Functional health literacy in adults and elderly with dysphagia

Letramento funcional em saúde em adultos e idosos com disfagia

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ABSTRACT

Purpose: To verify the association between Functional Health Literacy in adults and elderly with dysphagia and socioeconomic, clinical, and swallowing ability data according to cognitive screening. **Methods:** Observational analytical cross-sectional study with 49 participants in a rehabilitation clinic. We analyzed medical records, Brazil Economic Classification Criteria, Mini Mental State Examination, Short Assessment of Health Literacy for Portuguese-speaking Adults, Speech Therapy Protocol for Dysphagia Risk Assessment, Functional Oral Intake Scale, and Dysphagia Handicap Index. Descriptive, bivariate, and multiple logistic regression analyzes were performed. **Results:** Most participants presented functional literacy in inadequate health, neurological disease, higher score on cognitive performance, mild and moderate dysphagia, and were fed orally with restrictions. There was an association in the multiple logistic regression of functional health literacy with schooling and underlying disease for the group with a higher score on cognitive performance, participants with higher education were 11.9 more likely to have adequate health literacy, neurological participants demonstrated 93.0 times more likely to have inadequate health literacy. **Conclusion:** Individuals with a higher level of education and those who did not have underlying neurological disease sowed less chance of having inadequate Functional Health Literacy.

Keywords: Health literacy; Deglutition disorders; Adult; Elderly; Ambulatory care

RESUMO

Objetivo: Verificar a associação do letramento funcional em saúde de adultos e idosos com disfagia com os dados socioeconômicos, clínicos e de habilidade de deglutição, de acordo com o rastreio cognitivo. **Métodos:** Estudo observacional analítico transversal, com 49 participantes com disfagia de um ambulatório de reabilitação. Os procedimentos para coleta de dados foram análise dos prontuários, Critério de Classificação Econômica Brasil, Mini Exame do Estado Mental, *Short Assessment of Health Literacy for Portuguese-speaking Adults*, Protocolo Fonoaudiológico de Avaliação do Risco para Disfagia, *Functional Oral Intake Scale* e Índice de Desvantagem da Disfagia. Foram realizadas análises descritiva, bivariada e regressão logística múltipla. **Resultados:** A maioria dos participantes apresentou letramento funcional em saúde inadequado, doença neurológica, escore superior no rastreio cognitivo, disfagia leve e moderada e alimentava-se por via oral, com restrições. Houve associação na regressão logística múltipla do letramento funcional em saúde com a escolaridade e a doença de base para o grupo com escore superior, no rastreio cognitivo. Os participantes com maior escolaridade apresentaram 11,9 mais chances de ter letramento funcional em saúde adequado; os participantes neurológicos demonstraram 93,0 vezes mais chances de apresentar o letramento em saúde inadequado. **Conclusão:** Indivíduos com maior escolaridade e aqueles que não apresentavam doença neurológica demonstraram menos chance de ter letramento funcional em saúde inadequado.

Palavras-chave: Alfabetização em saúde; Transtornos de deglutição; Adulto; Idoso; Assistência ambulatorial

INTRODUCTION

Functional health literacy (FHL) is the ability to understand, interpret and apply written, spoken, or numerical information, necessary to understand and move around healthcare environments[1]. A low FHL can hinder health promotion and education, and is associated with risky behaviors, such as reduced self-care, increased hospitalizations, and costs[2]. In this context, we consider important not only the ability to read and write but what the individual can do with the health information obtained[1]. We believe that a person with a satisfactory level of FHL moves better through healthcare environments, having better self-care and management of health conditions[1,2]. Authors pointed out that FHL can be a tool for health promotion, providing individuals with conditions to exercise control over health and improve it[3].

Neurological, structural, mechanical, senile, or psychogenic disorders can cause swallowing disorders[4]. They consist of any difficulty in transporting the bolus from the oral cavity to the stomach, being a risk factor for malnutrition, dehydration and may cause aspiration pneumonia[4]. The treatment of oropharyngeal dysphagia involves adaptations, rehabilitation actions, and guidelines to minimize the risks of inefficient swallowing. Therefore, we believe that the appropriate FHL can be a facilitator in clinical management, influencing the individual's perception of his health condition and performance in self-care activities.

