

# Evaluation of the didactic material of the “Active Life Improving Health” Program (VAMOS), version 3.0

*Avaliação do material didático do Programa “Vida Ativa Melhorando a Saúde” (VAMOS), version 3.0*



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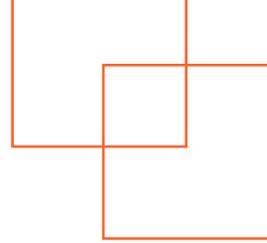
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## ABSTRACT

The evaluation of didactic materials is essential for health promotion programs to be able to positively affect the population. The objective was evaluate of content, appearance, usability, potential for understandability and actionability from the VAMOS Program, version 3.0. The Flesch reading-ease test assessed readability of written materials. The materials were evaluated by 18 health professionals. The Suitability Assessment of Materials (SAM) questionnaire and the Patient Education Materials Assessment Tool (PEMAT-P) were used to evaluate the written materials. The System Usability Scale (SUS) and the PEMAT-AV were used to evaluate the online version. Instrument scores and internal consistency were calculated. VAMOS 3.0 showed potential for application with individuals over 18 years of age, in its two formats. Our evaluation process resulted in improved written materials that were written in an adequate grade reading level, clearly communicated the objectives of the program, and were culturally relevant and easy to use, while achieving a superior potential for understandability and actionability.

## KEYWORDS

Health promotion; Behavior; Motor activity; Healthy eating; Evaluation of health programs and projects; Health Education.

## RESUMO

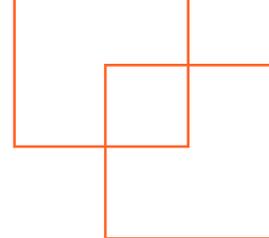
A avaliação dos materiais didáticos é essencial para que programas de promoção da saúde consigam afetar positivamente a população. O objetivo foi avaliar a legibilidade, conteúdo e aparência, usabilidade, potencial de compreensão e de ação do material didático do Programa Vida Ativa Melhorando a Saúde, versão 3.0. O Teste de facilidade de leitura de Flesch avaliou a legibilidade dos materiais. Os materiais foram avaliados por 18 profissionais da saúde. O Suitability Assessment of Materials (SAM) e o Patient Education Materials Assessment Tool (PEMAT-I) foram usados para avaliar para o formato impresso; o System Usability Scale (SUS) e o PEMAT-AV foram usados para avaliar o formato on-line. Foram calculados os escores dos instrumentos e a consistência interna. O material didático foi considerado qualidade superior e de fácil com-

## RESUMO

preensão. O VAMOS 3.0 apresentou potencial de aplicação para maiores de 18 anos, em seus dois formatos. Nossa avaliação resultou em materiais aprimorados, com um nível adequado de leitura, comunicando claramente os objetivos do programa, culturalmente relevante, com boa usabilidade e superior potencial de compreensão e ação.

## PALAVRAS-CHAVE

Promoção da saúde; Mudança de comportamento; Avaliação de programas e projetos de saúde; Educação em Saúde.

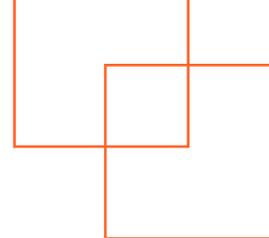


## INTRODUCTION

The World Health Organization has found that approximately 70% of deaths in Brazil are related to chronic non-communicable diseases (NCDs) (World Health Organization [WHO], 2020). This fact demonstrates the need to develop programs that effectively communicate strategies for promoting physical activity and healthy eating (Rebar, Rhodes, & Gardner, 2019), contributing to decreasing rates of NCDs. To this end, the educational materials used in these actions must be evaluated and present explicit content with the potential to promote change in the population (Brito et al., 2019). Although these evaluations are paramount to the success of the interventions, no references are found in the literature about programs that evaluated the readability, content, usability, understandability, and actionability of the teaching materials.

