Cogitare Enfermagem

TECHNOLOGICAL INNOVATION

Digital booklet for primary health care professionals on medication adherence among older adults

HIGHLIGHTS

1. Enhances multidimensional care and medication adherence.
2. Older adults' medication adherence: a multiprofessional perspective.
3. Digital booklet: an alternative for permanent health education.
4. Diverse expertise united for older adults' medication adherence.

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ABSTRACT

Objective: To develop the content of a digital booklet for primary health care professionals on medication adherence among older adults. **Method:** Methodological study conducted from July 2024 to December 2025 in a participatory manner with health professionals and nursing students, following the stages of situational diagnosis; content survey, selection, and charting; image and text development; and layout. Layout and images were produced with the support of artificial intelligence. **Results:** The booklet content covers the multidimensional assessment of older adults, aspects of the process of adherence to medication treatment, the relevance of health literacy, and the management of medication treatment. **Conclusion:** In the digital booklet, medication management is a responsibility shared by the interprofessional team. The content provides a replicable basis for other public health settings and acts as a facilitator of medication adherence among the older population.

DESCRIPTORS: Aged; Medication Adherence; Educational Technology; Education, Continuing; Primary Health Care.

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INTRODUCTION

Population aging has increased the prevalence of chronic noncommunicable diseases and multimorbidity among older adults, which poses a challenge for global public health[1]. In 2021, 1.97 billion cases were recorded among older adults, predominantly cardiovascular, respiratory, neurological, and neoplastic diseases[2-3]. Globally, this disease burden is not uniform. Health inequities are more pronounced in areas with a lower Sociodemographic Index, with a projected 215 million older adults affected by 2050[2-3].

In this setting, multimorbidity increases therapeutic complexity and favors polypharmacy. Understanding the use of multiple medications and adherence is essential for assessing treatment efficacy and requires holistic, personalized, and interprofessional management to optimize clinical outcomes. Strategies led by an interprofessional team that includes physicians, nurses, and pharmacists trained in Primary Health Care (PHC) are crucial for simplifying dosing regimens. These joint actions increase patient safety, favor adherence, and reduce health-related costs[4-5].

Achieving these positive health outcomes requires strengthening the gerontology competencies of PHC professionals. This training is indispensable, especially in implementing Integrated Care for Older People (ICOPE), which aims to strengthen care coordination through interprofessional collaboration among non-specialist professionals. For this model to be effective, it is imperative to invest in continuous educational processes for these professionals on strategies for treatment adherence among older adults, with a view to reducing the negative effects of polypharmacy[6-10].

Given the need for tools that foster the optimization of clinical practice and comprehensive care, developing a narrative-based virtual booklet emerges as a culturally sensitive strategy adapted to the local reality. By using narratives that portray real situations or situations inspired by everyday practice in health services, the educational material enables critical reflection on the topic. Digital storytelling promotes greater engagement, provides positive learning experiences, and improves the quality of the teaching-learning process[11]. This pedagogical strategy helps reduce the gap between theory and practice, enabling team members to recognize and apply these concepts in the local reality[12].

Accordingly, this study aimed to develop the content of a digital booklet for primary health care professionals on medication adherence among older adults.

METHOD

This methodological study is the final stage of an umbrella project entitled Relationship between functional health literacy, medication adherence, and functionality among older adults enrolled in a Family Health Strategy unit, carried out from July 2024 to December 2025 in a Family Health Strategy unit in a municipality in the Western Border region of Rio Grande do Sul State, Brazil. The educational technology proposal was defined based on the findings of the initial stages of the research, which showed a high prevalence of low health literacy among older adults with chronic diseases in the unit investigated. Given this scenario, the digital booklet was selected as a resource to support interprofessional work, with the potential to improve health literacy and strengthen treatment adherence.

The study used nonprobability, purposive, convenience sampling. Recruitment took place in person among professionals in active practice, and the inclusion criterion required at least six months of work in PHC; professionals on leave or sick leave during data collection were excluded. Because some local professionals were temporarily away

from work, external professionals who met the inclusion criteria were invited, resulting in a refusal rate of zero.

