

STRENGTHENING ADHERENCE TO TUBERCULOSIS TREATMENT: CONSTRUCTION AND VALIDATION OF A HANDBOOK

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ABSTRACT

Objective: to present the development and validation stages of an educational handbook to support and strengthen medication adherence among patients undergoing tuberculosis treatment.

Method: this is a methodological study which involved developing and validating a handbook based on Pasqual's psychometric precepts and Echer's framework, developed in Recife, Pernambuco, Brazil. A literature review was conducted to develop the educational technology. The project was developed between April 2023 and March 2024. Content validation used the Content Validity Coefficient, with judges being selected by the snowball technique. Semantic validation with the target population used the Suitability Assessment of Materials.

Results: the "*Em busca da cura da tuberculose*" ("In search of a cure for tuberculosis") handbook was organized into eight sections subdivided into 25 essential topics. The Content Validity Coefficient achieved was considered adequate. High agreement was observed among participants in the semantic validation, with a Suitability Assessment of Materials score between 0.90 and 1.0 for each item.

Conclusion: the handbook was considered valid by experts and the target audience, and suitable for use in strengthening adherence to tuberculosis treatment.

DESCRIPTORS: Tuberculosis. Health education. Validation studies. Educational technology. Medication adherence.

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FORTALECIMENTO DA ADESÃO AO TRATAMENTO DA TUBERCULOSE: CONSTRUÇÃO E VALIDAÇÃO DE CARTILHA

RESUMO

Objetivo: apresentar as etapas de construção e validação de uma cartilha educacional para suporte e fortalecimento da adesão medicamentosa de usuários em tratamento para tuberculose.

Método: estudo metodológico com construção e validação de uma cartilha baseada nos preceitos psicométricos de Pasqual e no referencial de *Echer*, desenvolvida na cidade do Recife, Pernambuco, Brasil. Para construção da tecnologia educacional, realizou-se revisão da literatura. O projeto foi desenvolvido entre abril de 2023 a março de 2024. A validação de conteúdo utilizou o Coeficiente de Validade de Conteúdo, com juízes selecionados pela técnica bola de neve. A validação semântica, com a população-alvo, utilizou o *Suitability Assessment of Materials*.

Resultados: a cartilha “Em busca da cura da tuberculose” foi organizada em oito seções subdivididas em 25 conteúdos essenciais. O Coeficiente de Validade de Conteúdo alcançado foi considerado adequado. Observou-se alta concordância entre os participantes da validação semântica, com escore do *Suitability Assessment of Materials* entre 0,90 e 1,0 para cada item.

Conclusão: a cartilha foi considerada válida pelos especialistas e pelo público-alvo, estando apta para ser utilizada no fortalecimento da adesão ao tratamento da tuberculose.

DESCRIPTORIOS: Tuberculose. Educação em saúde. Estudos de validação. Tecnologia educacional. Adesão à medicação.

FORTALECIMIENTO DE LA ADHERENCIA AL TRATAMIENTO DE LA TUBERCULOSIS: CONSTRUCCIÓN Y VALIDACIÓN DE UNA CARTILLA

RESUMEN

Objetivo: presentar las etapas de desarrollo y validación de una cartilla educativa para apoyar y fortalecer la adherencia a la medicación en pacientes en tratamiento antituberculoso.

Método: este estudio metodológico implicó el desarrollo y la validación de una cartilla basado en los preceptos psicométricos de Pasqual y el marco de *Echer*, desarrollado en Recife, Pernambuco, Brasil. Se realizó una revisión bibliográfica para desarrollar la tecnología educativa. El proyecto se desarrolló entre abril de 2023 y marzo de 2024. La validación de contenido utilizó el Coeficiente de Validez de Contenido, con jueces seleccionados mediante la técnica de bola de nieve. La validación semántica, con la población objetivo, utilizó la Evaluación de Adecuación de Materiales.