Evaluation of materials is of fundamental importance to health promotion programs (Koh et al., 2012). They need to be thought out and adequate to keep up with the level of knowledge and the difficulties in understanding the content by people, facilitating the understanding and using the materials regarding health literacy (Brito et al., 2019). This fact should be considered, especially in places where literacy is low, and understanding about health-related issues is still limited (Santos, Portella, Scortegagna, & Santos, 2015). In Brazil, about 35% of people over the age of 14 have not completed primary education (Brazil, 2019). The negligence in the production of materials to facilitate the understanding of their content, coupled with the low level of education, make it difficult for their recommendations to be put into practice, not achieving the expected goal.

Interventions have been developed to provide knowledge for people to adopt and maintain good health behaviours in a sustainable way. Among these initiatives, the “Vida Ativa Melhorando a Saúde” (VAMOS) program was developed in Brazil and has demonstrated its effectiveness in changing behavior (Borges, Meurer, & Benedetti, 2017; Gerage, Benedetti, Cavalcante, Farah, & Ritty-Dias, 2020; Meurer, Lopes, Almeida, Mendonça, & Benedetti, 2019; Scherer et al., 2018). However, limitations were found in these studies, which subsidized a new version of the program (VAMOS 3.0) with an expansion of its strategies (Konrad et al., 2019) and creating an online version to expand population reach. Such changes brought the need to evaluate the materials and adjust the ne-



cessary changes, seeking to qualify their construction and subsequent application.

Thus, the objective of this study was to evaluate the readability, content, appearance, usability, comprehension potential, and action potential of the printed and online materials of the Vida Ativa Melhorando a Saúde - VAMOS program, version 3.0.

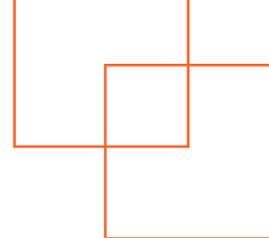
## 2 METHODS

### 2.1 Description of Intervention

VAMOS is a behaviour change program that aims to motivate people to adopt an active and healthy lifestyle ([www.vamos.ufsc.br](http://www.vamos.ufsc.br)). The program is recommended for people aged 18 or older, especially those who do not meet the minimum recommendations for physical activity, have inappropriate eating behaviour and have health problems. The application occurs mainly in Primary Health Care, by multipliers certified in training via Distance Education (Benedetti, Manta, Gomez, & Rech, 2017).

Previous versions of the program had 12 sections and lasted between three and six months, only in a printed and face-to-face format. In version 3.0, the program was expanded to 18 sections, and the duration of the program was increased to between six and nine months, in both printed and online formats. The material has been improved with short, easy-to-understand sentences and can be used by people with low schooling levels. More representative/explanatory images replaced the illustrations. These changes aimed to meet previous studies on VAMOS (Meurer, Lopes, Almeida, Mendonça, & Benedetti, 2019; Scherer et al., 2018). An online version was created to extend the reach, which can be taken from any location with internet on different devices (computer, tablet, smartphone). Making the program available in an online format is an innovation in health programs in Brazil. It includes the same content as the printed material, making it possible to do the sections individually, according to the availability of time and place that best suits them. The didactic material in the online format of the VAMOS program is available on the Moodle platform of the Federal University of Santa Catarina.

### 2.2 Evaluation of the Intervention Materials



In this study, the following elements were considered: (a) readability, which is associated with the reading level for which the material is suitable (Silva, & Fernandes, 2009); (b) content, which covers the technical construct, the purpose, and the relevance of the program (Pinheiro, Coelho, Silva, Chiesa, & Fracolli, 2018); c) appearance, which is related to the distribution of written content, clarity and relevance of illustrations and layout (Lima, Bezerra, Sousa, Rocha, & Oriá, 2017), d) usability, which checks ease of learning, the efficiency of use, ease of memorization, low error rate, and subjective satisfaction (Brooke, 2013; Padrini-Andrade et al., 2019); and, e) comprehension and action potentials, where the former refers to facilitating understanding by people of different backgrounds and educational levels and the latter to identification and decision making based on the information presented (Shoemaker, Wolf, & Brach, 2014).

