VALIDATION OF EDUCATIONAL TECHNOLOGY ON RATIONAL USE OF MEDICINES FOR RIVERSIDE COMMUNITY HEALTH WORKERS

VALIDAÇÃO DA TECNOLOGIA EDUCACIONAL SOBRE USO RACIONAL DE MEDICAMENTOS PARA AGENTES COMUNITÁRIOS DE SAÚDE RIBEIRINHOS

VALIDACIÓN DE LA TECNOLOGÍA EDUCATIVA SOBRE USO RACIONAL DE MEDICAMENTOS PARA AGENTES COMUNITARIOS DE SALUD RIBEREÑOS

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Objective: to validate the content of an educational technology on the rational use of medicines for riverine Community Health Workers. Method: methodological research guided by the Pasquali model for content validation and production of the final version of the manual. In the data collection two questionnaires were used for expert judges. For the analysis, the statistics of the Content Validation Index and the Suitability Assessment of Materials Score were used. Results: the Global Content Validation Index was 87.25% in a single round, being the first block referring to the objectives with 96.80%, the second block of presentation and structure with 84.80% and the third block of relevance of the material with 87.30%. The Suitability Assessment of Materials score obtained was 100.0%. Conclusion: the content of the manual was validated and the production is adequate to subsidize the permanent health education of the Riverside Community Health Workers.

Descriptors: Validation study. Educational technology. Medicine. Permanent Education. Community Health Workers.

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Objetivo: validar o conteúdo de uma tecnologia educacional sobre uso racional de medicamentos para Agentes Comunitários de Saúde ribeirinhos. Método: pesquisa metodológica guiada pelo modelo de Pasquali para a validação de conteúdo e a produção da versão final do manual. Na coleta de dados foram utilizados dois questionários para juízes especialistas. Para a análise utilizou-se a estatística do Índice de Validação de Conteúdo e o Escore Suitability Assessment of Materials. Resultados: o Índice de Validação de Conteúdo Global foi de 87,25% em uma única rodada, sendo no primeiro bloco referente aos objetivos com 96,80%, no segundo bloco de apresentação e estrutura com 84,80% e no terceiro bloco de relevância do material com 87,30%. O Escore Suitability Assessment of Materials obtido foi de 100,0%. Conclusão: o conteúdo do manual foi validado e a produção está adequada para subsidiar a educação permanente em saúde dos Agentes Comunitários de Saúde Ribeirinhos.

Descritores: Estudo de validação. Tecnologia educacional. Medicamento. Educação Permanente. Agentes Comunitários de Saúde.

Objetivo: validar el contenido de una tecnología educativa sobre uso racional de medicamentos para Agentes Comunitarios de Salud ribereños. Método: investigación metodológica guiada por el modelo de Pasquali para la validación de contenido y la producción de la versión final del manual. En la recopilación de datos se utilizaron dos cuestionarios para jueces expertos. Para el análisis se utilizó la estadística del Índice de Validación de Contenido y el Escore Suitability Assessment of Materials. Resultados: el Índice de Validación de Contenido Global fue de 87,25% en una sola ronda, siendo en el primer bloque referente a los objetivos con 96,80%, en el segundo bloque de presentación y estructura con 84,80% y en el tercer bloque de relevancia del material con 87,30%. El Escore Suitability Assessment of Materials obtenido fue de 100,0%. Conclusión: el contenido del manual fue validado y la producción está adecuada para subsidiar la educación permanente en salud de los Agentes Comunitarios de Salud Ribereños.

Descriptores: Estudio de validación. Tecnología educacional. Medicamento. Educación Permanente. Agentes Comunitarios de Salud.

Introduction

The Amazon riverine dwellers live on the banks of rivers and lakes in the largest tropical forest on the planet. This population undergoes unfavorable economic and educational conditions, combined with diseases typical of the region, such as difficulties in access to health services, seasonal variations and geographic isolation[1].

The use of home remedies made with medicinal plants and allopathic medicines, through self-medication, are common practices in the riverside populations of Amazonas, being used as an alternative for self-care, access to health services[2]. Self-care with health is an intrinsic element of these populations, converging with a scenario of different ways of life to adapt to the changing environment of the largest tropical forest on the planet.

