Information Design applied to Healthcare: an overview of Brazilian research on medication leaflets

Design da Informação aplicado à saúde: um panorama da pesquisa brasileira sobre bulas de medicamentos

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design applied to healthcare, medication leaflet, medications, information design, user-centred design

This study provides an overview of Brazilian research on medication leaflets and related formats from the perspective of Information Design. The method used was a systematic review, with papers identified through the Connected Papers tool and supplemented by Google Scholar, resulting in the mapping of 41 papers. Analysis of these papers reveals deficiencies in areas important for knowledge generation in the pharmaceutical industry, such as the limited selection of target audiences for research and the focus on medication leaflets as the sole object of study, neglecting relevant items such as packaging and blister packs. This study contributes to understanding the current scenario of Brazilian research on medication leaflets and indicates directions for future research in the field of Information Design applied to health.

design aplicado à saúde, bula de medicamento, medicamentos, design da informação, design centrado no usuário

O presente estudo oferece um panorama da pesquisa brasileira sobre bulas de medicamentos e formatos relacionados sob a perspectiva do Design da Informação. O método usado consiste em uma revisão sistemática, com artigos identificados por meio da ferramenta Connected Papers *e complementados pelo* Google Acadêmico*, resultando no mapeamento de 41 publicações. A análise desses trabalhos revela lacunas em áreas importantes para a geração de conhecimento na indústria farmecêutica, tais como a limitada seleção de públicos-alvo para as pesquisas e o foco nas bulas como único objeto de estudo, negligenciando itens relevantes, como embalagens e cartelas. Este estudo contribui para o entendimento do cenário atual da pesquisa brasileira acerca de bulas de medicamentos e indica direções para pesquisas futuras no campo do Design da Informação aplicado à saúde.*

1 Introduction

Brazil ranks fifth worldwide in the number of internet searches for medical advice (de Oliveira et al., 2013). This culture significantly contributes to the increase in self-diagnosis and self-medication, highlighting the importance of updating and improving reliable sources of information on the correct use of medications, such as medication leaflet.

The medication leaflet is an essential document that describes the use and storage of medications, providing specific information on care, precautions, and the chemical composition of drugs (Fujita et al., 2014). According to the Brazilian National Health Surveillance Agency (Agência Nacional de Vigilância Sanitária, ANVISA), the medication leaflet is regulated to guide patients and healthcare professionals in the rational use of medications, offering clear information based on scientific evidence. To regulate the use and effectiveness of medications, ANVISA establishes clear guidelines, as outlined in Resolution RDC No. 140-2003 (ANVISA, 2009). In summary, after the doctor, the medication leaflet should be the main source of information to assist in the patient's treatment (da Silva et al., 2000).

According to Mansur (2016), the medication system comprises several processes related to storage, prescription, transition, preparation, distribution, administration, and monitoring of use. Each of these steps involves a level of complexity that can lead to errors and failures. Researchers (e.g. Fujita et al, 2014; Henkel & Spinillo, 2018) highlight the importance of Information Design in making medication information and instructions, such as medication leaflets, more effective. In this context, Information Design serves as a tool that can significantly help reduce these errors by optimising the effectiveness of information presentation. The field of Information Design aims to meet the informational needs of the intended audience (Sociedade Brasileira de Design da Informação [Brazilian Society of Information Design], SBDI, 2020), facilitating effective and efficient communication and understanding of information (Horn, 1999). Therefore, the ability to accurately understand and share information in practical situations is essential (Fujita & Machado, 2014).

Many studies have evaluated, analysed, and detailed the problems and improvements needed for the medication leaflet to better fulfil its function. However, if the problem is not a lack of research on the subject, what is the barrier preventing real improvements in the current format of medication leaflets so that they can be widely used? The hypothesis of this study is that existing research becomes isolated. The difficulty in mapping all existing studies, their complements, and correlations leads to a certain degree of retraction of the results found, which hinders their implementation in an industrial scenario of significant economic and political power.

This research aims to provide an overview of medication leaflets and related formats by analysing and synthesising data from studies conducted in Brazil. To this end, a systematic literature review and a digital platform (Connected Papers) were used to conduct the search. Only papers that examined the research object from the perspective of Design or Information Design were included. Presenting these data and results in a combined and simplified manner can contribute to a better understanding of the main research gaps in the field and the key improvements already identified, providing a solid scientific basis for practical application.

2 Method and collected material

This research applies fundamental processes of the systematic review method to include a broader range of relevant results, considering the potential for consistency and generalisation of findings across studies. Research involves working with data, knowing where to obtain it, and how to process it to generate new information (Mariano, Cruz, & Arenas-Gaitan, 2011). Therefore, it is important to note that the overview presented here faces challenges and limitations, such as the complexity of digital research on scientific papers, the difficulty of verifying that all databases have been explored, and the potential for bias in the interpretation and systematisation of data, given the qualitative sources used. Furthermore, it is important to highlight the Brazilian context of knowledge production, such as non-indexed publications and the culture of using these publications, which have few citations in the field.

That said, the systematic review method proved particularly useful, as it enabled the integration of information from the studies analysed. This method allows the presentation of both conflicting and coinciding results, as well as the identification of themes lacking evidence, thereby assisting in guiding future research (Linde & Willich, 2003). The main steps of the systematic review considered in this study were: defining the objective of the review, identifying the database to be consulted, establishing criteria, selecting the studies to be included, and analysing and evaluating all studies included in the review. Before starting the search for papers to be included, certain criteria were defined to serve as filters, namely:

- Only papers conducted with reference to the realities or audiences of the national territory were included, that is, studies on the Brazilian context;
- The scientific papers or research needed to contain or consider Information Design, or related themes, in their analysis or investigation;
- The research topic for the papers needed to be medication leaflets or related items, such as medication boxes, blister packs of pills, informational booklets, or medical prescriptions, among others.

With these criteria established, the Connected Papers digital platform[1] was used to assist in searching for scientific papers and published studies to be considered in this overview. This tool uses citations, keywords, or thematic correlations to create visual schemes that reflect the proximity between papers (see Figure 1).

The tool operates using connection graphs; therefore, the initial search was conducted using the keywords “medication leaflets”, “information design”, and “graphic design”. Based on the results of this first search, an initial connection graph is generated. Within this graph, further connections can be discovered by accessing the connection graphs associated with the articles initially found. In this way, after the first search, one can continue to generate new results without needing to enter additional keywords, simply by exploring the connection graphs created for each article. Although it might seem as though this process could continue indefinitely,

1 https://www.connectedpapers.com/

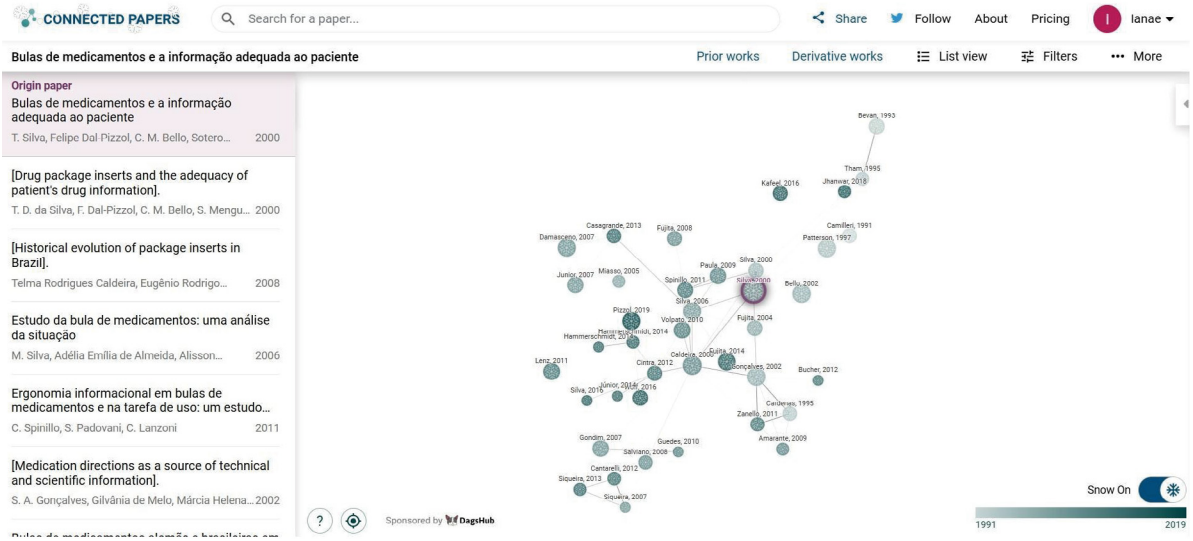

Figure 1 Screenshot for illustrative purposes only, showing the visualisation of one of the generated graphs in Connected Papers. Source: Connected Papers.