### **Instruments**

1) Flesch Readability Test: the didactic materials were converted into Microsoft Word® software, which classifies the text on a scale from 0 to 100 points, 0 low readability and 100 high readability. The higher the score, the easier the document is to understand (Silva & Fernandes, 2009). The formula for Flesch's readability score is:

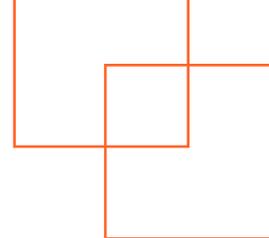
$$206.835 - (1.015 \times \text{ASL}) - (84.6 \times \text{ASW})$$

ASL = average sentence length (the number of words divided by the number of sentences); and

ASW = average number of syllables per word (the number of syllables divided by the number of words).

Readability was assessed as follows: average number of sentences per paragraph, the average number of words per sentence, the average number of letters per word, readability index by the Flesch method. The results were classified according to the Metric Scale for Texts in Portuguese, being: 0-24 = very difficult; 25-49 = not very difficult; 50-74 = easy; 75-100 = very easy (Silva, & Fernandes, 2009).

2) Suitability Assessment of Materials (SAM): a questionnaire that has been widely used in other countries and has been validated for Brazil. It assesses the quality of teaching and instrumental materials in health and their cultural appropriateness (Doak, Doak, & Root, 1996; Sousa, Turrini, & Poveda, 2015). The instrument uses a Likert scale (0 - inadequate, 1 - partially adequate, 2 - adequate, NA - not applicable). The calculation



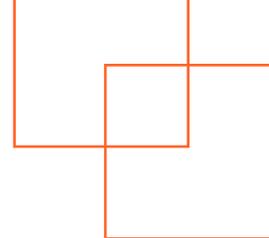
of the adequacy score is performed by summing the scores obtained in each item, divided by the maximum total scores and multiplied by 100, transformed into a percentage. The interpretation of the result is: 0-39% = inadequate material, 40-69% = adequate material, 70-100% = superior material (Sousa, Turrini, & Poveda, 2015).

The Patient Education Materials Assessment Tool (PEMAT) is the US Agency for Healthcare Research and Quality (AHRQ) instrument. It has been translated and culturally adapted for Brazil (Brito, Benedetti, Konrad, Ribeiro, & Almeida, 2019). It contains a version for printed materials (PEMAT-I) and one for audiovisual materials (PEMAT-AV). Both instruments use a Likert scale (0 - do not agree, 1 - agree, NA - not applicable). The scores should be used as indicators of quality in choosing between materials (McClure, Vitzthum, & Rudd, 2016), reaching at least 70% agreement in the final assessment among raters (Shoemaker, Wolf, & Brach, 2014).

3) PEMAT-I: determines how much material users can understand and act on the information available in the printed materials (Shoemaker, Wolf, & Brach, 2014). It is used to assess and compare the comprehension potential (the degree that people with low education can interpret the information) and action potential (how well readers will know what to do after interacting with the material) of printed health materials (<https://www.ahrq.gov>). The instrument consists of 24 items, with 17 assessing comprehension potential and 7 assessing action potential (Shoemaker, Wolf, & Brach, 2014).

4) PEMAT-AV: has the same characteristics as PEMAT-I but assesses comprehensibility and the user's ability to interact with audiovisual materials such as virtual platforms, websites, videos, apps, or other interfaces. The instrument comprises 17 items, 13 of which assess comprehension potential and 4 items assess action potential (Shoemaker, Wolf, & Brach, 2014).

5) System Usability Scale (SUS): measures the usability of different types of interface available in the electronic medium utilizing ten questions. Its Likert scale ranges from 1 (strongly disagree) to 5 (strongly agree) (Padrini-Andrade et al., 2019). The calculation of the score allows to perform the classification of the material evaluated: less than 20.5 =



worst case; 21 to 38.5 = bad; 39 to 52.5 = average; 53 to 73.5 = good; 74 to 85.5 = excellent; and 86 to 100 = best imaginable (Padrini-Andrade et al., 2019).

## 2.3 Procedures

The evaluation took place from December/2018 to February/2019. Nineteen healthcare professionals were intentionally invited to evaluate the 18 sections of the VAMOS Program, version 3.0. For inclusion in the study, professionals had to have a minimum of three years of higher education in healthcare. Eighteen professionals from three areas of knowledge agreed to participate in the evaluation.