Investigating functional health literacy in people with dysphagia is important, considering that individual engagement is key to the assistance and adherence to treatment. Thus, the FHL construct cannot be neglected by health professionals, including the speech therapist involved in the therapeutic and diagnostic processes, who must seek triangulation with cognitive, educational, socioeconomic, and severity factors of dysphagia. Thus, this study aimed to verify the association of functional health literacy in adults and the elderly people with dysphagia with socioeconomic, clinical, and swallowing ability data, according to cognitive screening.

METHODS

This is a cross-sectional analytical observational study, with a non-probabilistic sample. It had 49 adults and elderly patients of a dysphagia rehabilitation clinic in a public hospital. The study was approved by the institution's research ethics committee, under opinion number 3,006,459.

We informed all participants about the research objectives and procedures; those who agreed to participate signed the Informed Consent Form (ICF).

The study included individuals over 18 years old who presented with oropharyngeal dysphagia and were seen at the Speech Therapy Clinic of Hospital das Clínicas, at the Federal University of Minas Gerais. We excluded those who did not have neurological and/or cognitive conditions to understand the proposed procedures, being dependent on activities of daily living, according to the Functional Independence Measure (FIM)[5]. All participants were ongoing speech therapy for dysphagia for at least one month at the time of data collection. The neurological cases were Parkinson's disease, Huntington's disease, posterior fossa hemangioblastoma, Steinert's myotonic dystrophy, cerebral palsy, muscular atrophy, head trauma, myasthenia gravis, stroke, generalized dystonia, multiple sclerosis, Guillain-Barré syndrome, and cerebellar ataxia. The non-neurological cases were dysphagia after prolonged mechanical ventilation, late postoperative thyroidectomy, secondary dysphagia to heart disease, conduction dysphagia due to the presence of diverticulum, and dysphagia after trauma by a weapon. All participants were able to perform motor and cognitive activities without asking for help from third parties, at least according to the level of moderate dependence on the FIM scale. Thus, the functional performance of the study participants varied between complete independence and moderate dependence, without compromising the functionality to respond to the proposed protocols[5].

We collected the sociodemographic data for the characterization of the patients (age, education level, place of residence, and underlying disease) from medical records. The collection of the other procedures was carried out on the day the participant attended therapy, in a private room, through an individual interview, lasting approximately 30 minutes. The applied protocols followed the order described below. For education level, we considered groups with less education (composed of individuals who had an incomplete elementary school, completed elementary school, and incomplete high school) and higher education (composed of those with high school and higher education).

The Mini-Mental State Examination (MMSE) measured the cognitive screening as it provides information on different cognitive domains, grouped in the categories of temporal orientation, spatial orientation, attention and calculation, memory, language, and visuoconstructive capacity[6]. For the association analysis, we distributed the participants according to the cognitive screening. The MMSE score distributed the participants in the groups of the lower score (G1) and upper score (G2). Cutoff points were considered according to the school level, and to obtain a higher score, participants should have the following scores: illiterate, a score greater than 20; school level from one to four years, a score higher than 25; school level from five to eight years, a score higher than 26.5; school level between nine and 11 years, score higher than 28; school level over 11 years, a score of 29[6].

We applied the Brazil Economic Classification Criterion (BECC) to learn the socio-economic conditions through an interview with the participant[7]. The instrument considers the education of the head of the family and uses the survey of household characteristics related to the presence and quantity of household items.

Functional health literacy was researched using the Short Assessment of Health Literacy for Portuguese-speaking Adults (SAHLPA) protocol[8]. It is an instrument adapted and validated by Brazilian researchers to use at the request of interested parties and was authorized to use it in this research. The instrument assesses reading, pronunciation, and comprehension skills of 18 common medical terms, in which each correct item receives one point and the total score is obtained by adding the items, ranging from 0 to 18. Items were correct only when the pronunciation

and association were performed correctly. Scores in the range of 0 to 14 suggest poor health literacy and scores of 15 to 18 show adequate health literacy[8].