there eventually comes a point at which you begin to encounter the same articles repeatedly. This tool also allows searches using DOIs, author names, paper titles, or research titles. In most cases, the tool provides only the paper title. For this reason, Google Scholar was also used to locate the full texts.

It was necessary to construct multiple correlation graphs, as each search generated new bibliographic sources, which in turn produced new correlation graphs. This process was repeated until the papers and research began to recur and no new bibliographic references appeared. However, it is important to emphasise that this research was a selection using the tools and filters defined here, which may have resulted in the exclusion of one or more studies relevant to the topic.

After this process, 41 papers were identified within the parameters specified for this research. The research was conducted between November 2024 and March 2025, and the studies identified were published between 2004 and 2023. These are presented in Table 1.

Table 1 Papers or research analyzed. Source: Authors.

Authors	Publication year	Title
Blum, A.; Merino, E. A. D.	2015	Ergonomia em rótulos de medicamentos: uma análise a partir de princípios do conforto visual [Ergonomics in medication labelling: an analysis based on principles of visual comfort]
Caldeira, T. R.; Neves, E. R. Z.; Perini, E.	2008	Evolução histórica das bulas de medicamentos no Brasil [The historical evolution of medication leaflets in Brazil]
Cantareli, B. B. P. et al.	2021	Bulas de medicamentos: compreensão pelo usuário [Medication leaflets: user comprehension]
da Cunha, A. M.; Nascimento, G.; Guedes, G. P.	2018	Uma análise sobre as bulas de medicamentos no Brasil [An analysis of medication leaflets in Brazil]

Table 1 Papers or research analyzed. Source: Authors. (continued)

Authors	Publication year	Title
da Silva, C. H.; Spinillo, C. G.	2018	Artefatos de informação regulados e não regulados nas estratégias de uso de múltiplos medicamentos por idosos [Regulated and non-regulated information artefacts in the strategies used by elderly people when taking multiple medications]
da Silva, C. H.; Spinillo, C. G.	2016	Dificuldades e estratégias no uso de múltiplos medicamentos por idosos no contexto do design da informação [Difficulties and strategies in using multiple medications among elderly people in the context of information design]
da Silva, C. R. L.; Spinillo, C. G.; Soares, M.	2007	As contribuições da linguagem gráfica pictórica para o design de avisos e advertências em medicamentos [The contribution of pictorial graphic language to the design of notices and warnings on medications]
da Silva, M. et al.	2006	Estudo da bula de medicamentos:uma análise da situação [Medication leaflets: an analysis of the current situation]
da Silva, T. et al.	2000	Bulas de medicamentos e a informação adequada ao paciente [Medication leaflets and the provision of appropriate information to patients]
Dal Pizzol, T. da S. et al.	2019	Bulas de medicamentos sob a perspectiva dos usuários: elas são lidas e compreendidas? [Medication leaflets from the user perspective: are they read and understood?]
Freitas, R. F. de et al.	2020	Validação de aspectos semânticos em diretrizes para elaboração de Materiais Educativos Impressos para Promoção da Saúde: contribuição do Design da Informação [Validation of semantic aspects in guidelines for developing printed educational materials for health promotion: a contribution from information design]
Fujita, P. L.	2004	A comunicação visual de bulas de remédios: análise ergonômica da diagramação e forma tipográfica com pessoas de terceira idade [Visual communication in medication leaflets: an ergonomic analysis of layout and typography involving elderly users]
Fujita, P. L.	2009	Análise da apresentação gráfica do conteúdo textual da bula de medicamento na perspectiva de leitura do paciente em contexto de uso [Analysis of the graphic presentation of textual content in medication leaflets from the perspective of patient reading in a real-world usage context]
Fujita, P. L.; Machado, C. J. S.; Teixeira, M. de O.	2014	A bula de medicamentos e a regulação de suas configurações em termos de forma e conteúdo no Brasil [Medication leaflets and the regulation of their configuration – in terms of both form and content – in Brazil]
Fujita; P. L.; Spinillo, C. G.	2006	A apresentação gráfica de bula de medicamentos: um estudo sob a perspectiva da ergonomia informacional [The graphic presentation of medication leaflets: a study from the perspective of informational ergonomics]
Fujita, P. L.; Spinillo, C. G.	2008	Design da informação em bulas de medicamento: análise e classificação da estrutura e apresentação gráfica de seu conteúdo textual [Information design on medicine inserts: analysis and classification of the structure and graphic presentation of its textual content]
Gonçalves, S. de A. et al.	2002	Bulas de medicamentos como instrumento de informação técnico-científica [Medication leaflets as tools for technical-scientific information]
Hammerschmidt, C.; Spinillo, C. G.	2014	Reading Digital Medicine Leaflets in Mobile Devices an Interactive Study Conducted in Brazil [Reading digital medication leaflets on mobile devices: an interactive study conducted in Brazil]

Table 1 Papers or research analyzed. Source: Authors. (continued)