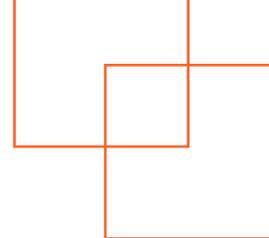
The professionals received via e-mail a form developed in Google Docs® with all the instructions for the evaluation process. Among them, the informed consent form (ICF) and the SAM, PEMAT-I (evaluation of the printed format), PEMAT-AV, SUS (evaluation of the online format) questionnaires to be filled out and the insertion of comments/observations/suggestions specific to the section. Due to the large volume of materials (18 sections), each professional evaluated three to four sections of the VAMOS Program, version 3.0, randomly selected to avoid attrition of the evaluators during the process.

## 2.4 Statistical Analysis

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) statistical software, version 20.0 for Windows®. Descriptive data were presented as absolute and relative frequency, mean, and standard deviation. Cronbach's alpha measured the internal consistency of the mean scores of the instruments.

## 2.5 Ethical Precepts

A methodological study was carried out from the community-based intervention project: "VAMOS Program: from training to implementation". It was approved by the Ethics Committee on Human Research of the Federal University of Santa Catarina (under No. 1.394.492). It can be found in the Brazilian Registry of Clinical Trials (<http://www.ensaiosclini>



cos.gov.br/) under the indicator RBR-2vw77q.

### 3 RESULTS

In total, 387 observations were made by the evaluators. Most of the comments referred to spelling corrections, suggestions for substitution of terms, or images. All comments were duly analyzed, and changes were made when necessary. The characteristics of the evaluators are presented in Table 1.

**Table 1** - Characteristics of the evaluators of the VAMOS Program, version 3.0. Florianópolis, Brazil, 2019 (n=18).

	<b>Professionals</b>
<i>Sex</i>	<b>n (%)</b>
Female	13 (72,2)
Male	5 (27,8)
<i>Age (years)</i>	<b>n (%)</b>
Minimum-Maximum	27 – 53
Mean (standard deviation)	38,4 (8,8)
<i>Education area</i>	<b>n (%)</b>
Biology	1 (5,6)
Physical Education	15 (83,3)
Nursing	2 (11,1)
<i>Degree</i>	<b>n (%)</b>
Specialist	1 (5,6)
Master	7 (38,8)
PhD	10 (55,6)
<i>Education time (years)</i>	
Minimum-Maximum	5 – 40
Average (standard deviation)	16,9 (10)

Source: the authors.

First, the readability was evaluated. The readability range varied from 55 to 70, showing that all sections obtained similar scores, so they received the same classification. The average score of the VAMOS courseware was 63 points, indicating easy readability. The descriptive results of the readability of the VAMOS courseware in its different sections are presented in Table 2.

**Table 2** - Readability evaluation of the didactic material of the VAMOS Program, version 3.0. Florianópolis, Brazil, 2019.