The clinical investigation of swallowing was carried out through the Speech-Language Pathology Protocol for Risk Assessment for Dysphagia (DRAP), consisting of swallowing tests of water and pasty food. From this analysis, the degree of swallowing ability is classified into seven levels, ranging from normal swallowing (level 1) to severe oropharyngeal dysphagia (level 7)[9].

We used the Functional Oral Intake Scale (FOIS) to characterize the participants' diet at the time of collection[10]. It is a clinical scale, composed of seven levels: 1- nothing orally; 2- dependent on alternative and minimal oral route of some food or liquid; 3- dependent on alternative route with the consistent oral route of food or liquid; 4- total oral route of a single consistency; 5- total oral route with multiple consistencies but in need of special preparation or compensation; 6- total oral route with multiple consistencies, without the need for special preparation or compensation but with dietary restrictions; 7- total oral route without restrictions.

We used the limitation of activity and restriction of participation in dysphagia to verify the Dysphagia Disadvantage Index (SHI)[11]. The instrument is composed of physical, functional, and emotional domains, and contains 25 questions, with the following possible answers, never (0 points), sometimes (2 points), and always (4 points). The score in each domain is calculated by adding the scores of the issues involved. The protocol also has a Likert scale, with values from 0 to 7, in which the participant performs a self-assessment of the difficulty related to swallowing. The higher the score, the worse the activity limitation and restriction of participation in dysphagia.

The response variable was functional health literacy (FHL-SALPHA,) and the explanatory variables were age, gender, education, economic class, the severity of dysphagia, restriction to participation in swallowing, and diet. For the analysis of many explanatory variables, we grouped the data obtained as shown below.

As for the severity of swallowing, the DRAP levels were redistributed into three categories: mild (functional swallowing and mild dysphagia), moderate (mild/moderate dysphagia and moderate dysphagia), and severe (moderate/severe dysphagia and severe dysphagia). In the FOIS scale, the groups were: use of alternative route (FOIS 1,2, and 3), the oral route with a consistency (FOIS 4), restricted oral route (FOIS 5 and 6), and unrestricted oral route (FOIS 7).

The descriptive analysis consisted of the frequency distribution for categorical variables and measures of central tendency and dispersion for continuous variables. The bivariate analysis was performed using the Chi-Square and Fisher's Exact tests, considering 5% of significance. The Backward selection method was adopted to associate functional health literacy with sociodemographic and clinical variables. The variables with an association at the level of 20% (p ≤ 0.20) with the response variables were considered for the logistic regression model. Subsequently, in the multiple logistic regression model, we considered variables with a significant association at a level of 5% (p ≤ 0.05). We assessed the magnitude of the associations by the Odds Ratio (OR) and their respective 95% confidence

intervals. The analyzes were performed using the IBM SPSS Statistics program, version 24.

RESULTS

Most participants had inadequate FHL (53.1%), and a higher score on cognitive screening (57.1%). Age ranged from 24 to 88 years old, with a mean of 58.4 years old (standard deviation ± 16.8 years old), in which the elderly participants were more frequent (51.0%). Female individuals (67.3%), living in the city of Belo Horizonte/Minas Gerais (63.2%) and with neurological diseases (73.5%) prevailed in the study. As for education, there was no predominance between categories. The most observed economic class was C (63.3%) (Table 1).