The digital booklet was developed collaboratively by the research team, consisting of a professor with a doctorate in nursing, a doctoral student in the same field, and three undergraduate nursing students. The development process also involved 16 health professionals working in PHC: seven community health workers, three nurses, two nutritionists, one physician, one dentist, one physical education professional, and one pharmacist.

The professionals participated in four stages of the study. In the first, the situational diagnosis, they answered two open-ended questions on treatment adherence among older adults and the essential content of the booklet, providing input for the thematic axes. In the second, the content survey, they contributed by indicating technical sources, and the professionals external to the unit studied also wrote content in their areas, giving rise to corresponding guidance and characters in the narrative. In the third, they evaluated the initial version of the illustrations, the storytelling, and the characters. In the fourth, after the final writing and new images, they reviewed the complete material.

The development of the digital booklet was grounded in and structured into six stages: situational diagnosis, content survey, selection and charting, illustrations, text development, and layout[13-14].

The situational diagnosis consisted of surveying educational needs through on-site field research, with two open-ended questions posed to PHC professionals: What do you consider important for treatment adherence among older adults? and What content is essential to the digital booklet? The responses were transcribed independently by a nursing student and a nurse and then subjected to content analysis[15].

The selection, survey, and charting of content provided the theoretical basis for the script, the construction of the characters, and the narratives (storytelling), which were carried out by three nursing students. This was done through searches of the scientific literature in Web of Science, Scopus, Embase, and the Cochrane Library and of official documents in the libraries of the World Health Organization and the Virtual Health Library. The descriptors were adapted according to the critical issues identified. No artificial intelligence tool was used at this stage to survey or synthesize the content. Charting was done collaboratively in a Google Docs document, with the main results, the authors' names, and how the material could contribute to the script, and it was subjected to content analysis[15].

The textual development of the booklet consisted of constructing the script (characters and storytelling) and writing the text. No artificial intelligence (AI) was used at this stage. The first visual construction and the characteristics of the characters were carried out by an undergraduate student with drawing skills.

The characters, script, and narrative were developed collaboratively with the research team using Google Docs. Development was based on World Health Organization standards, especially ICOPE[10], a tool used to assess the intrinsic and functional capacity of older adults, as well as on Brazilian policies and programs for this population. We chose to characterize the older adults with a focus on their functionality and intrinsic capacity, since these factors directly influence the complexity of care management. In addition, the presence or absence of social support was portrayed according to the professionals' reports in the initial survey. Outcomes are structured into assessment items aligned with ICOPE[10] and the multidimensional assessment of older adults[16]. After this first construction, the material was returned to the professionals for qualitative appraisal of the content and suggestions for improvement. The final illustrations of the booklet were generated based on the nursing student's hand drawing, which was scanned and entered into the generative artificial intelligence tool Gemini 3.0 Pro.

For the second stage of developing the characters that make up the narrative script, artificial intelligence was used with the commands (prompts) presented in Chart 1, below:

Chart 1. Prompts used in the second visual construction, to develop the figures and to construct the mind maps and infographics. Uruguaiana, RS, Brazil, 2026