Authors	Publication year	Title
Hammerschmidt, C.; Spinillo, C. G.	2015	Informações sobre medicamentos em dispositivos móveis: Análise da articulação tipográfica no aplicativo MedSUS [Medication information on mobile devices: an analysis of typographic arrangement in the MedSUS application]
Henkel, E.; Spinillo, C. G.	2018	A relação entre design de informação e a prevenção dos erros de medicação [The relationship between information design and the prevention of medication errors]
Kamisaki, M. S.; Nascimento, R. A. do; Santos, J. E. G. dos	2011	Bulas e cartelas de medicamentos: possíveis soluções de leiturabilidade através do design gráfico [Medication leaflets and cards: potential readability solutions through graphic design]
König, E.; Bohn, P. R.; Libânio, C. de S.	2022	Relações entre design, acessibilidade e inclusão no contexto da saúde [Relationships between design, accessibility and inclusion in the healthcare context]
Lima, V. L. de	2007	Legibilidade e leiturabilidade das bulas de medicamentos presentes no tratamento de pacientes cardíacos [Legibility and readability of medication leaflets used in the treatment of cardiac patients]
Lopes, L. G. A.; Spinillo, C. G.	2017	Proposta de modelo descritivo para o estilo de ilustração em Sequência Pictórica de Procedimento em bulas de medicamentos [Proposal for a descriptive model of illustration style in pictorial procedure sequences in medication leaflets]
Lopes, L. G. A; Spinillo, C. G.	2018	Análise de conteúdos: Uma abordagem qualitativa sobre instruções visuais em bulas de medicamentos [Content analysis: a qualitative approach to visual instructions in medication leaflets]
Lopes, M. O.; Spinillo, C. G.	2010	Análise da estrutura gráfica de uma bula de medicamentos transcrita para o Sistema Braille [Analysis of the graphic structure of a medication leaflet transcribed into the Braille system]
Lyra Junior, D. P. de et al.	2010	Bulas de medicamentos usados por idosos com hipertensão: adequação da informação à regulamentação sanitária e possíveis implicações para a saúde [Medication leaflets used by elderly people with hypertension: adequacy of information to health regulations and possible implications for health]
Macedo, L. de C.; Uhlmann, L. A. C.	2021	Relevância da leitura da bula de medicamentos [Relevance of reading medication leaflets]
Paschoarelli, L. C.; Bonfim, G. H. C.	2013	Ergonomia e as interfaces de sistemas informacionais tradicionais – embalagens [Ergonomics and interfaces of traditional information systems: packaging]
Paula, C. da S. et al.	2009	Análise crítica de bulas sob a perspectiva do usuário de medicamentos [Critical analysis of leaflets from the perspective of the medication user]
Pinto, J. M.	2013	Bulas de medicamentos comercializados no brasil enquanto fontes de informação: em foco a qualidade da informação nelas contidas após a resolução RDC n. 47/2009 da ANVISA [Medication leaflets sold in Brazil as sources of information: focus on the quality of the information they contain after ANVISA Resolution RDC No. 47/2009]
Pires, B. C. et al.	2023	Minha Bula: Mobile Application to Transcribes Medicine Leaflets for Patients with Visual Impairment [Minha Bula: mobile application for transcribing medication leaflets for patients with visual impairment]
Pires, C.; Vigário, M.; Cavaco, A.	2015	Legibilidade das bulas dos medicamentos: revisão sistemática [Readability of medication leaflets: systematic review]

Table 1 Papers or research analyzed. Source: Authors. (continued)

Authors	Publication year	Title
Rigotto, G. C. et al.	2016	A bula de medicamentos: a importância da leitura das bulas [The medication leaflet: the importance of reading leaflets]
Santos, D. J. L.; Feitosa, E. S. M.; Dalcin, M. F.	2019	A importância da bula para o usuário de medicamentos [The importance of leaflets for the medication user]
Smythe, K. C. A. S.; Spinillo, C. G.; Silva, C. M. A.	2014	Redesign de embalagem e bula de medicamento baseado em design da informação centrado no usuário [Redesign of medicine packaging and leaflets based on user-centred information design]
Spinillo, C. G.	2014	How Do Patient Information Leaflets Aid Medicine Usage? A Proposal for Assessing Usability of Medicine Inserts [Como as bulas auxiliam no uso de medicamentos? Uma proposta para avaliar a usabilidade de bulas de medicamentos]
Spinillo, C. G.; Padovani, S.; Lanzoni, C.	2010	Ergonomia informacional em bulas de medicamentos e na tarefa de uso: um estudo sobre fármaco em suspensão oral [Informational ergonomics in medication leaflets and in the task of use: a study on oral suspension medicines]
Teston de Escobar, B.; Spinillo, C. G.	2016	Retórica visual na infografia sobre saúde [Visual rhetoric in health infographics]
Volpato, L. F.; Martins, L. C.; Mialhe, F. L.	2010	Bulas de medicamentos e profissionais de saúde: ajudam ou complicam a compreensão dos usuários? [Medication leaflets and healthcare professionals: do they help or complicate users' understanding?]
Weissheimer, G. et al.	2023	Elaboração de uma cartilha informativa para familiares e cuidadores de crianças com autismo [Creation of an information booklet for family members and carers of children with autism]

For the analysis of these 41 papers, several variables were defined for comparison. During the analysis, the results were entered into a spreadsheet, with the rows representing the publications and the columns indicating the variables (Table 2).[2]

2 The complete spreadsheet with all the data is available at https://bit.ly/tabeladeanalise

Table 2 All the variables considered. Source: Authors.

Variable	Explanation
Paper Title	Title assigned to the published paper or research in question.
Authors	Topic focused on mapping the relationships between the authors and their relevance within the field, as well as analysing their publication frequency to identify the main authors.
Authors' University	Collection of information about the university, institute, or place of professional or academic activity of the authors.
Country	In which country was the study conducted?
Journal	Name of the journal, website, symposium, congress, or other institution where the text was published.
Publication Location	Location of publication, investigating which states have the most studies related to the proposed theme.

Table 2 All the variables considered. Source: Authors. (continued)

Variable	Explanation
Research Aims	What was the main aim and the specific aim of the paper?
Objects of Study	What were the main objects studied: the medication leaflet, the blister packs of tablets, or the box, internally or externally?
Detailed Description of Object of Study	What difficulties arose from the object of study, as well as the most evident characteristics to be explored in depth?
One-Word Description of Study Problem	Definition, based on the detailed description of the object of study, of a keyword that could encompass the focus of the investigation.
Reasons Identified for New Proposals	Studies and data highlighting the major challenges within the research, providing technical details that support the problem in question.
Target Audience	Intended audience for the study.
Method	The method used or selected by the researcher.
Results	What were the main conclusions, including a clear assessment of the method's effectiveness within the study, whether positive or negative?
Results Presentation	In what format were these results presented, such as graphically?
Study Keywords	The words the researcher considered most relevant within their research, summarising their work.
Author Recommendations	What are the main recommendations from the researchers to improve the effectiveness of the object of study?
DOI, Link, Reference	Select one of the three options so that the text can be easily found.

During data collection, the information was synthesised. This was necessary because most variables are qualitative, and each paper named, cited, or referenced the subject or topic differently. To enable data analysis, it was necessary to group them according to certain patterns, mainly nomenclature.

This synthesis process was guided by the authors' interpretation and understanding of the texts and research, which introduces some limitations to the results of this overview, as previously mentioned. However, this does not invalidate the results or reflections presented in the following section; rather, it allows for the possibility that the same papers may be analysed by other researchers, who may obtain different results or highlight different aspects from those presented in this research

A data analysis tool called Julius AI was also used. This tool was adopted to construct a data visualisation relating two variables, contributing to the identification of research concentrations or gaps. It is important to note that the Julius.ai tool can only cross-reference two variables at a time. Since the complete dataset contains more than 15 variables, cross-referencing was carried out by pairing them. For example: subject vs authors' university; subject vs problem definition (single word); objective vs presentation of results; subject vs target audience; and objective vs method. The information obtained through the analyses is presented in the following section.

3 Results and discussion

Throughout the completion of the forms, the most recurring points among the studies were identified, revealing a convergence in the adversities explored, the object studied, and the main aspects requiring attention and improvement in understanding the information. By observing the frequency and concentration of certain variables, as well as their relevance, it was possible to compare and visually organise the main results mapped in this overview.

The first variable analysed was the authors. The objective was to understand the frequency of their occurrence based on the number of papers published by each author and included in the overview. The results range from 1 to 17 papers written. A total of 104 names were identified, with the majority having published between 1 and 4 papers on the topic, except for researcher Carla Galvão Spinillo, who has the highest number of papers published in this overview, followed by Patrícia Lopes Fujita. However, it is important to note that many papers were written by more than one author, which means that the graph in Figure 2 does not correspond to the individual output of each researcher, but rather to the number of times the professional's name appears in the overview.