Studies indicate that the consumption of allopathic drugs in this population is often used indiscriminately and without professional guidance, and may cause health risks with drug interactions, adverse reactions, intoxications, besides the possibility of aggravating health problems[2-3]. Thus, it is necessary to adopt measures that can observe the regionalities, culture and local population, with a view to the rational use of medicines.

The Community Health Workers (CHW) are professionals who have, among their attributions in the services of Primary Health Care (PHC), the identification of socioeconomic, cultural and environmental factors that may interfere with health, as well as the monitoring of the population, through home visits, planning of actions with the team and execution of health education[4].

In the Amazon context, the work of the CHW acquires singular importance because they are the only health professionals present in most riverside communities, being local residents, chosen by the community to work with the aforementioned population. Thus, disease prevention and health promotion through individual and collective educational actions can contribute to self-care and correct use of medicines in remote areas[2,5].

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In this sense, Permanent Education in Health (PEH) contributes to the qualification of the work process and the perspective of the need to qualify the CHW to act in promoting the rational use of medicines in riverside communities, which lack coverage and continuity of the health system, constantly needing to reflect on their practices, advancing knowledge and quality of health actions and services[6].

Thus, the study aimed to validate the content of an educational technology on the rational use of medicines for Community Health Workers.

Methods

Methodological study conducted in two phases[7-8]: in the first phase, content validation was performed, guided by the Pasquali model[9-10], from November 2020 to March 2021, and the second phase consisted of the production of the final version.

Among the selection criteria for the composition of the committee of judges-specialists in the area of health, participants had to meet at least 9 points, according to the following classification: be a doctor (4 points), be a master (3 points), be a specialist (2 points), have participated in research or extension on medicines and riverine (3 points), have participated in events on the subject in the last 5 years (2 points), have published papers in journals/or events on the subject (2 points), be a riverside health professional (02 points) knowledge about educational technology (01 point) and have knowledge about validation process (1 point).

Regarding the participation of judges from other areas, they had to meet at least 8 points of the aforementioned criteria of choice: to be a doctor (4 points), to be a master (3 points), to have a latu sensu graduate degree in their area of expertise (2 points) have participated in scientific events in the last 5 years (2 points), have published scientific papers in the last 5 years (3 points), have experience as a teacher for at least 3 years (2 points), have experience in his area of expertise for at least 2 years (2 points) knowledge about educational technology (01 point) and have knowledge about validation process (1 point).

The invitation was sent to 50 judges, who met the selection criteria in consultations on the Lattes Platform. After selection, the Snowball sampling or snowball technique was applied, which refers to the relevance of the subjects that are intended to be accessed with the research and indication of the desired characteristics of the judges[9].

The contact with the selected judges was by electronic means, in which they received first e-mail with the invitation, explaining the objectives and procedures. For those who confirmed the expression of acceptance, the second email was sent, with the informed consent form (ICF) for digital signature. After obtaining the signature, the third e-mail of thanks for the acceptance was sent, containing the explanation of the research procedures, along with an online version of the educational technology (ET) and the evaluation instrument.

For data collection, the instruments were made available to expert judges through digital, by Google Forms. A questionnaire with Likert scale, organized in three blocks: objective, structure, presentation and relevance, containing 22 questions with the sum of up to 242 scores, was applied to the expert judges of the health area. For each item, they were instructed to indicate: Totally Adequate (TA), – Adequate (A), Partially adequate (PA) and Inadequate (I), in addition to the space for suggestions and comments[11].

The adapted instrument Suitability Assessment of Materials (SAM) was used to evaluate educational materials and ensure their suitability. This adapted instrument contains 13 items and can add 26 scores. For each item, the expert judges were instructed to report – Adequate (A), Partially Adequate (PA) and Inadequate (I)[12].

In the data analysis, descriptive statistics were used, observing the absolute and relative frequencies. The Content Validity Index (CVI) was calculated by the sum of agreement of items marked as 1 and 2, and divided by the total responses to all items was considered valid an CVI equal to or greater than 0.7 (70%)[9].

The calculation of the SAM score was performed from the sum of the scores obtained, divided by the total maximum scores (13 items = 26 scores) and multiplied by 100, to transform into percentage. The interpretation is as follows: 70-100% (upper material), 40-69% (suitable material) or 0-39% (inappropriate material)[10].