As for the characterization of swallowing, the severity of dysphagia varied, predominantly, between mild (51.1%) and moderate (44.9%), and most had the eating orally with more than one consistency; however, with restrictions (75.5%). More than a third of the sample self-assessed with a moderate swallowing problem. Activity limitation and restriction to participation in dysphagia had an average total of 38.7 points, with a minimum of 0 and a total of 100 points, and the closer to the total, the greater the activity limitation and restriction to participation in dysphagia. (Table 1). In the score by domains, the average physical domain was 14.4 points out of a maximum of 36, the average functional domain was 16 points in a maximum of 36 and the average emotional domain was 10 points, with a maximum of 28 points. (Figure 1). The closer to the total score in each of the domains, the greater the impact caused by oropharyngeal dysphagia. Cognitive screening showed a mean of 23.6 with a maximum score of 30, with a minimum of 14.0 and a median of 24 (standard deviation ± 4.2).

In the association analysis of the FHL according to the sociodemographic, clinical, and functional data in the cognitive screening showed no association with the researched variables (Table 2). The associations of the FHL with the sociodemographic, clinical, and functional variables, regardless of the cognitive screening did not show an association with significance between the variables (Table 3).

We performed multivariate analysis using hierarchical multiple logistic regression of the factors age, gender, education level, underlying disease, economic class, the severity of swallowing, diet, and restriction of participation in swallowing with the FHL. There was no statistically significant association between sociodemographic, clinical, and functional variables with the FHL for the lower score group. However, in the final model of multiple logistic regression, for the upper score group, schooling LEVEL p≤ 0.04, and the underlying disease p≤0.03 remained associated with the FHL (Table 4). Thus, we found that the chances of participants with higher education to have adequate functional health literacy were 11.9% times higher than those with less education. Participants who had a neurological etiology-based disease were 93.0% more likely to have inadequate health literacy than those with a non-neurological disease.

Table 1. Sample characterization according to sociodemographic and clinical data

		n	%
Life cycle	Adult	24	49
	Elderly person	25	51
Gender	Male	16	32.6
	Female	33	67.3
Education level	Minor (incomplete elementary school to incomplete high school)	25	51
	Major (secondary and higher education)	24	49
Residence	Belo Horizonte	31	63.2
	Metropolitan region	7	14.2
	Interior	11	22.4
BECC	A1	0	0
	A2	0	0
	B1	1	2
	B2	9	18.4
	C1	17	34.7
	C2	14	28.6
	D and E	8	16.3
Functional Health Literacy	Adequate	23	46.9
	Inadequate	26	53.1
Baseline disease	Neurological	36	73.5
	Non-neurological	13	26.5
Mini Mental State Examination	Higher score	28	57.1
	Lower score	21	42.9
DRAP	Mild change	25	51.1
	Moderate change	22	44.9
	Severe change	2	4
FOIS	Use of alternative route	1	2
	Orally a consistency	3	6.1
	Oral use with restriction	37	75.5
	Unrestricted oral use	8	16.4
Self-assessment of swallowing according to activity limitation and restriction of dysphagia participation - (SHI)	Normal	1	2
	Mild problem	10	20.4
	Moderate problem	23	46.9
	Severe problem	15	30.7

Subtitle: n = number of individuals; % = percentage; BECC = Brazil Economic Classification Criterion; A1, A2, B1, B2, C1, C2, D, E = economic classes; DRAP = Dysphagia Risk Assessment Protocol; FOIS = Functional Oral Intake Scale; SHI = Swallowing Handicap Index
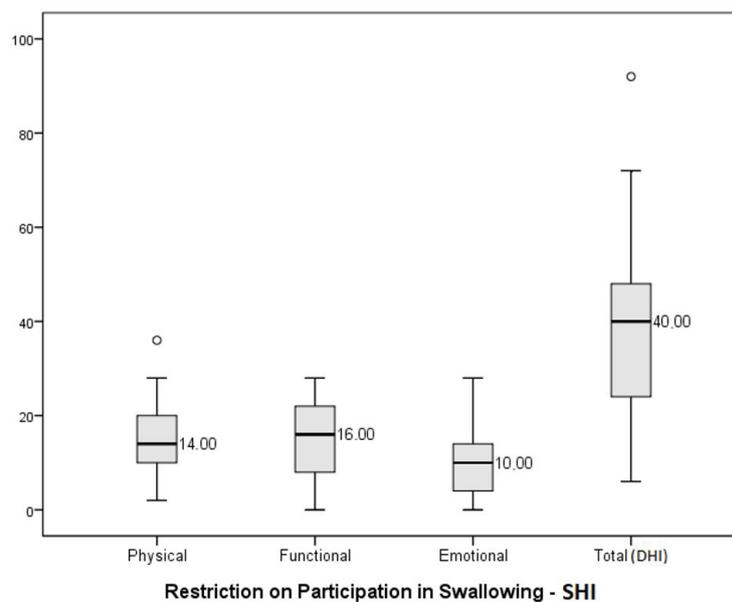
Figure 1. Characterization of activity limitation and restriction of participation in dysphagia according to the Deglutition Handicap Index
Subtitle: DHI = Swallowing Handicap Index