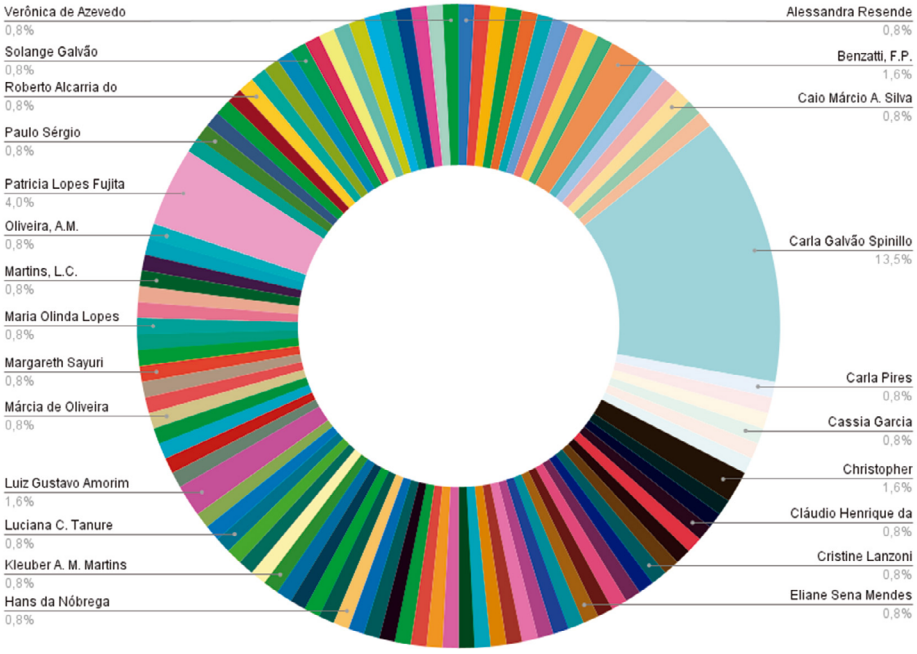

Figure 2 Author Table. Source: Authors.

Further analysis of the main authors' output revealed that many have produced a significant number of works on Information Design in the health field; however, their studies often focus on other topics, such as food packaging and products related to the female menstrual cycle, among others.

A similar pattern appears when examining the faculties or institutions with which these authors are affiliated. Although the landscape includes

many names, researchers are concentrated in certain institutions. The main institution is the Federal University of Paraná (UFPR), with 39 mentions. This university has a research group in this area, which explains its prominence, and Carla Spinillo, the most frequently published author, is a member of this group, further reinforcing this result.

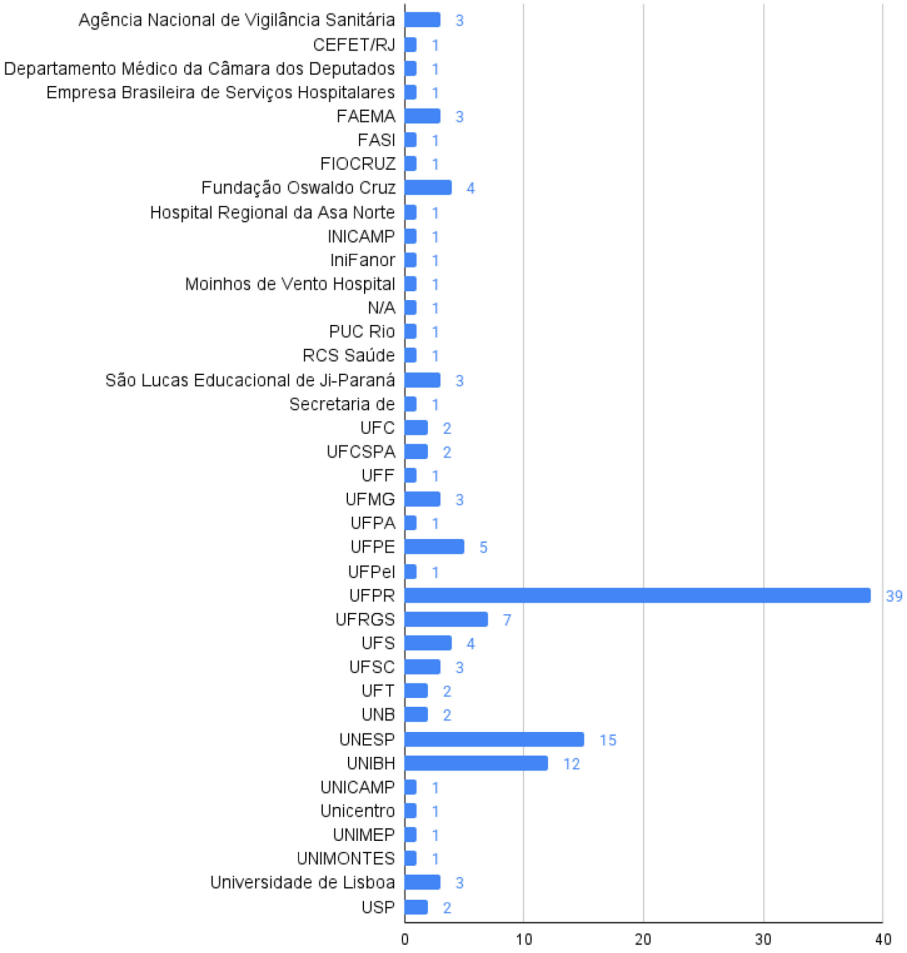

Figure 3 Graph of the Authors' Universities. Source: Authors.

Other universities that stand out include São Paulo State University (Unesp), the University of Belo Horizonte (UniBH), and the Federal University of Rio Grande do Sul (UFRGS). Several other institutions are listed, but the concentration of these studies within Brazilian academia, particularly in public universities, is evident.

This highlights the potential for collaboration between research centres at public universities and industry. Increasing the visibility of academic output and, above all, connecting research groups to enable more joint and collective work may help disseminate and implement the results of these studies in society's daily life.

Analysis of the object of study reveals a clear concentration of research focused solely on medication leaflets (Figure 4). Few papers explored

other related and complementary formats for instructions and information on medication use. Only three papers included packaging as an object of study, and none considered the blister pack of tablets as a possible informative format.

Focusing research solely on medication leaflets is limiting, especially as the leaflet, among all formats, contains the greatest number of norms, rules, and restrictions. Examining the blister pack, the medication box, or even new formats that could be incorporated into the packaging may be a more effective way to achieve short-term results.

Cross-referencing data on the authors' home universities with the subjects of their studies further highlights a concentration of research on a single object. Of the 41 works analysed, 31 focus on medication package inserts and were produced by authors from the Federal University of Paraná (UFPR). The fact that medication package inserts are a key area of investigation likely stems from the requirement, almost always mandatory, that they be included in product packaging. Yet, despite their importance, they appear to receive little attention from pharmaceutical manufacturers. Research into more appropriate ways of presenting these inserts could open a channel of dialogue with health authorities and help improve the regulation of such documents. This study also underscores the need to explore new formats, particularly through highly specialised research groups with in-depth knowledge of the subject. These researchers' perspectives on new objects of study could contribute to the development of standards and guidelines that are genuinely practical and capable of enhancing the user experience.