This study is derived from a Master's thesis of the Graduate Program in Nursing in the Amazon Context of the Federal University of Amazonas, entitled "Manual on health care for Community Agents who work with riverside populations of Amazonas" approved by the Research Ethics Committee of the, in accordance with Resolution 466/2012 of the National Health Council for research involving human beings, CAAE number 10957419.8.0000.5020 on May 26, 2019.

Results

In the selection of expert judges in the health area, the average was 16 points, while those from other areas was 13.5 points. The Expert Committee of the validation was composed of 15 judges, 73.3% (n = 11) health judges, all nurses and 26.7% (n = 04) of the areas of communication, linguistics and pedagogy.

The profile of the participants was mostly female 14 (90.0%) in the age group between 28 and 65 years, with a mean age of 46.5 years. Working time ranged from 2.5 to 43 years. Regarding professional qualification, most judges have doctorate 7 (56.6%), followed by master's degree 6 (40.0%), postdoctoral degree 1 (6.6%) and specialization 1 (6.6%). Participants were predominantly from the State of Amazonas 9 (60.0%), followed by Pará 2 (13.3%), São Paulo 1 (6.6%), Santa Catarina 1 (6.6%), Ceará 1 (6.6%) and Distrito Federal 1 (6.6%).

In the content validation of the health area, the answers obtained were organized according to the three blocks of items of the instrument: 1 - Objectives; 2 - Organization; 3 - Writing style; 4 -Appearance; 5 - Motivation. As all 11 (eleven) judges answered all items, the first block received 55 answers, the second 132, the third 55, the fourth 44 and the fifth 66.

In block 1, which corresponds to the objectives, it was found that of the total universe of responses obtained from 55 (scores), 39 (63.8%) judged fully adequate, 15 (33.0%) attributed adequate value and 1 (4.2%) considered the item partially adequate. In this block, the CVI was 96.80% (Table 1).

Table 1 – Answers from expert judges, regarding the objective items. Coari, AM, Brazil – 2023.

Items	Scores n= 11 (n*100)/score				Percentage of Consensus (TA+A)*100/n (%)	Quantitative Analysis Score
	TA	A	PA	I	TA+A	
Block 1 - Objectives						
1.1 Are the contents coherent with the daily needs of ET's target audience?	8	3	0	0	100.0%	+1
1.2 Are the contents important for the quality of the work of ET's target audience?	9	2	0	0	100.0%	+1
1.3 Does the ET invite changes in behavior and attitude?	9	2	0	0	100.0%	+1
1.4 Can the ET circulate in the scientific community of the area?	5	5	1	0	80.80%	+1
1.5 Does the ET meet the objectives of institutions where TE's target audience works?	8	3	0	0	100.0%	+1
Total	39	15	1	0	96.80%	100%

Note: TA - Totally adequate; A – Adequate; PA - Partially adequate; I - Inadequate.

Source: Created by the authors.

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In the general evaluation of responses to block 2 (structure and presentation), the total responses were 132 (scores), and 78 (59.10%) judged as fully adequate, 34 (25.75%) attributed an adequate value and 20 (15.15%) considered the item as partially adequate. The CVI was 84.80% (Table 2).

Table 2 – Answers from expert judges, regarding the items structure and presentation. Coari, AM, Brazil – 2023.

Items	Scores n= 11 (n*100)/score				Percentage of Consensus (TA+A)*100/n (%)	Quantitative Analysis Score
	TA	A	PA	I	TA+A	
Block 2 - Structure and presentation						
2.1 Is the ET appropriate to be used by the target audience?	8	1	2	0	81.82%	+1
2.2 Are the messages presented in a clear and objective manner?	6	2	3	0	72.73%	+1
2.3 Is the information presented scientifically correct?	5	4	2	0	81.82%	+1
2.4 Is the material appropriate to the socio-cultural level of the ET's target audience?	7	4	0	0	100.0%	+1
2.5 Is there a logical sequence of the proposed content?	7	3	1	0	90.91%	+1
2.6 Is the information well structured in concordance and spelling?	3	4	4	0	63.63%	+1
2.7 Does the style of writing correspond to the level of knowledge of the target audience?	6	4	1	0	90.91%	+1
2.8 Is the information on the front cover, back cover, summary and/or presentation consistent?	7	3	1	0	90.91%	+1
2.9 Are the size of the title and topics adequate?	8	2	1	0	90.91%	+1
2.10 Are the illustrations expressive and sufficient?	7	2	2	0	81.82%	+1
2.11 Is the material (Quality / proportions of illustrations / Images) appropriate?	6	2	3	0	72.73%	+1
2.12 Is the number of pages adequate?	8	3	0	0	100.0%	+1
Total	78	34	20	0	82.8 %	100.0%

Note: TA - Totally adequate; A – Adequate; PA - Partially adequate; I - Inadequate.