Prompt used in the second visual construction
The commands (prompts) were adapted according to the character, setting, and speech, using the following template models: The prompt for the storytelling: I want you to generate a composite image in comic-strip format with three panels, following the cartoon style, with clean lines, soft colors, and a welcoming atmosphere. The only difference is that, in place of the (character), I want (sex of the character) in the same style, same palette, and same type of line. What I want in the image (detailed instructions): Format: horizontal comic strip with 3 panels separated by thin black lines. Main character: Description of the character with details such as (man or woman), kind, smiling, (hair type), Type of facial expression. Details of clothing (type, color, shape). Details of appearance (welcoming, friendly appearance, style), Visual style: digitally illustrated cartoon, clean lines, soft outlines, pastel palette, soft lighting, warm and gentle aesthetic, identical to the reference image, identical proportions (same character size, same perspective), settings (identical to those in the original image): Panel 1: description. Panel 2: description. Panel 3: description. Speech balloons (same shape and typography as the reference): Panel 1: "Specific speech content." Panel 2: "Specific speech content." Panel 3: "Specific speech content." Facial expressions: soft, friendly, instructive, slight smile, relaxed posture. Clarity: scenes must be easily legible, with a balanced composition like the reference. What I do not want in the image: I do not want the sex opposite to that of the character, only that of the character. Do not alter the composition of the comic strip; keep everything identical to the original, only replacing the character. Do not use realistic styles; keep the soft cartoon style. Do not change the settings, palette, or perspective. Do not add other characters. Do not alter the text in the balloons. Do not use different fonts, exaggerated shadow effects, or filters. Do not turn the comic strip into a comic book with onomatopoeia or extra text.
Prompt used in the second visual construction to develop the figures.
The prompt for the figures: I want you to create a cartoon figure, instructive and fun for older adults, with the following words. I do not want you to add words or letters. Content chosen for the figure.
Prompt used in the second visual construction to develop the mind maps or infographics.
The prompt for the mind maps or infographics: Turn this into a cartoon mind map, instructive and fun for older adults, with the following words. I do not want you to add words or letters. Content chosen for the figure.

Source: The authors (2026).

Layout was carried out with the support of the Gemini 3.0 Pro tool. The following template prompt was used: I want you to review the following text, focusing on grammatical and spelling correction and on flow. Single-sentence paragraphs need to be adjusted. Ensure cohesion and logical progression between ideas without, under any circumstances, deleting information, adding external content, or changing the original language. When you finish, provide a detailed report of all the changes to be made. After this stage was completed, the final content of the booklet was returned to the professionals for suggestions for improvement.

The research complies with ethical precepts under opinion number 5.668.686. The AI tool was used exclusively in the illustration and layout stages described above. All the generated material was reviewed, adjusted, and appraised collaboratively and in a participatory manner. The use of AI complied with applicable privacy standards, copyright, and institutional guidelines.

RESULTS

In the situational diagnosis, four core categories emerged from the deconstruction of 65 units of meaning. The first category, Clinical Specificities and Global Geriatric Assessment (11 units of meaning), grouped factors associated with improving care, such as morphofunctional profile, comorbidities, and the importance of adopting standardized instruments for frailty screening in PHC.

The second category, Therapeutic Management and Medication Safety (23 units of meaning), comprised care practice in the face of iatrogenesis, with interventions such as deprescribing, polypharmacy control, and medication reconciliation across points of the health care network. The third category, Health Literacy and Educational Methodologies (17 units of meaning), presents the challenges inherent to health communication and the person-centered approach, emphasizing the teach-back technique, the need to adapt language, and the production of teaching materials for older adults and the health team. The fourth category, Support Network Dynamics and Therapeutic Itinerary (14 units of meaning), revealed the impact of social and family support on treatment adherence and identified critical issues in patients' movement across the different levels of the health system.

The content survey and search were structured around the pre-established categories. To guide Clinical Specificities and Global Geriatric Assessment, as well as Support Network Dynamics and Therapeutic Itinerary, we selected the ICOPE model, recommended by the World Health Organization, and the Multidimensional Assessment of Older Adults, proposed by the Ministry of Health. In turn, the scope of Therapeutic Management and Medication Safety and of Health Literacy and Educational Methodologies was based on references identified in the databases. For this purpose, 83 bibliographic references were used, including national and international guidelines, ensuring that the person-centered approach was aligned with the availability of the health care network.

To structure the visual aspect of the virtual booklet, 90 graphic representations were generated. This material is distributed among storytelling scenes (n=49), infographics (n=21), mind maps (n=10), stand-alone illustrations (n=9), and one pictogram (n=1).