Program Sections	Medium			Rreadability	
	Sentences per paragraph	Words per sentence	Characters per word	Flesch Method	Result
Section 1 - VAMOS get started?	1,2	7,4	5,2	64	Easy comprehension
Section 2 - VAMOS get to know the program?	1,6	12,6	5,2	60	Easy comprehension
Section 3 - VAMOS learn about the benefits of a healthy lifestyle?	1,5	11,7	5,4	55	Easy comprehension
Section 4 - VAMOS understand more about physical activity?	1,4	11,6	5,3	58	Easy comprehension
Section 5 - VAMOS understand more about healthy eating?	1,6	10,4	5,4	55	Easy comprehension
Section 6 - VAMOS to understand health risks?	1,4	9,9	5,2	64	Easy comprehension
Section 7 - VAMOS face the obstacles?	1,9	10,6	5,2	63	Easy comprehension
Section 8 - VAMOS we revisit our plans?	1,4	8,9	5,1	66	Easy comprehension
Section 9 - VAMOS identify social support?	1,4	11,0	5,1	64	Easy comprehension
Section 10 - VAMOS manage stress?	1,6	12,0	5,2	59	Easy comprehension
Section 11 - VAMOSat good physical activity practices?	1,4	10,6	5,2	62	Easy comprehension
Section 12 - VAMOS talk about fat, salt and sugar?	1,5	12,1	5,2	60	Easy comprehension
Section 13 - VAMOS learn about labels and calories?	1,5	11,8	5,0	66	Easy comprehension
Section 14 - VAMOS identify opportunities to be healthy?	1,4	11,1	5,1	66	Easy comprehension
Section 15 - VAMOS avoid relapse?	1,6	10,1	5,0	69	Easy comprehension
Section 16 - VAMOS going to maintain motivation and progress?	1,3	10,1	5,2	63	Easy comprehension
Section 17 - VAMOS we keep the new behaviors?	1,7	10,9	5,1	66	Easy comprehension
Section 18 - VAMOS we reevaluate the state of life?	1,3	11,3	4,9	70	Easy comprehension
<b>VAMOS program average</b>	<b>1,5</b>	<b>10,8</b>	<b>5,2</b>	<b>63</b>	<b>Easy comprehension</b>
Standard Deviation	0,2	1,2	0,1	4,2	
Minimum-Maximum	1,2-1,9	7,4-12,6	4,9-5,4	55-70	

Source: the authors.

Next, an analysis by section was performed on the materials in printed and online formats, allowing each section of VAMOS to be observed independently. The overall averages showed high scores in the evaluation of the printed format and the online format, indicating that the VAMOS program, version 3.0, was considered to have superior quality, as shown in Table 3.

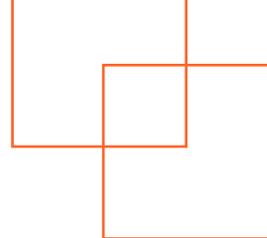
**Table 3** - Section scores assigned by the evaluators of the VAMOS Program, version 3.0. Florianópolis, Brazil, 2019 (n=18).

Program Sections	Printed material		Online material	
	SAM (%)	PEMAT-I (%)	PEMAT-AV (%)	SUS (%)
Section 1 - VAMOS get started?	98,5	96,0	94,5	99,2
Section 2 - VAMOS get to know the program?	91,9	97,0	100,0	83,3
Section 3 - VAMOS learn about the benefits of a healthy lifestyle?	97,7	83,0	96,5	88,3
Section 4 - VAMOS understand more about physical activity?	95,4	97,0	100,0	75,0
Section 5 - VAMOS understand more about healthy eating?	94,5	92,0	100,0	97,5
Section 6 - VAMOS to understand health risks?	85,6	88,0	100,0	85,9
Section 7 - VAMOS face the obstacles?	98,2	99,0	100,0	89,4
Section 8 - VAMOS we revisit our plans?	97,7	99,0	100,0	90,0
Section 9 - VAMOS identify social support?	92,7	98,0	98,5	90,0
Section 10 - VAMOS manage stress?	97,6	100,0	100,0	88,3
Section 11 - VAMOSat good physical activity practices?	93,9	92,5	100,0	96,7
Section 12 - VAMOS talk about fat, salt and sugar?	86,4	95,0	95,5	97,5
Section 13 - VAMOS learn about labels and calories?	97,0	91,0	100,0	75,0
Section 14 - VAMOS identify opportunities to be healthy?	93,2	94,5	97,0	96,7
Section 15 - VAMOS avoid relapse?	97,7	99,0	100,0	98,3
Section 16 - VAMOS going to maintain motivation and progress?	100,0	100,0	100,0	85,0
Section 17 - VAMOS we keep the new behaviors?	93,5	95,5	97,0	87,5
Section 18 - VAMOS we reevaluate the state of life?	96,6	100,0	100,0	83,8
<b>Overall average</b>	<b>94,9</b>	<b>95,4</b>	<b>98,8</b>	<b>89,3</b>
Cronbach's alpha	0,926	0,769	0,553	0,767

Fonte: dos autores.