Source: Created by the authors.

In block 3 (relevance of educational material), the overall evaluation of the responses had a total of 55 (scores), of which 34 (61.8%) judged as fully adequate, 14 (25.5%) attributed an adequate value and 7 (12.7%) considered the item as partially adequate. The CVI was 87.3% (Table 3).

The calculation for the global IVC of Educational Technology performed from the averages of the previous blocks resulted in a total of 87.25%.

Table 3- Answers from expert judges, regarding the item relevance of the educational material. Coari, AM, Brazil – 2023.

Items	Scores n= 11 (n*100)/score				Percentage of Consensus (TA+A)*100/n (%)	Quantitative Analysis Score
	TA	A	PA	I	TA+A	
Block 3 - Relevance						
3.1 Do the themes portray key aspects that should be reinforced?	8	2	1	0	90.91%	+1
3.2 Does the material allow the transfer and generalization of learning to different contexts?	6	2	3	0	72.73%	+1
3.3 Does the ET propose the construction of knowledge?	9	2	0	0	100.0%	+1
3.4 Does the material address the issues necessary for ET's target audience to know and do?	8	2	1	0	90.91%	+1
3.5 Is it suitable for use by any professional?	3	6	2	0	81.82%	+1
Total	34	14	7	0	87. 30%	100%

Note: TA - Totally adequate; A – Adequate; PA - Partially adequate; I - Inadequate.

Source: Created by the authors.

In the content validation of the expert judges of other areas, the answers obtained were organized according to the five blocks of items of the SAM instrument: content, language, graphic illustrations, motivation and cultural adequacy, with a total of 13 items and can add up to 26 scores per instrument. All of the above items were considered adequate (Table 4).

Table 4- Answers from judges - experts from other fields. Coari, AM, Brazil – 2023.   (continued)

Items	Score N=4			Quantitative Analysis Score
	A	PA	I	
1 - Content				
1.1 Is the objective evident, facilitating the prompt understanding of the material?	2	-	-	+1
1.2 Does the content address behavior-related information?	2	-	-	+1
1.3 Is the purpose of the material limited to the objectives, so that the viewer can reasonably understand in the time allowed?	2	-	-	+1
2. Language				
2.1 Is the reading level adequate for comprehension?	2	-	-	+1
2.2 Does the conversational style facilitate understanding of the text?	2	-	-	+1
2.3 Does the vocabulary use common words?	2	-	-	+1
3. Graphic Illustrations				
3.1 Does the cover attract attention and portray the purpose of the material?	2	-	-	+1

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Table 4- Answers from judges - experts from other fields. Coari, AM, Brazil – 2023.

(conclusion)

Items	Score N=4			Quantitative Analysis Score
	A	**PA**	**I**	
3.2 Do the illustrations present key visual messages so the reader can understand the main points on their own, without distractions?	2	-	-	+1
4. Motivation				
4.1 Does the text and/or figures interact with the reader, leading them to solve problems, make choices and/or demonstrate skills?	2	-	-	+1
4.2 Are desired behavior patterns modeled or well demonstrated?	2	-	-	+1
4.3 Is there self-efficacy motivation, that is, are people motivated to learn because they believe that tasks and behaviors are feasible?	2	-	-	+1
5. Cultural Adequacy				
5.1 Is the material culturally appropriate to the logic, language and experience of the target audience?	2	-	-	+1
5.2 Does it present culturally adequate image and examples?	2	-	-	+1
Total Score obtained from judges	26	0	0	100,0%

Note: A: Suitable; PA: Partially Adequate; I: Inadequate.

Source: Created by the authors.

The production of the final version of the Educational Technology followed the suggestions annotated by the expert judges in the instruments and, later, classified according to the dominant characteristic, represented by actions such as include, change, reinforce and review. After the adjustments, the final version was obtained (Figure 1).