The initial visual development of the characters and the life story of each one were carried out by a nursing student with the aim of representing the daily life of the unit studied. To guide this construction, the profiles described in the Multidimensional Assessment of Older Adults were adopted. Based on this framework, the three characters created represent different levels of functionality: the robust older adult, the older adult at risk of frailty, and the frail older adult. The clinical, functional, and social conditions of each character were outlined to reflect the specificities of the regional study setting and the biopsychosocial demands of aging.

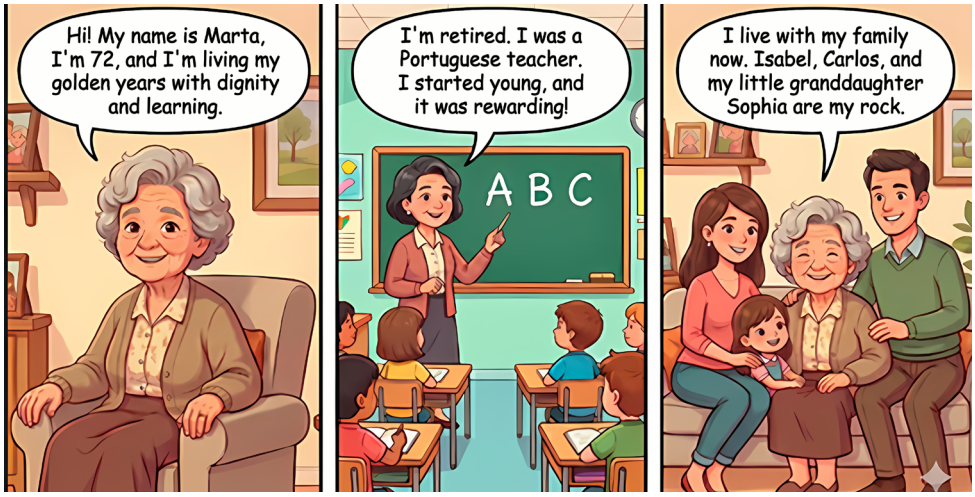

Figure 1. Robust older adult character: Older adult Marta. Uruguaiana, RS, Brazil, 2026

Source: The authors (2026).



Figure 2. Older adult character at risk of frailty: Older adult Osvaldo. Uruguaiana, RS, Brazil, 2026

Source: The authors (2026).