The overall internal consistency and reliability index showed an adequate level of agreement among raters in both the evaluation of the courseware in printed format (SAM  $\alpha=0.926$ ; PEMAT-I  $\alpha=0.769$ ) and online format (PEMAT-AV  $\alpha=0.553$ ; SUS  $\alpha=0.767$ ). Researchers consider that average correlation values between items greater than 0.300 as adequate (Souza, Alexandre, & Guirardello, 2017).

The SAM, whose objective refers to the content and appearance of the material, showed high overall scores (94.9%) for adequacy of the material. The scores ranged from 87.3% to 99.8%. The PEMAT-I results also showed high average scores for both comprehension potential (93.2%) and action potential (97.5%). These results are described in Table 4.



**Table 4** - Evaluation of the didactic material in printed format of the VAMOS Program, version 3.0. Florianópolis, Brazil, 2019 (n=18).

Item	Description	Score (%)
Content	Clarity and relevance of content for learning	99,8
Language	Appropriate and accessible language for people with low schooling	96,9
Graphic illustrations	Representative and explanatory images of the content	87,3
Layout and design	Adequacy of the action elements and images	95,7
Motivation for learning	Strategies to motivate achievement and permanence	96,7
Cultural appropriateness	Application in different contexts in Brazil	95,6
<b>SAM<sup>a</sup> Overall Average</b>		<b>94,9</b>
Comprehension potential	Interpretation of the information available in the material	93,2
Action potential	Decision making after interacting with the material	97,5
<b>PEMAT-I<sup>b</sup> Overall Average</b>		<b>95,4</b>

<sup>a</sup>Suitability Assessment of Materials; <sup>b</sup>Patient Education Materials Assessment Tool - for printable materials.

Source: the authors.

In the evaluation of the material in the online format, in the PEMAT-AV results, the percentages of average scores were high for both comprehension potential (98.4%) and action potential (99.4%). The SUS results indicate that usability showed high overall scores (89.3%) for the suitability of the material. The scores ranged from 82.2% to 98.1%, as shown in Table 5.

**Table 5** - Evaluation of the didactic material in online format of the VAMOS Program, version 3.0. Florianópolis, Brazil, 2019 (n=18).

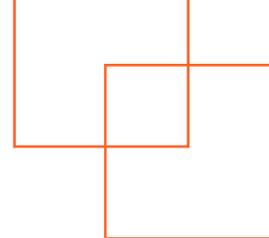
Item	Description	Score (%)
Comprehension potential	Interpretation of the information available in the material	98,4
Action potential	Decision making after interacting with the material	99,4
<b>PEMAT-I<sup>a</sup> Overall Average</b>		<b>98,8</b>
System learning	Ease of learning and using the system	89,4
System efficiency	How suitable is the system for use	92,0
System inconsistency	Minimization of errors in the system and its functionality	98,1
Ease of recall	Ease of remembering program commands and actions	82,2
User satisfaction	Positive user experience of usability	87,7
<b>SUS<sup>b</sup> Overall Average</b>		<b>89,3</b>

<sup>a</sup>Patient Education Materials Assessment Tool - for printable materials; <sup>b</sup>System Usability Scale.

Source: the authors.

## 4 DISCUSS

The results show that the didactic material of the VAMOS program presents superior quality both in printed and online formats, with easy



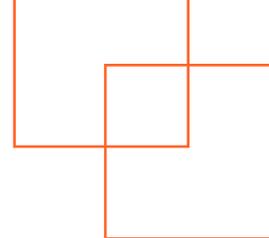
readability, indicating its suitability for application to the Brazilian population over 18 years of age.

In Brazil, although educational materials are widely used in health promotion actions, the literature does not describe an evaluation of their usability and suitability for the population. The quality of teaching materials is fundamental to the success of an intervention, which has already been corroborated by the literature (Brito et al., 2019; Padrini-Andrade et al., 2019).

The online submission of the evaluation instruments was necessary, facilitating experts from different regions of the country to be part of the process, allowing after the evaluation the material to be suitable for application in Brazil's different contexts and cultures. The online form was easy to apply and presented an excellent response rate, and may be recommended for evaluation processes of health materials in the Brazilian context.