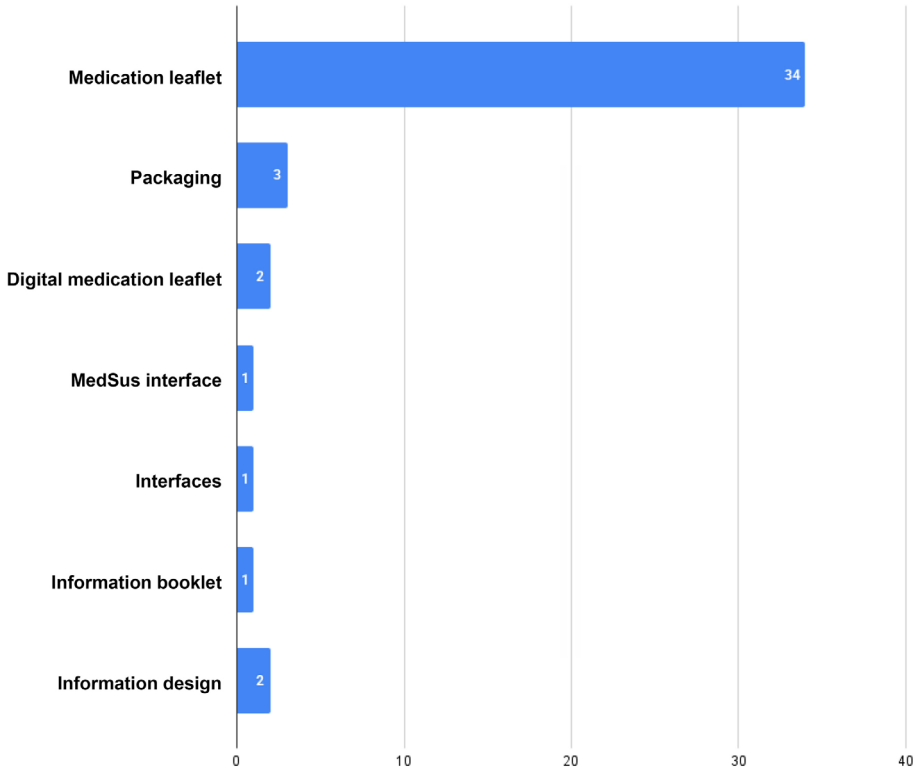

Figure 4 Graph of the Object of Study. Source: Authors.

Regarding the objective of the study, complexity and diversity increase. Many studies address similar points or objectives, but the form or detail of these objectives differs significantly. Another factor contributing to the difficulty is that, when we synthesise the objectives, we simplify their meaning. Thus, some papers fall under more than one synthesised objective, resulting in significant nuances. Table 3 presents this synthesis, highlighting the nuance of the results in the broad manner in which the frequency was established.

Table 3 Frequency of Objectives. Source: Authors.

Aim	Frequency
General analysis of medication information leaflets	+15 times
Analytical or bibliographic studies identifying gaps, understanding possible errors, and their impacts on users	around 5 times
Studies analysing typography, readability, legibility, and comprehension	+4 times
Studies proposing a graphic solution, redesign, or prototype	around 3 times
Thematic investigation from the perspective of regulations and legislation	2 times
General bibliographic research on the topic	+2 times
Analytical research focused on digital tools and formats	2 times
Studies analysing or validating visual materials that support patients, such as infographics and booklets	2 times
Investigation of the difficulties faced by the elderly in using multiple medications, considering memory strategies and the adequacy of medication information leaflets	2 times
Development of an informative booklet for family members and caregivers of children with Autism Spectrum Disorder	1 time
Analysis of the historical evolution of this object	1 time
Discussion of the information artefacts used by the elderly in their strategies for using multiple medications	1 time

The aim of this visualisation is not to quantify frequency, but to provide insight into the concentration and possible grouping of the objectives identified in the proposed overview. This is one of the variables with the greatest potential for interpretation, which creates opportunities for future revisions of this research from the perspective of other researchers.

In the analysis presented in this paper, most studies focused primarily on the package insert and its shortcomings, differing only in the research approach adopted. Few studies addressed other support tools in the context of medication, overlooking elements relevant to the effective transmission of the message.

Within the same context, another analytical approach can be adopted, grouping the papers according to the level of detail of the object. This variable depends on how the object is presented, handled, how the

information is organised, and the characteristics the researcher considered pertinent to explore in their research (Figure 5).

The item "Analysis of comprehension" is the most frequent, referring to the user's understanding of the object of study, followed by "Graphic analysis of the object of study", which highlights the importance of visual language combined with appropriate vocabulary.

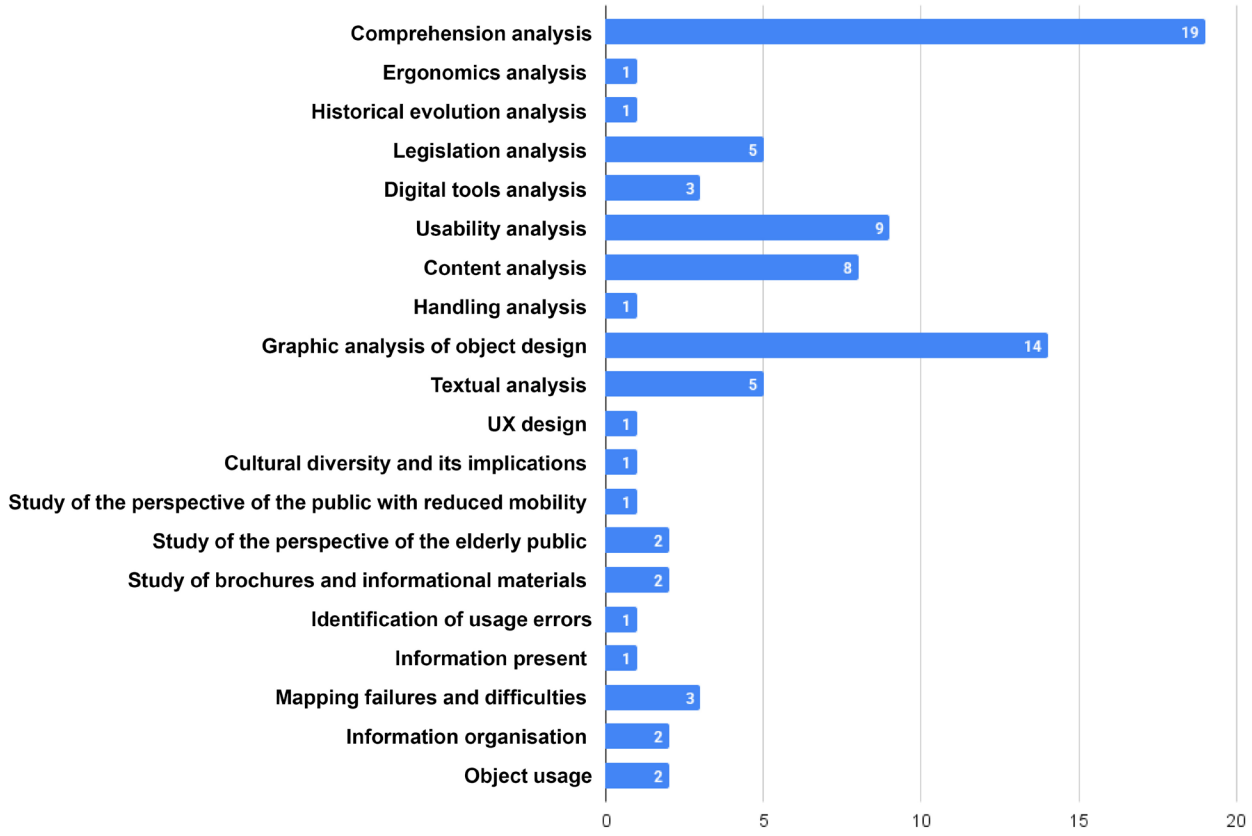

Figure 5 Object Detailing Graph. Source: Authors.

It is important to note that many other items have meanings similar to the two main ones, such as textual analysis, content analysis, and usability analysis, among others. This reinforces the concentration of existing research themes in very similar areas and problems, highlighting that expanding the research area could be highly beneficial for the development of the field.

Another issue present in the texts is "Detailing the problem in one word." The sentences in the object of study detailing column were condensed into a single word. The aim was to identify the researchers' main intention in their papers with one word, which is not necessarily among the study's keywords. "Poor information design" was predominant, followed by "Lack of understanding," which in this context does not necessarily result from poor information design.