Resultados: la cartilla “*Em busca da cura da tuberculose*” se organizó en ocho secciones subdivididas en 25 temas esenciales. El Coeficiente de Validez de Contenido alcanzado se consideró adecuado. Se observó una alta concordancia entre los participantes en la validación semántica, con una puntuación en la Evaluación de Adecuación de Materiales entre 0,90 y 1,0 para cada ítem.

Conclusión: la cartilla fue considerada válida por expertos y el público objetivo, y adecuado para fortalecer la adherencia al tratamiento de la tuberculosis.

DESCRIPTORIOS: Tuberculosis. Educación sanitaria. Estudios de validación. Tecnología educativa. Adherencia a la medicación.

INTRODUCTION

The epidemiological control of tuberculosis (TB) is a global priority, as the disease remains a global health concern. Brazil is one of the 22 countries with the highest number of cases worldwide, with a treatment noncompliance rate above the acceptable level¹⁻².

The range of actions to combat TB requires a multifaceted approach which includes medical interventions, as well as robust economic and social policies capable of contributing to the goal of eliminating TB as a public health problem by 2030, as agreed upon in the Sustainable Development Goals (SDGs)³.

Medication nonadherence is the main global challenge to TB control³. Therefore, it is necessary to promote intervention strategies integrated into care practices addressing physical and biopsychosocial aspects to be implemented during treatment. In the meantime, the healthcare team can reframe the obstacles which hinder achieving TB elimination goals⁴. For effective therapeutic adherence to be achieved, consolidation of an interactive, bidirectional process between patients and healthcare professionals is essential to ensure a cure. Therefore, educational technologies (ETs) emerge as tools capable of implementing and consolidating this dynamic process which promotes user empowerment by providing information, encouraging assertive health practices, and supporting self-care⁵.

In the context of TB, the literature shows that the use of ETs favors the teaching-learning process and knowledge dissemination, and can stimulate changes in attitudes and behavior at various levels. Among ETs, handbooks are low-cost, easily accessible, and can be consulted as many times as necessary. They enable users to understand their active participation in the process, contributing to improve healthcare quality and add new perspectives for TB control⁶.

It is therefore indisputable that developing a handbook focused on promoting healthcare and patient adherence in the fight against TB can help achieve a cure, reduce the transmission of bacterial strains, and consequently prevent drug-resistant tuberculosis (DR-TB)⁷.

In view of the above, this study aimed to present the development and validation stages of an educational handbook to support and strengthen medication adherence among patients undergoing TB treatment.

METHOD

This is a methodological study on the development of educational technology based on Echer's guidelines⁸ on the construction of healthcare manuals and developed based on recommendations for the construction and validation of items contained in the theoretical framework of psychometrics, proposed by Pasquali⁹.

The study took place between April 2023 and March 2024 and was divided into three stages: 1 – development and construction of the ET; 2 – content validation by judges; and 3 – semantic validation by the target audience⁹.

For the first stage, the theoretical basis for developing the handbook was based on a literature review¹⁰ of the recommendations manual for tuberculosis control in Brazil¹¹ and the World Health Organization (WHO) operational manuals on TB¹²⁻¹⁴, which allowed to identify essential sections and content to be included in the educational material.

Thus, the following phases were adapted and listed for the handbook development process: bibliographic survey; selecting and summarizing content covering information about the disease, monitoring and therapeutic adherence, and follow-up after medication discharge; text development; image creation; and layout⁸.

After reading the materials, the handbook was constructed and organized into eight sections, subdivided into 25 essential content points, distributed across 24 pages. The first version was created with the professional support of a graphic designer using InDesign® software.

Next, a committee of experts selected using the snowball sampling technique participated in content validation in the second stage, which enabled defining a reference sample¹⁵. The initial nominations came after an invitation to the Pernambuco State TB Control Program coordination office. Each judge was able to nominate other professionals to join the group of validators, and information available in their Lattes CVs was analyzed to assess eligibility.

The inclusion criteria for the judges were: a) a bachelor's degree in the health field; b) at least three years of experience in collective health, public health, or a TB program; c) at least one experienced situation in developing or evaluating educational materials; and d) at least a specialist in collective health, public health, or infectious diseases.