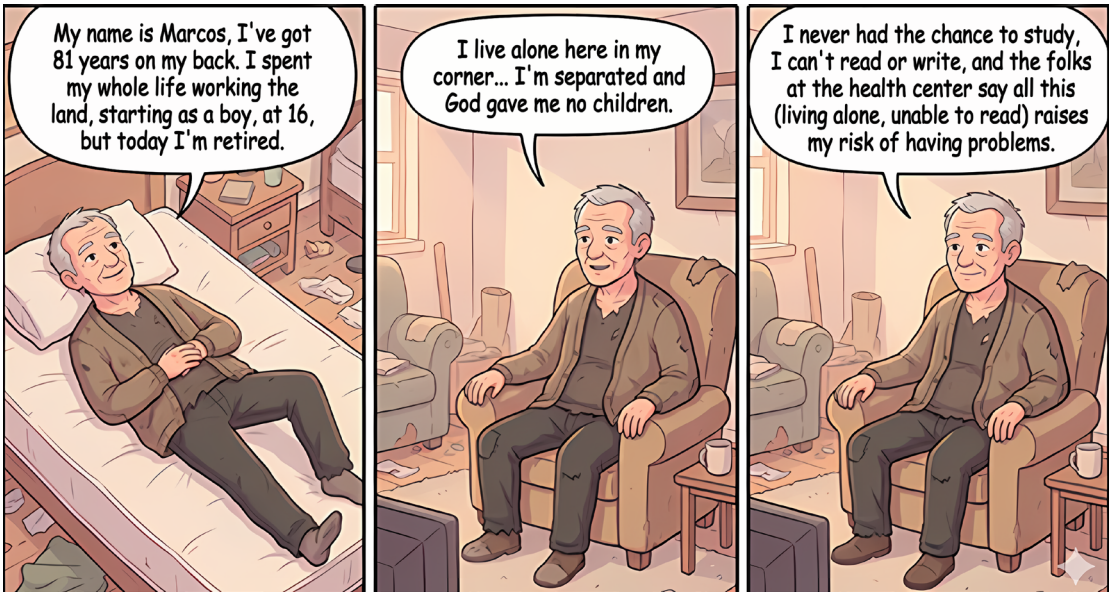

Figure 3. Frail older adult character: Older adult Marcos. Uruguaiana, RS, Brazil, 2026

Source: The authors (2026).

The characters created to represent the health professionals act interdependently throughout the narrative. A psychologist was also included as a character, since psychologists work in some units in this municipality. This group of fictional actors comprises physicians (n=2), a pharmacist (n=1), nurses (n=2), a nutritionist (n=1), a dentist (n=1), a physical education professional (n=1), a psychologist (n=1), and community health workers (n=2).

In the text development, the initial axes of the booklet are grounded in the Multidimensional Assessment of Older Adults and the Comprehensive Geriatric Assessment. The content ranges from guidance on the storage and correct administration of medications to the analysis of factors that affect treatment adherence, with an emphasis on polypharmacy management and the practice of deprescribing from multiprofessional and multidimensional perspectives. These elements aim to support clinical decision-making in Primary Care, bringing scientific evidence closer to the everyday reality of health services. The tool uses storytelling to link fundamental concepts of aging, such as functional capacity and intrinsic capacity, to practical medication management strategies.

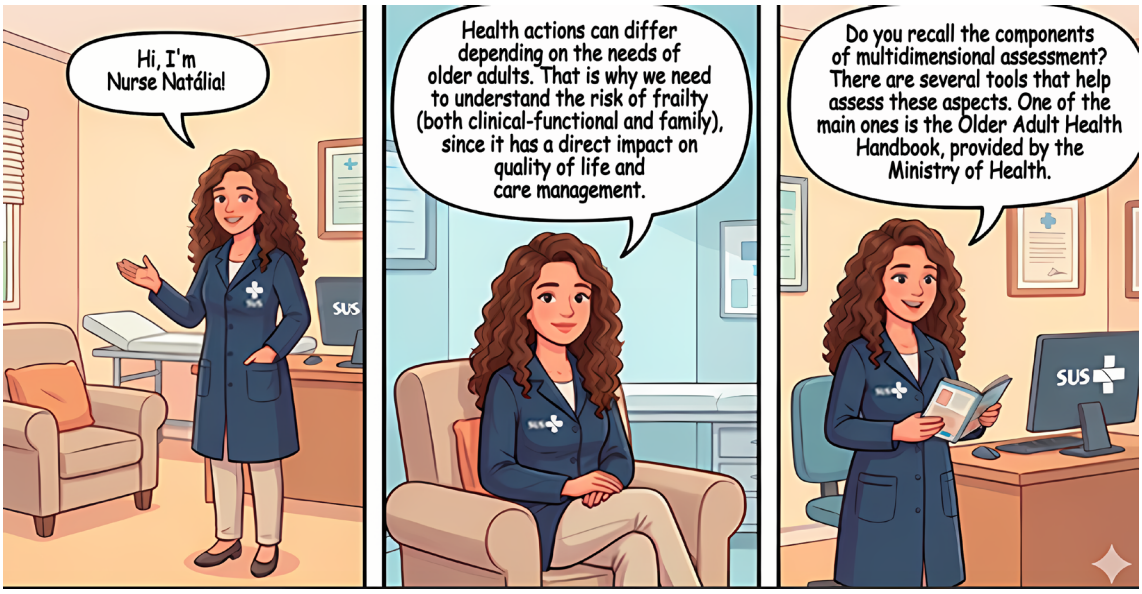

Figure 4. Character: Nurse Natália. Uruguaiana, RS, Brazil, 2026

Source: The authors (2026).