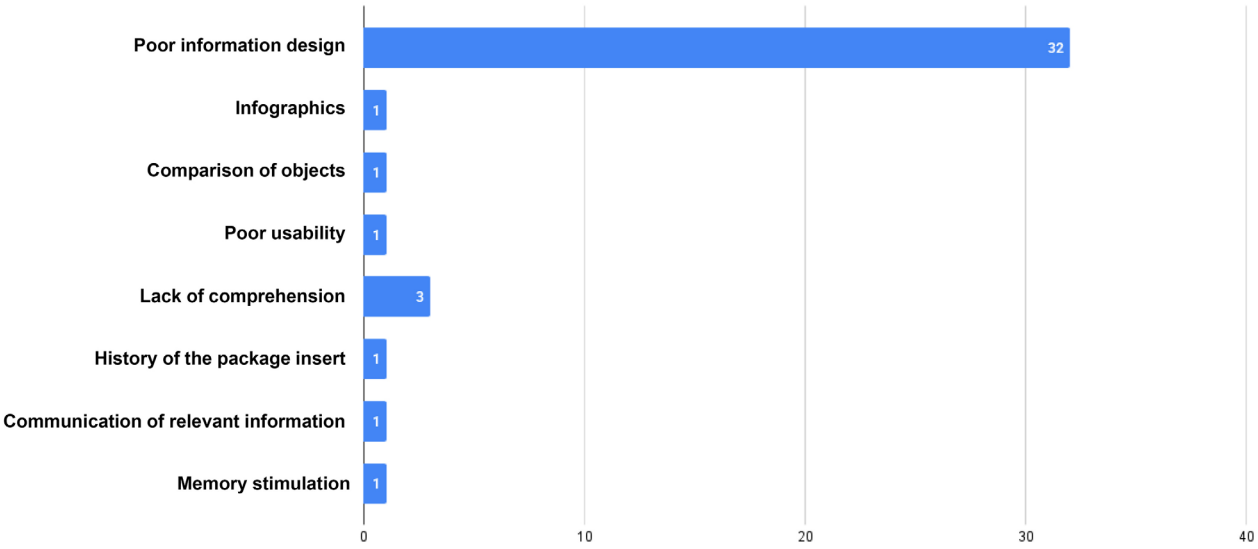

Figure 6 Graph showing the problem in a single word. Source: Authors.

When cross-referencing the word describing the problem with the object of study, a high concentration of studies on a single item is again evident (Figure 7). Most national research focuses on identifying design flaws in drug leaflets and, in some cases, in packaging or digital interfaces.

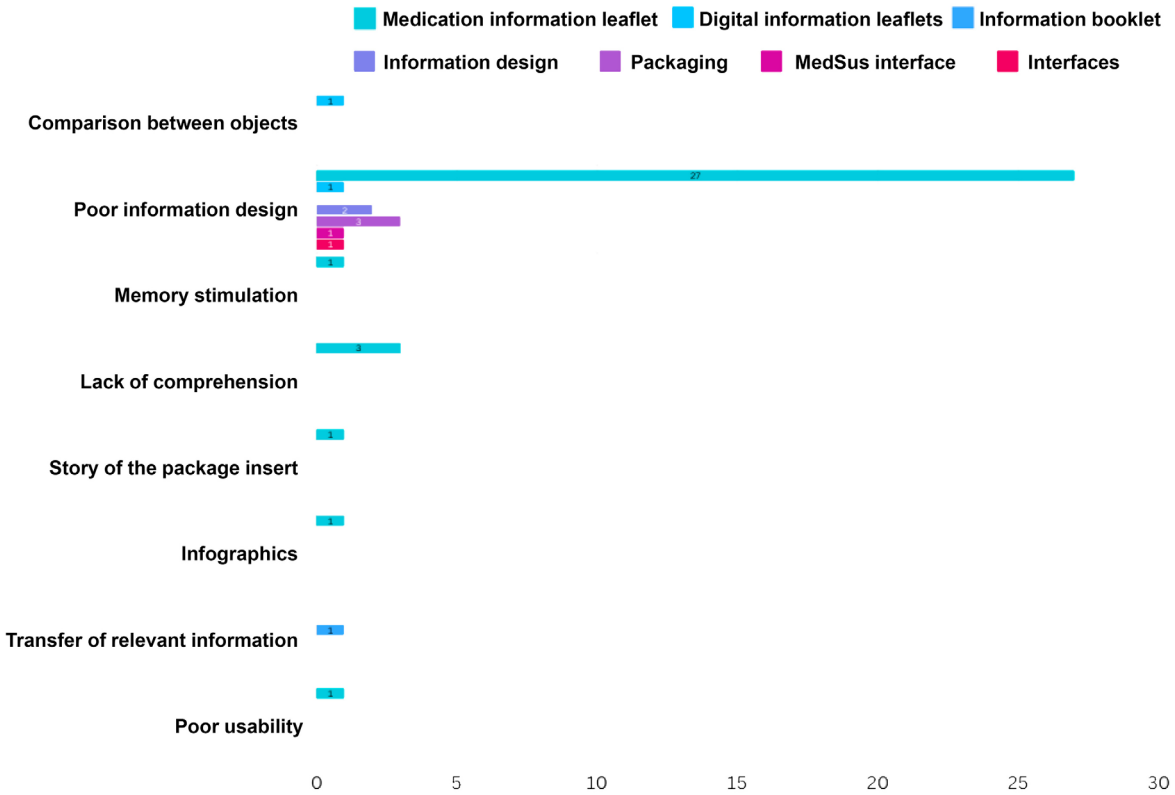

Figure 7 Crossing the object of study with the detailed description of the problem in one word. Source: Authors.

This concentration is also observed in the analysis of the target audience of the research. In most cases, the studies targeted adult medication users (Figure 8). Few studies addressed more specific audiences, revealing a field of possibilities for future research.

For example, there are few studies on the experience of elderly users, as well as a reduced number of papers relevant to People with Disabilities (PWD). People who use medications continuously or who need to manage multiple medications are also not represented in the mapped studies in the area. Presenting viable solutions for different audiences can be an interesting research path, and creating proposals that encompass more than one audience can reinforce the implementation of these proposals in practice.

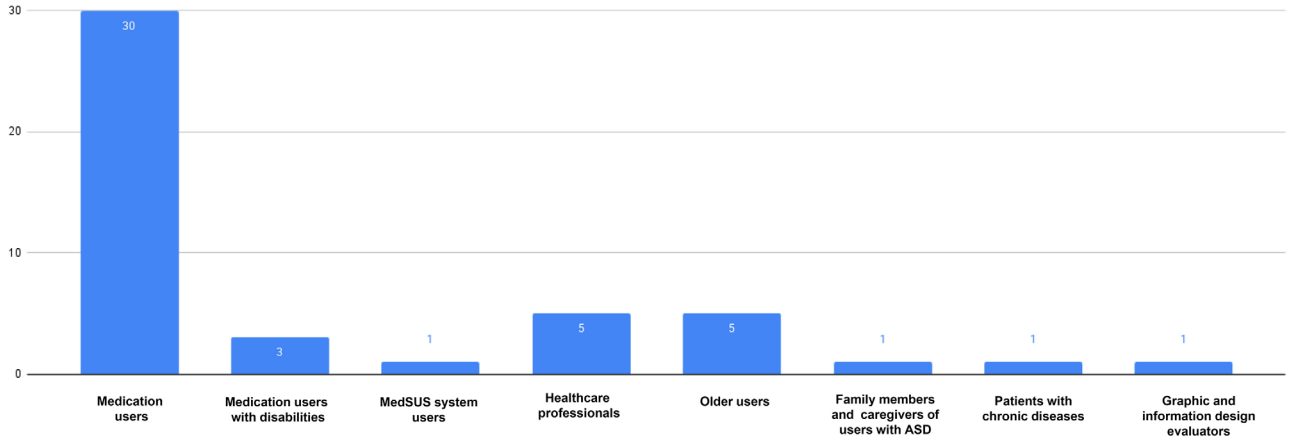

Figure 8 Audience Graph. Source: Authors.