A total of 16 judges were invited by email, of which 12 agreed to participate by completing a Google Form and signing the Informed Consent Form (ICF), which were sent via email. Data collection took place between July and September 2023, in a single round. Frequency distribution was used to characterize the participants.

An inter-judge agreement analysis was performed to obtain content validation data. The Content Validity Coefficient (CVC) was used, in which the judges analyzed the criteria of appearance, content, relevance, verbal language, and cultural appropriateness using a Likert scale from 1 to 4 through 29 evaluative questions formulated by the researchers.

The overall CVC and the CVC for each item were calculated for this study by dividing the mean of the judges' opinions ($\sum x/j$) by the maximum value of the last category on the Likert scale ($V_{\max}$). A value greater than or equal to 0.80¹⁶ was adopted as the criterion for satisfactory agreement. The responses were tabulated in a Microsoft Excel® spreadsheet. A space was created for comments and/or suggestions from the judges at the end of each page.

After the changes required for content validation, the handbook underwent reformulation and was sent to the third stage: semantic validation with the target population. Participants included 35 people undergoing clinical treatment for TB from three referral polyclinics in the city of Recife, Pernambuco, Brazil. The sample was intentional, non-probabilistic, and recruitment occurred based on the availability of participants present at the institutions during the data collection period, which was conducted between November 2023 and January 2024.

Participants were recruited according to the following inclusion criteria: being literate; 18 years of age or older; undergoing TB treatment (information confirmed in medical records); and having 30 to 40 minutes available to participate in the handbook reading and answer the evaluation questionnaire.

The target population analyzed the handbook individually and in a private room, using the Suitability Assessment of Materials (SAM) questionnaire, in the version adapted and translated into Portuguese by Sousa et al. (2015)¹⁸. The questionnaire is structured into 22 items capable of evaluating the content, literacy requirements, illustrations, layout, motivation for learning, and cultural suitability. Each item is rated on a scale of zero to two: 2 = Excellent (E); 1 = Adequate (A); and 0 = Not adequate (NA)¹⁷⁻¹⁸.

The Semantic Agreement Index (SIC) was used for the statistical analysis, which indicates the proportion of participants in agreement on a given aspect of the instrument. The total score was calculated by adding the scores obtained, dividing them by the total number of questionnaire items, and multiplying them by 100 to convert them into a percentage. The results were then categorized as: 70-100% = Superior material; 40-69% = Adequate material; and 0-39% = Inadequate material¹⁷.

After this stage, further adjustments were made to the material, resulting in structuring and formatting the final version of the handbook entitled: “*Em busca da cura da tuberculose*” (“In search of a cure for tuberculosis”), created with the professional support of a graphic designer and the help of InDesign® software. The study was approved by the Research Ethics Committee of the Oswaldo Cruz University Hospital Complex/Professor Luiz Tavares University Cardiology Emergency Room of Pernambuco, in accordance with Resolutions 466/2012 and 510/2016 of the National Health Council.

RESULTS

Interpretation of the literature review data enabled organizing the following sections: presentation (three essential topics); general information about TB (three essential topics); symptoms (two essential topics); transmissibility and prevention (three essential topics); diagnosis (two essential topics); household contacts (four essential topics); treatment (six essential topics); post-discharge follow-up (two essential topics), as shown in Chart 1.

Chart 1 – Essential sections and content for developing the handbook. Recife, Pernambuco, Brazil, 2023.

Section	Essential content
Presentation	Catalog Card.
	Information from the Handbook.
	Patient Data.
General information about tuberculosis	After all, what is tuberculosis?
	Types of tuberculosis.
	Who are the most vulnerable people?
Symptoms	When to suspect tuberculosis?
	Record of symptoms presented by the patient.
Transmission and Prevention	Transmission Modes.
	Prevention.
	Myths and truths.
Diagnosis	Guidelines on diagnostic tests.
	Record of test results.
Household contacts	Record of household contacts.
	Record of contacts eligible for tuberculin skin testing.
	Record of contacts eligible for Latent Tuberculosis Infection Testing.
	Record of symptomatic household contacts.
Treatment	Information on medication treatment.
	Record of follow-up tests.
	Medication reactions.
	Healthy habits during treatment.
	Myths about treatment.
	Consultation records.
Post-discharge follow-up	Follow-up appointments.
	Record of new symptoms.