Table 2. Association of functional health literacy with sociodemographic and clinical variables and activity limitation and restriction of participation in dysphagia according to cognitive screening

		Lower score on cognitive screening					p-value*	Higher score on cognitive screening					p-value*
		Adequate functional health literacy		Inadequate functional health literacy				Adequate functional health literacy		Inadequate functional health literacy			
		n	%	n	%			n	%	n	%		
Gender	Male	2	28.5	4	28.5		0.99	6	37.5	4	33.3		0.57
	Female	5	71.5	10	71.5			10	62.5	8	66.7		
Education level	Minor	1	14.3	7	50.0		0.17	8	50.0	9	75.0		0.25
	Major	6	85.7	7	50.0			8	50.0	3	25.0		
Baseline disease	Neurological	6	85.7	10	71.5		0.62	9	56.3	11	91.7		0.08
	Non-neurological	1	14.3	4	28.5			7	43.7	1	8.3		
BECC	B1 and B2	2	28.5	4	28.5		0.81	3	18.7	1	8.3		0.53
	C1 and C2	5	71.5	8	57.2			11	68.8	7	58.4		
	D and E	0	0.0	2	14.3			2	12.5	4	33.3		
DRAP	Slight change	3	42.8	9	64.3		0.57	8	50.0	5	41.6		0.83
	Moderate change	4	57.2	4	28.6			7	43.7	7	58.4		
	Serious change	0	0.0	1	7.2			1	6.3	0	0.0		
FOIS	Alternative use	0	0.0	1	7.2		0.62	1	6.1	1	8.2		0.99
	Orally a consistency	1	14.3	0	0.0			12	75.0	8	66.6		
	Oral use with restriction	6	85.7	11	78.5			3	18.7	3	25.0		
	Unrestricted oral use	0	0.0	2	14.3			1	6.2	1	8.2		
		Median	Mean (±SD)	Median	Mean (±SD)		p-value**	Mean (±SD)	Median	Mean (±SD)	Median		p-value**
Age		63.0	55.1 (SD± 19.1)	65.5	62.8 (SD± 18.4)		0.33	57.6 (SD± 16.3)	55.0	55.8 (SD± 15.0)	55.0		0.71
Activity limitation and restriction to dysphagia participation - total SHI		44.0	45.1 (SD± 20.75)	40.0	41.4 (SD± 17.1)		0.55	38.2 (SD± 22.9)	40.00	32.6 (SD± 16.7)	34.0		0.43

*Fisher's exact test; **Simple logistic regression

Subtitle: n = number of individuals; % = percentage; BECC = Brazil Economic Classification Criterion; B1, B2, C1, C2, D, E = economic classes; DRAP = Dysphagia Risk Assessment Protocol; FOIS = Functional Oral Intake Scale; SHI = Swallowing Handicap Index; SD = standard deviation; statistically significant if p <0.050

Table 3. Association of functional health literacy with sociodemographic and clinical variables and activity limitation and restriction of participation in dysphagia regardless of cognitive screening

