality of life and sociodemographic factors, also without related pathologies, contributes to the discussion on the topic. The use of self-administered collection tools favors the participants' freedom of response, especially with questions that could constrain them, such as those related to violence.

The non-stratification of the sample by school classes and age as well as the use of a non-validated instrument to evaluate functional health literacy represent the limitations of the study. Adolescents were invited to participate in the study without taking into account stratification by school year and age. Thus, there was a larger number of 18-year-old participants, since the Informed Consent form signed by guardians was not required from this age group. Students under the age of 18 often took the term to their legal guardians and forgot to take it back to school, thus being unable to participate in the research. At the time of selection of the instrument, there was no test validated in Brazil to measure functional health literacy for adolescents, which justifies the use of an non-validated instrument. The diversity of tests used in studies and the socioeconomic and cultural differences of the samples hamper comparison of results.

CONCLUSION

The present article instigates reflection on the importance of studying functional health literacy in the life cycle of adolescence. It indicated a statistically significant association

between functional health literacy and the social and educational domains of quality of life, as well as the lack of religious practice. The better perception of socialization with peers, the perception of less educational difficulties, as well as not practicing any religion increase the chances of individuals having good functional health literacy. Similar studies using samples from other economic stratifications should be conducted to better understand the dynamics of functional health literacy in the population in question. This study aims to contribute to the construction of strategies to promote better functional health literacy for adolescents.

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Author contributions

PCR has participated in the study design, data collection and analysis, writing, and final approval of the version to be published; DCR participated in data collection and analysis, writing, and final approval of the version to be published; SMAL participated in the study design, data analysis and interpretation, critical review of the intellectual content, co-orientation of the study, and final approval of the version to be published.