The first version was titled “Tuberculosis guidance and monitoring handbook,” and was 24 pages long. Light, watercolor colors were chosen to create a more ludic handbook with less visual fatigue. This initial version was presented to the judges for review.

Then, 12 judges participated in the content validation stage, predominantly female (n=10; 83.3%) and aged between 35 and 80 years (mean=53.5; SD=13.04). Participants included professionals in the nursing (n=5; 41.7%), medicine (n=5; 41.7%), biology (n=1; 8.3%), and speech-language pathology (n=1; 8.3%) fields. The highest academic qualification observed was a doctorate (n=6; 50%), followed by a master’s degree (n=5; 41.7%) and a specialization (n=1; 8.3%). Professional experience ranged from eight to 44 years, with an average of 26.83 (SD=11.33).

The overall CVC obtained was 0.86 for the 29 items evaluated, as shown in Table 1.

In addition to calculating the CVC, the recommendations recorded by the judges in the “suggestions” field at the end of each page were qualitatively analyzed. Data interpretation based on identifying CVCs below the recommended level in the questions “Is the reading level adequate for patient comprehension?”, “Does the conversational style facilitate understanding of the text?”, and “Is the reading level adequate for patient comprehension?”, indicated the need for a more accessible rewrite.

The judges acknowledged approval of the handbook content, as the questions “Is there any unnecessary information in the handbook?” and “Does the handbook contain any errors or misleading ideas regarding the information?” had CVCs below 0.8.

Suggested corrections related to the source, textual synthesis, and image changes were accepted to improve the material’s completeness. Technical terms were replaced with simpler, more accessible words. The written step-by-step instructions for sputum collection were reorganized.

Although it was recommended to include the Interferon Gamma Release Assay (IGRA), it was decided to maintain the main diagnostic tests already listed, with a space added for other tests. Treatment was detailed more clearly, without presenting medical procedures to avoid the risk of self-medication. The different types of discharge were also included.

After the changes, a new version of the handbook was developed and subjected to semantic validation with 35 patients undergoing clinical treatment for TB, as shown in Table 2. Females predominated (n=20; 57.1%). Their ages ranged from 23 to 70 years (mean=43.71; SD=14.40). Regarding education, the majority of participants completed high school (n=25; 71.4%), and 14 (40%) of these had accessed higher education. Regarding clinical condition, 26 participants (74.3%) were undergoing intensive treatment against TB and nine (25.7%) were undergoing maintenance treatment.

One evaluator considered the reading level (item 2.1) inadequate and suggested a more concise text, which was accepted. Furthermore, the police terms “suspect” and “investigate,” as well as the expression “crowd of people,” were replaced with “tumultuous” and “communicant” with “contact.” The inadequacy pointed out by one of the patients in items 5.1 and 5.2 was accepted, resulting in guidance to improve understanding of the sputum collection technique and the distinctions between treatment phases.

The message that “tuberculosis is not a poorly cured flu” stood out. The sputum collection technique was illustrated, and the differentiation between the types of blisters and tablets used after the third month of treatment was more clearly explained. Information about the free availability of the medication through the Unified Health System (*Sistema Único de Saúde - SUS*) was also reinforced, as well as information about the risks of discontinuing treatment. The score above 95% obtained in each of the six items assessed by the SAM method precluded further statistical analysis. However, this does not invalidate the qualitative analysis of the results, which indicated excellent comprehension of the handbook according to the users themselves, the main beneficiaries of the educational technology.

Table 1 – Agreement of expert judges participating in the content validation stage of the tuberculosis guidance and monitoring handbook, Recife, Pernambuco, Brazil, 2023. (n=12).