Figure 1 – Cover and presentation text of the educational technology booklet. Coari, AM, Brazil – 2023.
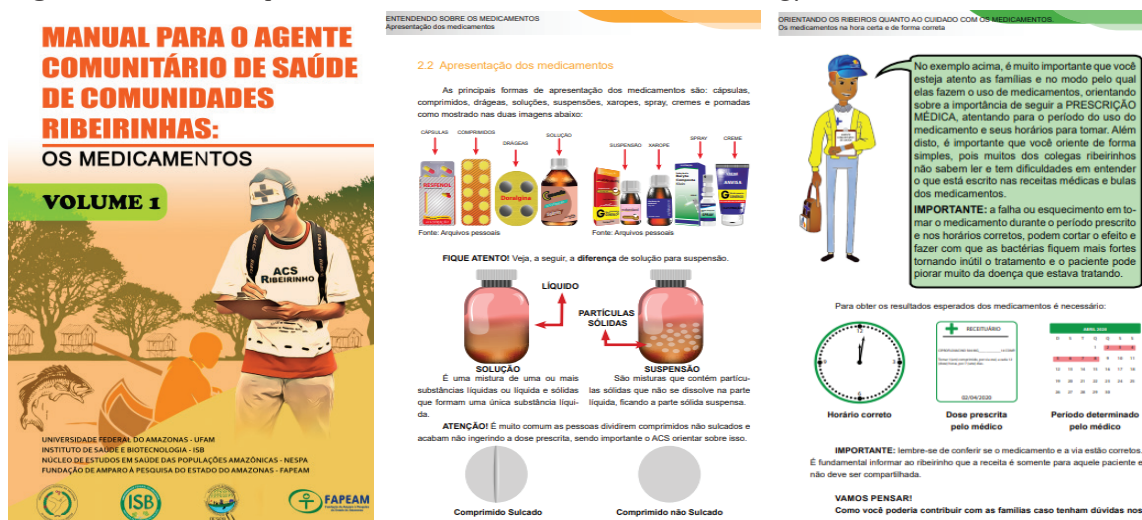
Source: Created by the authors.

Discussion

Considering self-medication as a practice of wide magnitude distributed in different populations, in which it can be contextualized as part of self-care to the detriment of the absence of health services, educational technologies can contribute to the promotion of rational use of medication[1-2].

In this sense, the validation of an educational technology for the performance of CHW in remote areas in the Brazilian Amazon, can avoid problems that would be generated with the inappropriate use of medicines, causing possible intoxications, reactions and drug interactions.

The validation of educational technology confers relevance of the content and aims to enhance the inclusion of adequate and safe information for riverine CHWs and the precepts established by the methodological studies already performed[13-14], making it a tool to intensify educational processes and provide safe and reliable subsidies for health care education[15-16].

Thus, considering that in the riverside communities of the Amazon the role of CHW is unique in relation to other Brazilian regions (geographic isolation, endemic diseases, changing environment with climate variations) and that the communities have only the CHW as a health professional in the locality[1], this professional becomes a reference among the community, being sought for the most different health problems or even removal of sick residents to the headquarters of the municipality. Therefore, the qualification for the rational use of medicines and guidelines to the community is an important public health instrument.

The Pasquali model, applied to validation, provided the opportunity to evaluate the contents of the ET prepared with intelligible language and easy to promoting the current stage of global technological evolution with a lot of easily accessible information and achieving the objectives proposed in the study[17,18]. It is important to note, therefore, that the riverside populations of the Amazon have cultural characteristics, such as the way of communicating and practices, that the CHW are immersed. In this sense, the content validated in the ET allows the understanding in a facilitated way and easy consultation and applicability by the riverine CHW.

The study validated the ET by expert judges from different regions of Brazil, which incorporated different views. On the other hand, most were from the Amazon region, being able to contribute to the local reality and improvement of the objects under analysis and evaluation. Regarding the degree, most professionals had a doctorate, contributing to the improvement of scientific knowledge in the health area, as well as nurses with expertise in the area and judges in other areas, field of knowledge that favors the focus on communication between areas[19-20].