Another important variable for understanding the field's landscape is the format in which results are presented. Based on the findings so far, one might expect most studies to present results as visual suggestions, prototypes, or other formats that facilitate the presentation of alternatives to the current model.

However, most papers present results only in text format, excluding visual elements that could aid comprehension (Figure 9). This variable is relevant because the way results are presented influences how information is conveyed within the paper. Although many papers discuss Information Design, emphasizing the quality of the information set and the length of the text, only three papers effectively presented a prototype as a solution to the issue.

The main concern with this variable is the importance of preserving these schematisations, as applying this research would be much easier if the suggestions and results included a prototype proposal that could be used in practice or validated.

It is necessary to consider that research is often not used by practitioners in the field. In other cases, those with the capacity to promote change may not belong to academia, so the publication of papers and research must be self-explanatory. If most results are presented only as text or tables, this creates an additional obstacle to implementing real changes in this field.

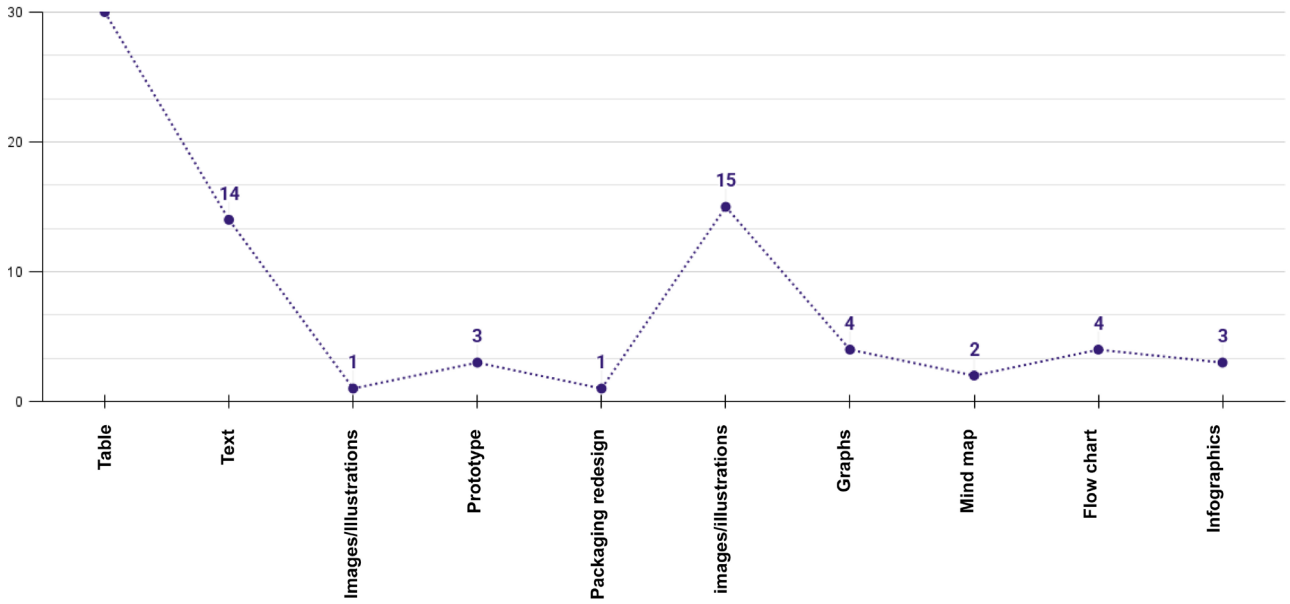

Figure 9 Results Presentation Graph. Source: Authors.

It is important to consider that research is often not consumed by people in the field. In other cases, those who can drive change may not belong to the academic world, so the publication of papers and research must be self-explanatory. If most results are presented only in text or tables, it creates yet another obstacle to implementing real change in this field.

Given the high concentration of studies on the same subject, one might expect to find, among the results, a visual solution or prototype illustrating how drug leaflets should appear to improve user experience and usage. However, such a visualisation is not provided. The overview includes several images, tables, and texts indicating areas for improvement, but does not actually propose this enhanced visual solution.

When cross-referencing the object of study with the format of results presentation, it is noted that, of the three papers proposing a prototype, only one refers to the traditional drug leaflet (Figure 10). The other two present prototypes for digital leaflets and informational booklets.

In other words, there is a vast field of research with significant potential for practical application. This justifies the results obtained when analysing the panorama study method (Figure 11). In most cases, these are analytical studies that identify and evaluate the strengths and weaknesses of the object studied. No study was found that, for example, implemented an intervention to apply suggestions and improvements already proposed or mapped in previous work.

Finally, we analysed the keywords, which reveal another interesting point identified in this mapping. Ninety-five different keywords were found in 41 papers, most of which share the same object of study (Figure 12). Therefore, the complexity of finding papers on the topic is likely to increase considerably.

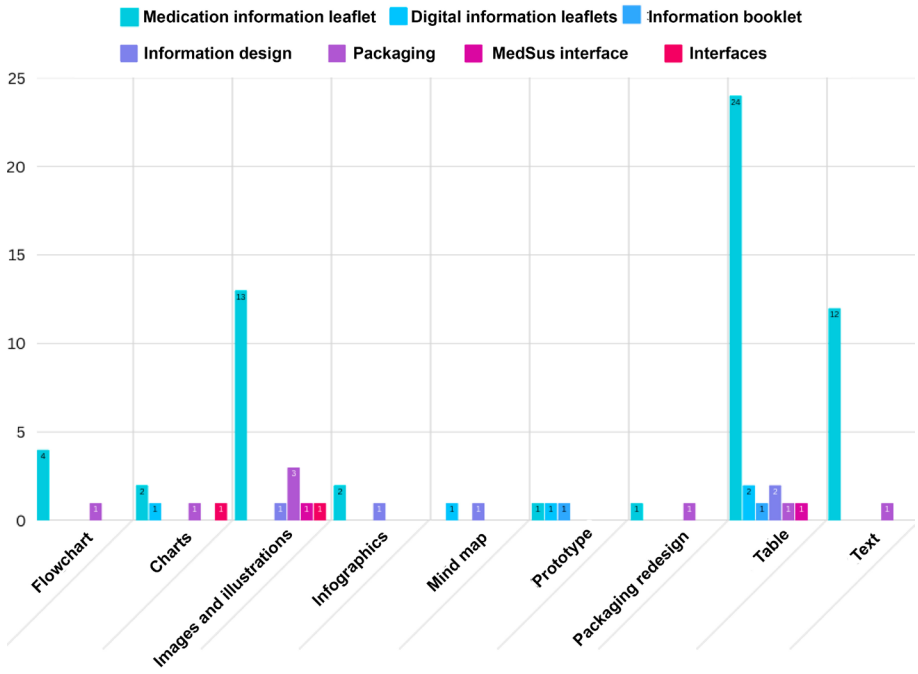

Figure 10 Cross-section of the object of study × Presentation of results. Source: Authors.