Item	Mean	*CVC	†SD		‡D		§A		SA		¶A+SA
			N	%	n	%	n	%	n	%	%
Appearance											
Does the handbook look good?	3.83	0.96	0	0.0	0	0.0	2	16.7	10	83.3	100.0
Does the cover attract attention and convey the purpose of the material?	3.42	0.85	0	0.0	1	8.3	5	41.7	6	50.0	91.7
Is the layout satisfactory?	3.58	0.90	0	0.0	0	0.0	5	41.7	7	58.3	100.0
Are the topics covered in the handbook appropriate?	3.83	0.96	0	0.0	0	0.0	2	16.7	10	83.3	100.0
Do the colors used interfere with reading?	3.92	0.98	0	0.0	0	0.0	1	8.3	11	91.7	100.0
Do the handbook's layouts facilitate understanding?	3.83	0.96	0	0.0	0	0.0	2	16.7	10	83.3	100.0
Do the illustrations present key visual messages so the reader can grasp the main points on their own, without distractions?	3.67	0.92	0	0.0	0	0.0	4	33.3	8	66.7	100.0
Content											
Is the objective clear, facilitating quick comprehension of the material?	4.00	1.00	0	0.0	0	0.0	0	0.0	12	100.0	100.0
Does the handbook facilitate understanding of the topic?	3.75	0.94	0	0.0	1	8.3	1	8.3	10	83.3	91.6
Does the handbook offer content consistent with current knowledge?	3.33	0.83	0	0.0	2	16.7	4	33.3	6	50.0	83.3
Is the information contained in the handbook adequate for guidance and follow-up for users undergoing tuberculosis treatment?	3.58	0.90	0	0.0	1	8.3	3	25.0	8	66.7	91.7
Is the information contained in the handbook appropriate for the target audience (users undergoing tuberculosis treatment)?	3.33	0.83	1	8.3	0	0.0	5	41.7	6	50.0	91.7
Is the guidance presented necessary and addressed correctly?	3.33	0.83	0	0.0	0	0.0	8	66.7	4	33.3	100.0
Is there unnecessary information in the handbook?	2.25	0.69	3	25.0	4	33.3	4	33.3	1	8.3	58.3

Table 1 – Cont.

Item	Mean	*CVC	†SD		‡D		§A		SA		¶A+SA
			N	%	n	%	n	%	n	%	%
Relevance											
Do the images represent important aspects for users undergoing tuberculosis treatment to understand the pathology and follow-up?	3.58	0.90	1	8.3	0	0.0	2	16.7	9	75.0	91.7
Do the images enable transferring content to the target audience?	3.58	0.90	0	0.0	1	8.3	3	25.0	8	66.7	91.7
Are the visual compositions attractive and well-organized?	3.58	0.90	0	0.0	1	8.3	3	25.0	8	66.7	91.7
Is the number of images adequate?	3.75	0.94	0	0.0	0	0.0	3	25.0	9	75.0	100.0
Are the images integrated into the text content of the response letters?	3.67	0.92	0	0.0	0	0.0	4	33.3	8	66.7	100.0
Can the handbook serve as a document with the patient's treatment history?	3.42	0.85	1	8.3	0	0.0	4	33.3	7	58.3	91.6
Verbal language											
Is the reading level appropriate for the patient's understanding?	3.00	0.75	1	8.3	1	8.3	7	58.3	3	25.0	83.3
Does the conversational style facilitate understanding of the text?	3.17	0.79	1	8.3	1	8.3	5	41.7	5	41.7	83.4
Does the vocabulary use common words?	3.08	0.77	1	8.3	3	25.0	2	16.7	6	50.0	66.7
Are the concepts covered clearly and objectively presented?	3.67	0.92	0	0.0	0	0.0	4	33.3	8	66.7	100.0
Is the verbal language easy to understand?	3.42	0.85	0	0.0	2	16.7	3	25.0	7	58.3	83.3
Does the handbook contain any errors or misleading information?	2.08	0.73	3	25.0	5	41.7	4	33.3	0	0.0	66.7
Cultural adequacy											
Is the material culturally appropriate to the logic, language, and experience of the target audience?	3.50	0.88	0	0.0	1	8.3	4	33.3	7	58.3	91.6
Does it present culturally appropriate images and examples?	3.75	0.94	0	0.0	0	0.0	3	25.0	9	75.0	100.0

*CVC – Item Content Validity Coefficient; † SD – Strongly Disagree; ‡ D – Disagree; § A – Agree; || SA – Strongly Agree; ¶ C+CF – sum of agreement.