To bring this about, the illustrations and narratives permeate all sections, using characters to personify interprofessional care. The script unfolds through narratives set in Basic Health Units, in the community, and in patients' homes. In these settings, health professionals and older adults recount their experiences with pharmacotherapy adherence, offering perspectives that underpin person-centered care from a multiprofessional and multidimensional standpoint.

Drawing on storytelling as a pedagogical strategy, medication management is presented from a collaborative and systemic perspective, addressing critical phenomena such as polypharmacy, deprescribing, and medication reconciliation. The narrative seeks to deconstruct the hegemonic, fragmented model of prescribing, showing that patient safety and therapeutic effectiveness are inseparable from assertive interprofessional communication. In this context, the discourses of nutritionists, physical education professionals, dentists, physicians, nurses, psychologists, and community health workers converge in a network of knowledge structured to ensure the problem-solving capacity of care under the paradigm of Person-Centered Care and comprehensive health care.

The digital booklet developed, entitled Adherence to medication treatment: a focus on older adults, has 65 pages and 17 main sections. It is available at: https://repositorio.unipampa.edu.br/handle/123456789/11226

The storytelling design uses narrative conflict around polypharmacy and medication adherence. Scenarios of declining intrinsic capacity and social and family vulnerability serve as the main obstacles in the plot. The comprehensive geriatric assessment functions as the turning point in the textual progression of each clinical case. The introduction of assessment tools redirects the care plan toward a strictly interprofessional approach. The conflict is resolved through deprescribing, health education, and the use of behavioral strategies. The outcome of the narrative reaffirms the preservation of the older adult's autonomy and the adequacy of social support. The interprofessional perspective builds a narrative of comprehensive care that transcends the strict management of disease. In the storytelling, the health professional characters contribute their views on what matters for adherence to medication treatment among older adults, in the form of a clinical narrative applied to gerontology.

DISCUSSION

The analysis of adherence to medication therapy in the storytelling begins with the measurement of intrinsic and functional capacities. This approach corroborates the current literature, since decline in these domains among older adults acts as a predictor of polypharmacy and of failures in therapeutic follow-up[17-18]. Multidimensional assessment complements this analysis by identifying clinical and psychosocial determinants essential to therapeutic success. This method overcomes the limitations of self-report by revealing frequently underestimated vulnerabilities, such as cognitive decline, depression, sensory loss, inadequate caregiver support, and high medication complexity. Identifying these barriers is essential, as they compromise treatment continuity, especially in older adults with multimorbidity[17,19].

Continuous assessment of older adults' ability to understand, remember, and carry out the therapeutic plan autonomously proves indispensable, since prescription and clinical guidance alone are insufficient[20]. This complexity highlights the need to include the community health worker in the storytelling, given this worker's strategic role in the territory in promoting and sustaining medication adherence.

In this setting, the patient's degree of functionality determines the type of care intervention required. In the storytelling, the robust character presents lower therapeutic complexity and higher literacy. By contrast, the at-risk-of-frailty and frail profiles, often living alone and in greater vulnerability, reflect findings in the literature. Evidence indicates that medication adherence is influenced by multidimensional factors, including socioeconomic determinants such as isolation, loneliness, male sex, and living alone. Added to this is clinical condition, such as multiple chronic diseases, functional decline, high care demand, and low health literacy. These aspects underscore the importance of the nurse and the psychologist in the storytelling and the need for comprehensive, multidimensional nursing interventions for older adults to improve treatment adherence[19,21-22].

The dynamics of the support network and therapeutic itinerary demonstrate the influence of social and family support on treatment adherence. In this context, the older adults' narratives in the storytelling reveal different configurations of health beliefs and of social and family support, in line with the literature, which indicates that discontinuity of care exacerbates adherence difficulties associated with the fragmentation of health systems. To mitigate these challenges, support networks are essential in maintaining therapeutic routines. Thus, effective interventions must be multifaceted, tailored, and centered on the individual's comprehensive needs. In addition, adherence is influenced

by individual beliefs, treatment complexity, and factors related to the health system itself[23].