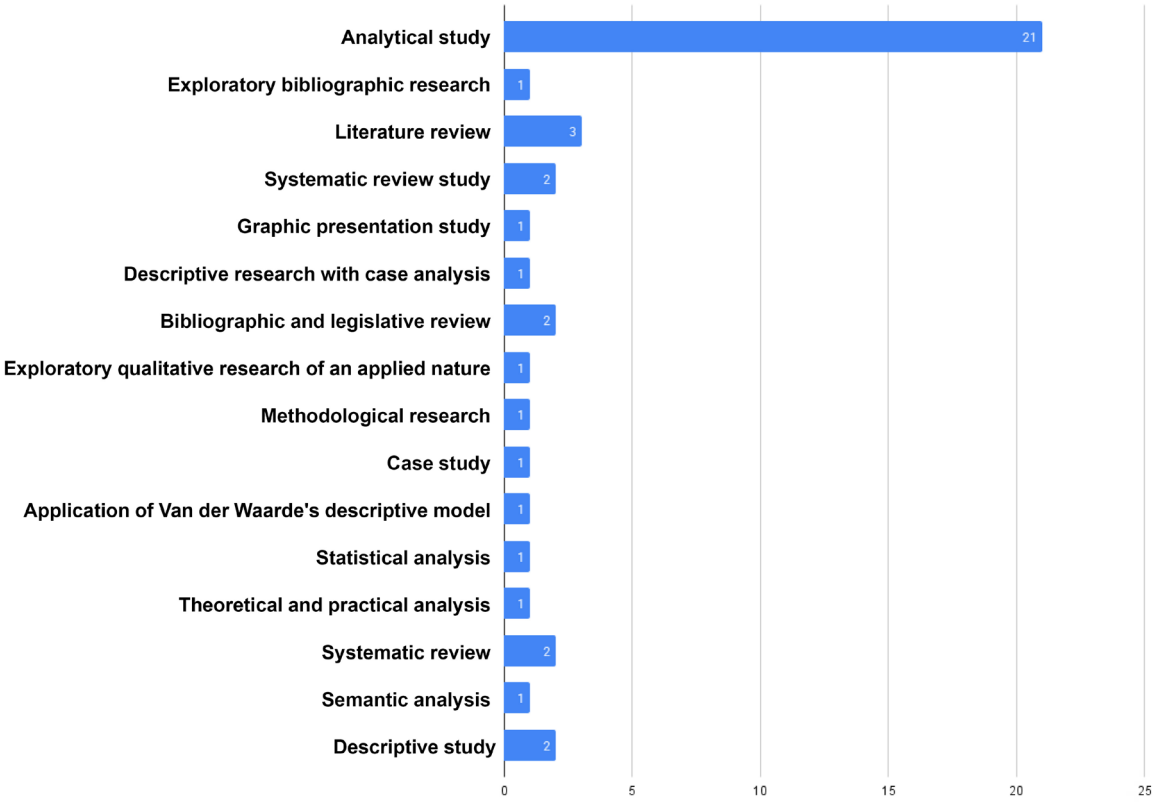

Figure 11 Method Graph. Source: Authors.

This analysis highlights the importance of considering the most frequent keywords when selecting them for a paper. Understanding which keywords are used enables new searches to use the same terms and thus integrate into the same search group, facilitating access to papers and research.

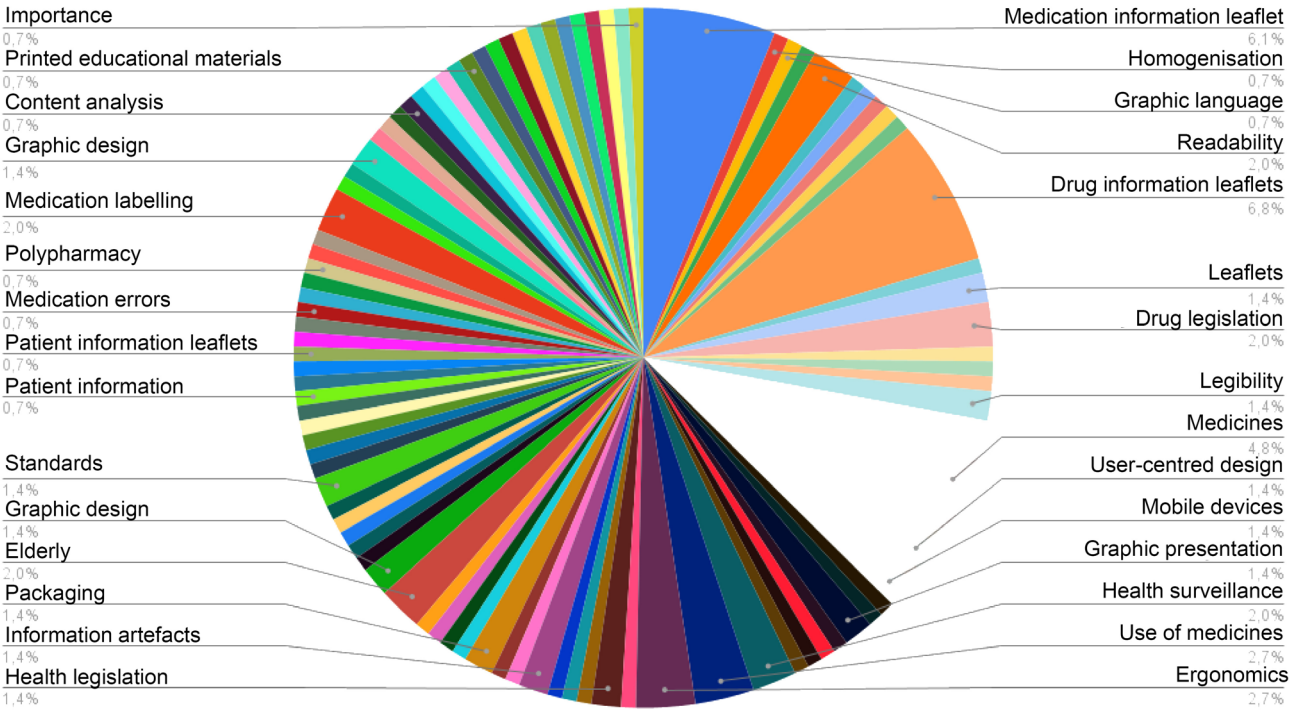

Figure 12 Keyword Graph. Source: Authors.

4 Final considerations

This study aimed to provide an overview of Brazilian research that analyses medication leaflets from the perspective of Information Design. The results indicate that many areas within this field remain unexplored. Beyond leaflets, future research should broaden its scope to include blister packs, outer packaging, prescriptions, online information, and new formats that could complement those currently available to patients.

Another underexplored area concerns the target audience and the diverse population segments affected, who could benefit from practical improvements. Further investigation into the impact of this field on the lives of older people, people with disabilities, polypharmacy users, neurodivergent individuals, and other groups could enrich the existing body of knowledge.

It is also important for future research to adopt more intervention-focused approaches, testing practical applications and experimenting with new prototypes, proposals, and models that can be tested and validated. This could facilitate the transfer of the knowledge generated, currently concentrated in academia, into everyday life.

This mapping showed that Brazilian researchers have produced a substantial body of knowledge capable of stimulating debate and progress in the field, particularly in sectors that drive changes to prevailing structures.

As previously mentioned, the goal of this overview was not to evaluate the quality of research in the field. Instead, it sought to provide a summary that would give visibility to the studies conducted, reduce the isolation of smaller groups, authors, and publications, and thereby facilitate the development of new research that continues or expands upon existing work.

It is hoped that this study has achieved this goal, despite its limitations, by contributing to a deeper understanding of the subject and highlighting areas that still require investigation. Given the sensitivity of the topic and the relevance of these issues to the daily lives of Brazilians, contributing to the field through this and future work is highly valuable and has the potential to generate a significant positive impact on people's lives.

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