Likewise, the instruments used need to be appropriate to perform the evaluation they are intended. Among them, having good reliability, easy understanding and administration by the evaluator, providing results that indicate the potentialities and limitations, assisting in producing relevant and appropriate materials for their purpose (Padrini-Andrade et al., 2019). As there is a gap in the available processes and instruments for evaluating teaching materials for health interventions in the Portuguese language, we chose to use two instruments to evaluate each format of the VAMOS Program.

Evaluating readability is one of the strengths of this study since the literature does not report this type of evaluation in health programs. The results suggest that the material presents easy comprehension, thus reaching people with low education. This fact may positively impact the effectiveness demonstrated by the intervention since health materials need to have clear, understandable information that motivates users to action (Koh et al., 2012). Similarly, we realize the importance of evaluating the materials to see if they meet the requirements of quality and understanding, since meeting these premises can make the health system more effective and less costly (Koh et al., 2012). In a systematic review, it was observed that most drug information materials had readability problems. Among them, complex and extensive texts, with the existence of insufficiently understood topics or not understood by users (Pires, Vigário, & Cavaco, 2015). This is a relevant factor since adequately organized and quickly understood teaching materials help adherence and permanence in the programs, besides influencing individual decisions

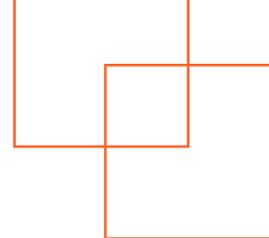


on health issues and expanding the users' knowledge and autonomy (Moreira, & Silva, 2005).

The evaluation of the printed educational materials using SAM showed that the content and appearance are consistent with the objective of VAMOS. As is already known, the goal of VAMOS is to offer the population a behaviour change program that motivates people to adopt an active and healthy lifestyle (Benedetti, Manta, Gomez, & Rech, 2017). The high scores showed that the printed material has clarity and relevance, accessible language, representative and explanatory images, adequacy of action elements, motivation strategies for permanence, and the possibility of application in different contexts in Brazil. Other studies that used the SAM to evaluate health teaching materials indicated that the use of the instrument allows the identification of specific issues of review and reformulation of information, visual aspects, and reading pattern, optimizing the material and allowing its adequacy to the target population (Brito et al., 2019; Moura et al., 2017).

This was the first time that the PEMAT adapted into Portuguese (Brito, Benedetti, Konrad, Ribeiro, & Almeida, 2019) was used in research in Brazil. It is a substantial differential of the study since it has been used and recommended by AHRQ as a valid and appropriate instrument for this type of assessment. When considering the results of the printed material, the PEMAT-I scores agree with the readability results, demonstrating that the VAMOS is suitable to be applied to the Brazilian population. The high scores indicate that the content and appearance can aid in behaviour change related to physical activity and healthy eating. This is fundamental since the material is understandable. The extent to which it can promote understanding and capacity for action are essential factors for the participant to remain in the intervention and make the necessary changes in their lifestyle (Pinheiro et al., 2018).

The results were similar to those found in the international literature. Studies that used the PEMAT-I to evaluate materials for cardiovascular disease prevention (Lee, Kim, Yoo, & Lee, 2016) and blood and bone marrow transplant patients (Armato, & Weisbrod, 2019) found rates higher than 92%. These indices generated in the use of the material assist in improving and proper use of the materials concerning their potential for understanding and action. Because of this information, the scores presented by the VAMOS program indicate ease of understanding of the contents and motivation to perform the necessary actions to change lifestyle. Even though they were created based on international in-



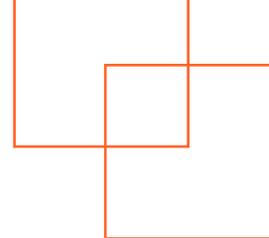
terventions, the scores for content and appearance (SAM and PEMAT-I) associated with cultural adequacy (SAM) reflect that the materials were adapted to the local reality and are suitable for implementation in the Brazilian context.

In the online courseware evaluation, PEMAT-AV showed high scores for comprehension and action potential (98.8%). The scores indicate that the VAMOS program in online format can be used efficiently, without losing the quality of the printed material, and with a high degree of usability. The PEMAT-AV is appropriate for evaluating teaching materials on the questions of comprehensibility (how much the user can understand the contents) and action (how much decision making is possible with the information received) (Shoemaker, Wolf, & Brach, 2014). This instrument is user-friendly and presents essential data in the evaluative process and the ability to reformulate elements needed to improve the material being evaluated (Kang & Lee, 2019).