		Functional health literacy				p-value*
		Adequate		Inadequate		
		n	%	n	%	
Gender	Male	8	34.78	8	30.77	0.999
	Female	15	65.22	18	69.23	
Education level	Minor school	9	39.13	16	61.54	0.156
	Major school	14	60.87	10	38.46	
Baseline disease	Neurological	15	65.22	21	80.77	0.332
	Non-neurological	8	34.78	5	19.23	
BECC	B1 and B2	5	21.74	5	19.23	0.459
	C1 and C2	16	69.57	15	57.69	
	D and E	2	8.70	6	23.08	
DRAP	Mild alteration (functional swallowing + mild dysphagia)	11	47.83	14	53.85	0.885
	Moderate change (mild/moderate dysphagia + moderate dysphagia)	11	47.83	11	42.31	
	Severe change (moderate/severe dysphagia + severe dysphagia)	1	4.35	1	3.85	
FOIS	Restriction of food orally using alternative route	0	0.00	1	3.85	0.822
	Orally one consistency	2	8.70	1	3.85	
	Oral use more than one consistency, but with special preparation	18	78.26	19	73.08	
	Unrestricted oral use	3	13.04	5	19.23	
		Median	Mean (±SD)	Median	Mean (±SD)	p-value**
Age		60.0	56.9 (SD± 16.8)	59.0	59.7 (SD± 17.0)	0.542
Activity limitation and restriction of participation in dysphagia according to the total SHI		44.00	40.35 (SD± 22.10)	39.00	37.38 (SD± 17.17)	0.583

*Fisher's exact test or Pearson's chi-square test; **Simple logistic regression

Subtitle: n = number of individuals; % = percentage; BECC = Brazil Economic Classification Criterion; B1, B2, C1, C2, D, E = economic classes; DRAP = Dysphagia Risk Assessment Protocol; FOIS = Functional Oral Intake Scale; SHI = Swallowing Handicap Index; SD = standard deviation; statistically significant if p <0.050

Table 4. Logistic regression analysis of functional health literacy with schooling and underlying disease

Cognitive screening		Lower score				Higher score				Regardless of the score			
			95% confidence interval for OR				95% confidence interval for OR				95% confidence interval for OR		
FHL		OR	Inferior limit	Upper limit	p-value*	OR	Inferior limit	Upper limit	p-value*	OR	Inferior limit	Upper limit	p-value*
Education level	Minor	-	1	-	-	1	-	-	-	1	-	-	-
	Major	0.12	0.01	1.45	0.09	0.11	0.01	0.91	**0.04**	0.33	0.10	1.13	0.07
Baseline disease	Neurological	-	1	-	-	1	-	-	-	1	-	-	-
	Non-neurological	4.01	0.31	52.12	0.28	0.07	0.00	0.82	**0.03**	0.31	0.07	1.36	0.12

*Multiple logistic regression with Backward selection method; Variables included in the initial model: age, gender, education level, underlying disease, Brazil Economic Classification Criterion; Dysphagia Risk Assessment Protocol; Functional Oral Intake Scale (Functional Oral Intake Scale); and Restriction to participation in swallowing

Subtitle: OR = *Odds Ratio*; FHL = Functional Health Literacy

DISCUSSION

Most of the study participants had inadequate FHL. Research that investigated the FHL in samples of primary health care and specialized component (outpatient), who had diabetes and chronic kidney disease in pre-dialysis treatment, found inadequate FHL in greater proportions than in this study[12,13]. For individuals with diabetes, more than two-thirds had inadequate FHL and all those with chronic kidney disease had inadequate performance[12,13]. The level of education of the participants in this study was higher than in the studies cited and, although education does not guarantee an adequate level of FHL, the literature points out that individuals with a higher level of education may have better FHL performance, regardless of their training area. Unlike the instrument used in this study, which verifies the ability to read, pronounce and understand using 18 common medical terms, the Short Test of Functional Literacy in Adults (S-TOFHLA), consisting of 36 items divided into two subtests that assessed textual comprehension skills through phrases with gaps to be filled in by the participant at a given time and numbering[14].