In the content validation by expert judges in the health area, the answers obtained in the evaluation of the items met the percentage of validation of the CVI. Among the blocks: objectives, structure and presentation and relevance, most evaluations received fully adequate judgment. The overall CVI, performed from the averages of the previous blocks, was 87.25%, validating the content with a result higher than the CVI of 70%[7,9]. In the content validation of the judges-specialists of other areas, the answers obtained in the blocks of the items of the SAM instrument (content, language, graphic illustrations, motivation, cultural adequacy), were considered fully adequate to reach 100%[21].

The final version of the manual incorporated the suggestions of the expert judges in the following items: Include, Change, Reinforce and Review[22]. In the item Include, the information was about the use of more than one different drug that favors drug interaction and can intensify or cancel the effect of each drug; images that differentiate a suspension of a solution, orientation and illustration of tablets grooved, routes of administration in the ears and eyes, dose prescribed by the doctor and the importance of checking the drug, the route and the patient, in addition to the prescription that is only for that patient and should not be shared.

Thus, ET for CHW assists in permanent health education with content that converges

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with the rational use of medicines in a safer way[19,23]. At this point, it is relevant to point out that the inappropriate use of medicines, even those without prescription and for conditions of mild problems, such as a simple headache, can generate serious health problems such as allergies, in the case of the use of dipyrone in people sensitive to composition. Another example would be the use of drugs with the same chemical composition and different trade names, which could be misused, attenuating the dosage and in situations of special patients (children, elderly, chronic patients) could lead to serious health problems[2].

The suggestions of the expert judges were salutary for improvement and adaptation to local reality, in which in the item "Change" the following suggestions were indicated: to be disclosed among CHWs from other locations in Amazonas; main sites of the body that are administered drugs and types of presentation[14,24]. In the item "Reinforce" it was indicated that the timetable cannot take into account as a rule, in view of the cases of using more than one medication, thus avoiding drug interaction; the images and drawings are very illustrative and appropriate in the manual[15,19]. In the item "Review" it was inferred to consider the product in terms of form, content and reference to stimulate reading and encourage the use of the manual, reaching the purpose of this study. At this point, it is important to highlight that the expert judges evaluated the images and drawings of the ET as very illustrative and adequate, referring to a scenario with the appearance of a riverside environment[6, 24], which can promote the use of ET.

In the production of the final version of the manual, the expert judges suggested introducing scientific language in the content, in order to credit credibility for the use of CHW. However, this indication was not fully accepted by the authors, because it is a riverine population, which has important limitations on access to education and health information and, consequently, possibly the understanding of ET. In addition, riverine people have regional elements in the communication and expressions of the Amazon region, which were inserted in themes and topics covered with educational information and aspects related to their needs and particularities[25].

The study presented limitations, which were presented in this manuscript only the validation process, not considering the content construction process, which would perhaps make the manuscript more robust. However, this aspect is justified because the phases - construction and validation – were divided into distinct stages, in which the Master's degree student – author of the manuscript – participated only in the validation stage of the TE, a time period considered appropriate for the objective.

Conclusion

The manual was considered valid and adequate to subsidize the permanent education of CHW in promoting the rational use of medicines in riverside populations of the Amazon. In addition, the content of the manual can improve the work process, in view of a significant acceptance and agreement score.

Therefore, the final version of the ET validated by expert judges can be used as an instrument of guidance for health professionals and monitoring of the riverine population in Primary Health Care in remote areas of the Brazilian Amazon.

Collaborations:

1 – conception and planning of the project: Gigellis Duque Vilaça, Abel Santiago Muri Gama and Elizabeth Teixeira.

2 – analysis and interpretation of data: Gigellis Duque Vilaça, Abel Santiago Muri Gama, Elizabeth Teixeira, Rizioléia Marina Pinheiro Pina, Darlisom Sousa Ferreira and Rodrigo Silva Marcelino.

3 – writing and/or critical review: Gigellis Duque Vilaça, Abel Santiago Muri Gama, Elizabeth Teixeira, Rizioléia Marina Pinheiro Pina and Darlisom Sousa Ferreira.

4 – approval of the final version: Gigellis Duque Vilaça, Abel Santiago Muri Gama, Elizabeth Teixeira, Rizioléia Marina Pinheiro Pina and Darlisom Sousa Ferreira.

Conflicts of interest

There are no conflicts of interest.

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