The association between frailty and low health literacy increases the risk of inappropriate medication use and clinical decline in older adults[20]. To mitigate this vulnerability, comprehensive interventions should include regular exercise. The inclusion of the physical education professional character in the storytelling is justified by the role of physical activity in preventing complications associated with frailty syndrome[24].

In this context, older adults with low health literacy have a higher occurrence of dosing errors, omissions, and unreported adverse reactions and lower adherence to medication management strategies. Pharmaceutical intervention helps reduce these events, and community pharmacists play an important role in promoting safe medication use through health education, pharmacotherapy review, and therapeutic monitoring[25-26].

The digital booklet addresses multidimensional assessment in PHC and supports the premise that medication management is a shared responsibility. Specific knowledge of gerontology needs to be strengthened in the education of physicians, nurses, and other health professionals[9]. Medication management, traditionally centered on physicians, pharmacists, and nurses, benefits from the incorporation of an interprofessional team, enabling non-pharmacological interventions such as teach-back and behavioral strategies, as well as the identification of deprescribing needs, aligning pharmacological management with patient preferences and reducing the risks associated with polypharmacy[4,8].

Another relevant aspect is food-drug interaction, which reinforces the inclusion of the nutritionist in the interprofessional approach of the storytelling. In addition, the use of anticholinergics, antihypertensives, and psychotropics can cause xerostomia, favoring the development of caries, candidiasis, mucosal lesions, and gingival hyperplasia. Diagnosis is often hindered by underreporting of symptoms and by cognitive deficits. The clinical approach requires interdisciplinary action by dentists, physicians, and pharmacists in medication review and deprescribing, helping reduce the effects of polypharmacy and improve older adults' quality of life[27].

The use of AI in the layout and in producing the second version of the images optimized the design process. Generative AI tools have increased the speed of and access to content production; however, many derive from general-purpose uses and do not fully meet pedagogical demands, as they are not structured around learning processes[28]. In this context, it is up to humans to ensure the ethical and equitable use of these technologies, which involves guiding systems, critically evaluating responses, and reviewing content to correct inaccuracies, biases, or misleading information[29].

The main limitation of this study is the geographic restriction of the sample, composed exclusively of professionals from a single location, which reflects institutional, cultural, and epidemiological specificities of the context investigated. The absence of validation of the digital booklet is also a limitation of this study. In future work, the material will be adapted to incorporate accessibility features based on Universal Design. This adaptation will ensure inclusive access to scientific information and prepare the content for the subsequent validation stage.

Future studies should expand sample representativeness to include different categories of health professionals. The inclusion of nurses, physicians, pharmacists, and community health workers is essential, as is the participation of nutritionists, psychologists, dentists, and physical education professionals. This diversification enables a broader interprofessional approach to actions aimed at adherence to medication treatment among older adults.

CONCLUSION

This study developed the content of a digital booklet for primary health care professionals on medication adherence among older adults. Through storytelling as a pedagogical strategy, the digital booklet brings gerontology evidence closer to practice in PHC. Medication management is a shared responsibility of the interprofessional team. By structuring clinical cases on polypharmacy and using multidimensional assessment as a turning point, the material shows that treatment adherence transcends the mechanical administration of medications and is linked to the preservation of older adults' functional and intrinsic capacity. Despite the geographic limitations, the booklet model is replicable in other settings, favoring safe deprescribing, social and family support, and the maintenance of autonomy and quality of life among the older population.

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Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work - **Messa ND, Tier CG, dos Santos AO.** Drafting the work or revising it critically for important intellectual content - **Messa ND, Tier CG, dos Santos AO, Prates LA, Bico IMT, Barlem JGT, Hirdes A.** Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved - **Messa ND, Tier CG, dos Santos AO, Hirdes A.** All authors approved the final version of the text.

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