According to data from the Brazilian Institute of Geography and Statistics (IBGE), the elderly population and the life expectancy of the population over 60 years old are growing[15]. When searching the literature for studies that investigated FHL in different life cycles, in a study carried out with elderly people in the Southern Region of Brazil, using the S-TOFHLA, there was an inadequate result in more than a third of the sample and, the FHL may decrease with advancing age[16]. When considering adults, the inadequate FHL observed in most of the sample was also found in studies carried out in primary health care in the Southeast Region, using the same instrument, and in the North Region, through the S-TOFHLA[17,18]. There was no association between the age variable and the FHL in this study and a possible justification was the reduced number of participants.

As in this study, other studies[12-14,16-18] that investigated FHL had a prevalence of females in their samples. Data from the last IBGE-2010 census showed a higher proportion of women than men. Also, when seeking to identify the factors associated with differences in the demand for health services between men and women, it appears that being female may be a predictor of greater demand for assistance[15,19].

When researching studies carried out in the context of rehabilitation clinics, we observed that the FHL was also a topic of interest in other areas or fields of study[20,21]. In a study in the field of Physiotherapy carried out in Turkey aimed at determining the FHL in 423 individuals with chronic musculoskeletal disorders, more than two out of ten patients had inadequate FHL[20]. The research used two instruments for screening the FHL and found that there were good reproducibility and agreement between the instruments. The first instrument assessed the ability to read and pronounce 66 medical terms for parts of the body, which could be common or lay, to classify the FHL into four levels. The second instrument assessed literacy and numeracy skills by reading a nutritional label with six questions and, according to the number of correct answers, the LFS was considered adequate or inadequate. A North American study in the Occupational Therapy field that investigated whether elderly people with low vision had lower FHL through the S-TOFHLA found that low visual acuity was correlated with lower FHL scores[21]. In outpatient rehabilitation services, there is systematic care, with constant access to health services and direct contact between the patient and health professional, factors that can contribute to better performance of FHL.

In speech-language therapy clinical practice in dysphagia, there is a large amount of information to be understood, applied, and reviewed by patients, and the elements are constantly transmitted in writing to assist in the management of health conditions. In this context, the communicative and critical levels of the FHL must be considered for therapeutic efficacy. A case study carried out in South Africa, with a 43-year-old patient who presented with oropharyngeal dysphagia and low level of FHL, used high-tech strategies such as audio recordings in the form of CD/cassette, telephone contact, and text message, to maximize the FHL and the recovery of clinical information, with a greater understanding of the therapeutic process and greater motivation to perform the tasks involved in self-care for home rehabilitation[22]. Thus, the speech-language therapist must consider the individual's FHL to promote individualized strategies that guarantee the understanding and adherence to the procedures indicated in the rehabilitation of dysphagia.

Although most of our sample was presented orally with restrictions, with ingestion of multiple consistencies, almost half of the participants self-evaluated with a moderate swallowing problem. Thus, the speech-language therapist must be attentive to the level of FHL of the patient under his care. Adequate FHL can decrease activity limitations and restrict participation in dysphagia since it can favor individuals' understanding of therapeutic strategies that facilitate efficient and safe swallowing.

The initial data on FHL and dysphagia need to be improved since studies that address the interrelationship between these variables are scarce. In speech-language therapy for dysphagia, there is a large amount of information to be processed by the patient to manage the health condition, in addition to the therapeutic environment. Thus, we need to understand the possible influences of the FHL in the process of self-care and health management of the individual with dysphagia. Activity limitations and restriction to participation in dysphagia are based on the structuring of the biopsychosocial model of the World Health Organization and, consequently, of the International Classification of Functioning, Disability, and Health (CIF), as guiding health care. Thus, when examining dysphagia from the perspective of human functionality, we observe the need to change an approach based on the disease and its consequences to a perspective anchored in functionality as a component of health[23], and in the understanding that the situations of health are diverse and should be treated differently, according to the limitations of activities and restrictions on the participation of each individual[24,25]. In this context, patients with similar degrees of dysphagia may have different limitations of activity and restrictions on participation in dysphagia.