The score of 89.3% found in the SUS application indicates that the online format of the VAMOS program, version 3.0, meets the usability requirements for the target population (Brazilians over the age of 18). Even though it obtained a positive evaluation, the use of the instrument allowed us to identify opportunities to improve the material, which can contribute to more significant and better usability in future versions of the program.

The SUS was used to evaluate user perceptions of a neonatal information system (Padrini-Andrade et al., 2019) and a color wound classification system (Santos et al., 2017). In both materials, the rating was excellent and excellent, respectively, gauging adequacy to users. Both indicate that SUS is efficient in evaluating the usability of virtual health environments and that their results can be considered reliable, corroborated in this study.

The VAMOS classification of the didactic material obtained a high potential for understanding and action of the evaluated didactic material. The scores found in the tests were high for content, appearance, appropriateness, usability and may also be related to its easy readability. Studies have indicated that more challenging reading levels are correlated with low comprehension skills and difficulty taking positive action on behaviour change by users (Armato, & Weisbrod, 2019). However, it is essential to note that readability tests need to be associated with other instruments. They do not provide information, for example, of assessing ease of reading, highlighting of critical messages, interference with



behavioural strategies, or cultural appropriateness and relevance (Brito et al., 2019).

This is the first Brazilian study that evaluates health promotion oriented materials that we are aware of and used two instruments to evaluate the printed (SAM and PEMAT-I) and online (SUS and PEMAT-AV) didactic material associated with a readability test. This fact attests to the research team's concern with the quality of the material and the relevance of the VAMOS Program. Given the results, it is possible to suggest that the VAMOS Program, version 3.0, presents two supply options with high quality and application potential.

It was not possible to establish comparative standards, as we found no health promotion programs and strategies in Brazil that carried out a comprehensive evaluation of teaching materials similar to the one used. This demonstrates a gap in these types of programs and evaluations, highlighting the importance and need to evaluate teaching materials as fundamental to the success of health promotion interventions.

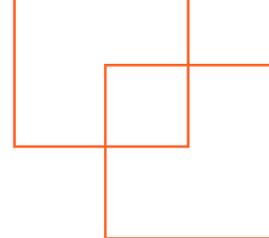
Some limitations were found: a) each evaluator analyzed between three and four sections. However, this option was used to avoid wear and tear in the evaluation process and to ensure that it was carried out objectively and efficiently; b) evaluations were not carried out with the target population, which will be done after the completion of the test of this new version, which is in progress.

## 7 CONCLUSIONS

The evaluation process resulted in improved materials written at an adequate reading level, clearly communicating the program's objectives, culturally relevant and user-friendly, achieving a higher potential for understanding and action. As a health innovation, the VAMOS program can be considered a valid strategy to be used in public health settings, schools, and public or private institutions/companies in Brazil, or on an individual basis, for people over 18 years of age in print or online. The results suggest that the evaluation process used can be replicated with teaching materials for evidence-based interventions.

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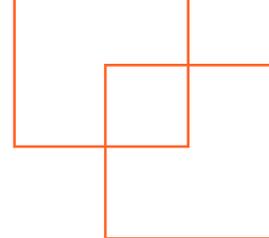
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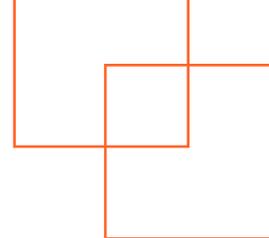
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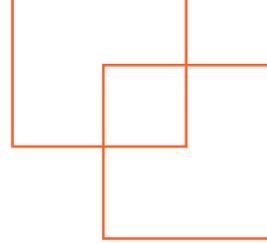
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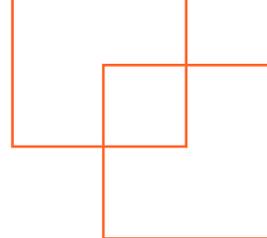
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