Table 2 – Semantic validation by the target population. Recife, Pernambuco, Brazil, 2024. (n=35).

Item to be classified	*E	†A	‡NA	Score
1 – Content				99%
Is the purpose clear?	35	–	–	100%
1.2 Does the content address behaviors?	35			100%
1.3 Is the content focused on purpose?	35	–	–	100%
1.4 Does the content highlight key points?	34	1	–	98%
2 – Literacy requirement				98%
2.1 Reading level	32	2	1	94%
2.2 Uses active voice writing	35	–	–	100%
2.3 Uses vocabulary with common words in the text	34	1	–	98%
2.4 Context comes before new information	35	–	–	100%
2.5 Learning is facilitated by topics	35	–	–	100%
3 – Illustrations				98%
3.1 The purpose of the illustration in relation to the text is clear	35	–	–	100%
3.2 Types of illustrations	35	–	–	100%
3.3 The figures/illustrations are relevant	33	2	–	97%
3.4 Lists, tables, figures, etc. have explanations	35	–	–	100%
3.5 The illustrations have captions	33	2	–	97%
4 – Layout and presentation				99%
4.1 Layout Features	35	–	–	100%
4.2 Font size and typeface	34	1	–	98%
4.3 Subtitles are used	35	–	–	100%
5 – Learning motivation				97%
5.1 Uses interaction	32	2	1	94%
5.2 Guidelines are specific and provide examples	33	1	1	95%
5.3 Motivation and self-efficacy	35	–	–	100%
6 – Cultural adequacy				100%
6.1 It is similar to the logic, language, and experience	35	–	–	100%
6.2 Cultural image and examples	35	–	–	100%
General				98%

*E: Excellent; †A: Adequate; ‡NA: Not adequate.

The final draft of the educational handbook aimed at the population undergoing TB treatment resulted in a material consisting of a cover and 23 pages, in handbook format, with A4 paper folded in half, printed in color on coated paper. The material should be handed out at the time of diagnosis and should accompany the patient to all appointments. The final version of the handbook can be found in Supplementary Material.

DISCUSSION

There has been an increase in the use of health technologies in clinical practice in recent years¹⁹. In the context of TB, several educational materials have been developed to guide sputum collection²⁰. The “In search of a cure for tuberculosis” handbook was developed to record the longitudinal assessment and evolution of clinical data, contributing to produce indicators capable of supporting better care planning, in addition to presenting a strong educational component²¹.

Having a validated ET that supports national and international agendas for tuberculosis control is a feasible strategy for strengthening health surveillance actions. When considering the epidemiological characteristics of TB, it is essential to emphasize medication adherence, as its lack can increase the occurrence of negative outcomes, such as treatment failure, maintenance of the transmission chain, emergence of drug resistance, and increased morbidity and mortality²².

Following the methodological steps recommended by Pasquali⁹ (theoretical, empirical (experimental), and analytical (statistical)), and anchored in the recommendations of the Ministry of Health and the World Health Organization, it was possible to develop an educational technology in the form of a handbook aiming to facilitate user access to information and provide the opportunity for content dissemination through playful, educational, and easily disseminated material. Furthermore, the handbook plays an important role in assisting with TB treatment monitoring, as well as clarifying potential diagnostic and therapeutic questions for the individual, their family, and the community, strengthening medication adherence²³.

The validation process involved the participation of subject matter experts and the target audience. It was based on an approach that prioritized problematization of the topic, aiming for social transformation, experience sharing, humanization, and above all, the commitment of professionals to comprehensively serve users, respecting their individuality and focusing on patient empowerment²⁴.

The expert evaluation confirmed the content validity of the ET, achieving an overall CVC that corresponds to excellent validity. This result indicates that the handbook is well structured in relation to the proposed topic, follows a logical sequence, and presents accurate, clear, precise, and easy-to-understand information, thereby sparking user interest²⁵.