The variables of school level and underlying disease remained in the final model of the analysis by multiple logistic regression. For the group with the highest score in cognitive screening, we found that individuals with higher education showed less chance of having inadequate FHL, as well as those who did not have the underlying disease of neurological etiology.

A study pointed out that a higher level of education may be responsible for better FHL performance and that reduced reading and writing skills can limit access to health information[13]. In a survey conducted with adult patients of primary care in the Southeast of Brazil, the results showed that school level remained associated with FHL. We found that adults with primary and secondary education were more likely to have inadequate FHL than those with higher education[17]. Although there was an association between education and the FHL, authors pointed out that this is not the only condition that influences or guarantees the level of skill in the FHL and that other dimensions of the phenomenon must be considered, such as access to the health network and the quality of communication between health professionals and patients[14,26].

In this context, health professionals must be attentive when providing health information, seeking to always ensure the degree of understanding of the information provided. In the underlying disease, there was a greater chance of inadequate FHL in individuals with dysphagia, whose etiology of the underlying disease was neurological. Neurological pathologies can influence motor and cognitive abilities, whether progressive or degenerative or not. Although it was not the object of the study to analyze neurological disease and cognitive skills as mediators of FHL, the use of cognitive screening as a criterion for the inclusion and separation of groups allowed reaching the objective of the study and the use of the proposed instruments.

Also, regarding the underlying disease, a North American cohort study carried out with 221 individuals attended by an

outpatient neurology service identified that more than a quarter of the participants had low FHL, and those with a longer duration of the neurological disease were more likely to have levels of FHL, and almost a third of the sample was unable to name any medication they used[27]. Since people with neurological diseases are frequent for speech-language therapy in dysphagia, the professional should be sensitive to the aspects of FHL, education, access to health services, communication, and social and family support, when transmitting health information and guidelines to ensure greater effectiveness of actions in the therapeutic process.

However, for the group with a lower score on cognitive screening, we observed no association with statistical significance between the variables of education level and underlying disease. When comparing the groups of upper and lower scores, we observed a higher occurrence of inadequate FHL in patients with lower scores. The FHL represents the cognitive ability to understand, interpret and apply health information, and, in this sense, cognitive screening can influence the process of obtaining, processing, and interpreting basic health information[1]. A study pointed out that cognitive and social skills can be determinants in motivating individuals to access, understand and use health information[28]. In a North American study aimed to investigate the correlation between health literacy, age, and cognitive skills of the elderly population, the FHL skills changed with cognitive aging, reinforcing the need to ensure that self-care tasks in health care for the elderly people have cognitive and literacy demands appropriate to individual performance[29]. In this context, elderly individuals or those with impaired cognition may need the help of a caregiver to move around in health care environments. Thus, for greater effectiveness of health actions with this audience, it is relevant to know the level of FHL of the caregiver.

Among the limitations of this study, we note the sample size and design, factors that did not allow generalizations. The underlying diseases found were diversified, hindering to study of the specific FHL conditions for each of them. Also, the patients' therapeutic course was not controlled and the influence of the therapeutic process on the FHL was not measured. However, this is the first study with the theme of FHL in dysphagia, carrying out the analysis in the context of a rehabilitation clinic and used instruments disseminated in dysphagia and for the evaluation of FHL. For a better understanding of FHL and dysphagia, we suggest studies with more specific groups regarding functional processes and underlying diseases, which analyze the relationship between FHL and the rehabilitation of swallowing disorder, in terms of adherence and understanding therapeutic strategies and investigate the influence of the therapeutic process on FHL performance.

CONCLUSION

We observed no association between functional health literacy and sociodemographic, clinical, and functional variables for the lower score group, in cognitive screening. However, there was an association with the variables of education level and underlying disease for the group with the highest score, in the cognitive screening. Thus, we concluded that individuals with a higher level of education and those who did not have an underlying disease of neurological etiology showed less chance of having inadequate FHL.

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