Physicians and nurses predominated among the experts. The presence of nurses in Health Technology Assessment (HTA) studies has been progressively increasing. Nurses play a fundamental role in the context of TB, from tracking symptomatic respiratory cases to post-discharge follow-up²⁶. The work of these professionals in HTA provides relevant data for the inclusion of new technologies and procedures which improve healthcare and clinical outcomes for patients²⁷.

Changes were made during the content validation stage to ensure greater clarity and objectivity, as well as promote understanding across different population segments. Professionals with expertise in the topic suggested adjustments to the formatting, writing, and language adaptation in sentences which could make interpretation difficult for patients⁹.

A fundamental step in developing educational materials is considering user evaluations, which are essential to verifying that the ET is understandable and engaging for the target audience²⁸. Responses to the data collection instrument administered to the target population indicated that the handbook was considered suitable for use. Further changes were implemented after semantic

validation. Statistical indices similar to those obtained in this study were observed in the validation of an educational handbook for the prevention of transphobic bullying in schools²⁹.

The handbook's social relevance is reiterated from validation of the developed ET, as it meets the Sustainable Development Goals (SDGs) of the United Nations (UN) 2016-2030 agenda and is closely related to Goal 3, which aims to end some communicable diseases¹.

While this study contributes to scientific advancement in public health by providing a support tool for the TB Control Program, it is noteworthy that the content and semantic development and validation stages were conducted with healthcare professionals and patients from only one Brazilian state capital city. Therefore, further studies are recommended to evaluate the usability and effectiveness of the material in different contexts.

It is also important to emphasize that the lack of structural resources in services affects TB control. In this scenario, Primary Health Care faces significant challenges, such as infrastructure deficiencies, shortages of material supplies, lack of support for ongoing team education, and workload, negatively impacting professionals' motivation to use the guides during consultations³⁰.

It is also worth mentioning that data collection with judges and specialists occurred remotely, eliminating verbal dialogue between researchers. However, this strategy enabled participation of professionals from different knowledge fields and different regions of the country in developing the educational material, adding content and quality to the handbook.

Educational technology is expected to assist healthcare teams with technical and scientific support to provide qualified and humane care, as empowering patients about their health and disease processes is crucial for favorable outcomes in recovery and cure in TB treatment.

CONCLUSION

The development of the educational technology followed the steps recommended in the literature, achieving the study's objective of describing the development and validation of an educational handbook to support and strengthen medication adherence among users undergoing TB treatment. The overall CVC obtained through expert evaluation and complete agreement among the target population, respectively, confer content and semantic validity to the handbook entitled "In search of a cure for tuberculosis".

Thus, it is possible to confirm that the developed handbook demonstrates evidence of validity and is therefore recommended for use in PHC continuing education programs with a view to contributing to achievement of tuberculosis control goals, in alignment with the global initiative "The End TB" strategy.

Presenting a validated educational technology to society provides a reference for interventions aimed at improving the epidemiological situation of a country fighting TB. It is suggested that patients receive this handbook at healthcare facilities after a confirmed TB diagnosis as a supporting resource to demonstrate the importance of taking an active role during their treatment.

Finally, it is recommended that the handbook be tested in different healthcare settings (primary, secondary, and tertiary which attend patients undergoing TB treatment) to assess its effectiveness in achieving better cure rates.

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NOTES

ORIGIN OF THE ARTICLE

Extracted from the thesis – “*Validação de cartilha para adesão medicamentosa em Tuberculose: teoria do alcance das metas*”, presented to the Associated Graduate Program in Nursing of the University of Pernambuco, 2024.

CONTRIBUTION OF AUTHORITY

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Discussion of results: Cabral JR, Oliveira RC, Andrade MS.

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CONFLICT OF INTEREST

There are no conflicts of interest.

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DATA AVAILABILITY

The data is available.

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SUPPLEMENTARY MATERIAL

The following online material is available for this article:

Cartilha de orientação e acompanhamento em Tuberculose.

