

Perspectives of Information Design in the use of simple language in women's health articles on Wikipedia

Isabela Correa Macena¹

<https://orcid.org/0000-0003-4638-6984>

Maria José Vicentini Jorente¹

<https://orcid.org/0000-0002-0492-0918>

¹ Universidade Estadual Paulista, Marília, SP, Brasil

Abstract: Information Design is essential for enhancing the accessibility and comprehension of complex health information, particularly in women's health, where specialized terminology and sensitive content require strategies that make knowledge understandable and actionable. In this context, widely consulted platforms such as Wikipedia illustrate both the challenges of effectively communicating health knowledge and the potential of applying design and language simplification strategies, as exemplified by its Simple English version, which reduces cognitive barriers and facilitates broader access to essential information. Building on this perspective, the present study examines how Information Design resources are structured and adapted in English and Simple English Wikipedia articles on women's health, aiming to evaluate whether language simplification and design strategies preserve informational integrity while enhancing accessibility. Following this framework, a purposive sample of 12 articles was analyzed comparatively to examine women's health content in both the standard English Wikipedia and its Simple English counterpart. The analysis highlights the central role of visual and structural elements in supporting comprehension, showing that illustrations and well-organized summaries can compensate for reductions in textual complexity. Overall, the study demonstrates that the integration of Information Design and language simplification in digital health resources improves the clarity and usability of women's health information, emphasizing the importance of accessible knowledge for supporting informed health practices.

Keywords: Information Design; e-health; women's health; simple language; plain language

1 Introduction

In contemporary society, the rapid expansion of Information and Communication Technologies (ICTs) has profoundly transformed how individuals seek, access, and share knowledge, particularly in the health domain (Tennant *et al.*, 2015; Arachchi *et al.*, 2023). Digital environments have emerged as essential resources for the dissemination of health-related information, enabling unprecedented access to data and supporting informed decision-making across diverse populations. This scenario underscores the importance of understanding how information is organized and presented, as the sheer volume and complexity of digital content can pose significant comprehension challenges.

Consequently, the field of Information Design (ID) has gained increasing relevance as a framework for structuring information in ways that facilitate understanding and cognitive assimilation. Traditionally defined as the combination of textual, visual, and spatial elements into cohesive communicative units, ID seeks to enhance both the clarity and usability of information (Horn, 1999). Garrett (2002) further emphasized that effective design should prioritize comprehension and functional navigation, integrating visual and interactive consistency to guide users intuitively through complex informational landscapes. As such, ID is a multidimensional strategy that aligns content organization with cognitive and perceptual principles.

Moreover, the intersection of Information Design and health communication has become a critical area of scholarly inquiry. Health information is inherently complex, often involving specialized terminology, multifaceted concepts, and sensitive subject matter. In this context, ID offers tools to structure and sustain such information, thereby reducing cognitive load and supporting users' comprehension (Goldchmit, 2024). By integrating structural elements and textual clarity, designers can mediate the accessibility of health content, ensuring that critical information is both understandable and actionable for diverse audiences.

In parallel, linguistic accessibility emerges as a fundamental dimension of effective health communication. Within the principles of Information Design,

textual simplification complements visual and structural strategies, creating environments in which information is cognitively manageable and semantically clear (Sanches; Bueno, 2022; Mont'Alvão; Clemente; Ribeiro, 2021). This alignment highlights the potential for combining language simplification with ID strategies to foster equitable access to knowledge, particularly in domains with high social and personal stakes, such as health.

Within this framework, Wikipedia represents a significant case study for exploring the application of these principles. Launched in 2001 as a collaborative, multilingual encyclopedia, Wikipedia has grown into one of the most accessed knowledge repositories worldwide (Wikipedia, 2025). Despite its extensive coverage, research consistently demonstrates that health-related articles often present readability challenges, limiting their accessibility to audiences with varying literacy or language proficiency (Candelario *et al.*, 2017; Simpson *et al.*, 2018; Suwannakhan *et al.*, 2019; Yacob *et al.*, 2020). In response to these challenges, Simple English Wikipedia was developed as a complementary platform, adapting articles using simplified vocabulary and grammatical structures to enhance comprehension without sacrificing informational integrity (Simple English Wikipedia, 2023a).

Building on this approach, the accessibility of health information is particularly critical in the context of women's health. Low health literacy can hinder understanding of topics such as contraception, prenatal care, fertility, and sexual health, and may affect health behaviors and outcomes (Kilfoyle *et al.*, 2016). Therefore, ID and language simplification can contribute to more equitable access to knowledge, helping women make informed decisions and navigate complex health information more effectively.

Given the documented challenges in health literacy, particularly in the domain of women's reproductive health, and the widespread use of Wikipedia as a primary source of health information, it becomes crucial to investigate how such information is presented and structured. Therefore, examining English and Simple English Wikipedia provides an opportunity to understand whether digital health resources are designed in ways that genuinely support comprehension, mitigate linguistic barriers, and enhance equitable access to critical health

information. Accordingly, this study is guided by the following research concern: are Information Design resources organized in the English and Simple English versions of Wikipedia in ways that support the comprehension of articles related to women's health?

Within the scope of the above, this study aims to examine how Information Design resources are structured and adapted across English and Simple English Wikipedia articles related to women's health, in order to understand how simplification practices affect accessibility and informational integrity. More specifically, the study seeks to contextualize simple language as an Information Design strategy within digital health environments and to analyze how structural, visual, and content-related elements are organized and transformed between the two Wikipedia versions.

2 Methodology

The used methodology is qualitative in nature, with a descriptive-exploratory typology. The selection of the articles analyzed in this study followed a structured procedure grounded in both thematic relevance and conceptual coherence. First, the division into the three health aspects, defined as physical, mental and public health (Simple English Wikipedia, 2024f), was adopted from the structure presented in the Simple English Wikipedia "Health" page, which frames health according to the World Health Organization's multidimensional definition of well-being. This tripartite organization provides a coherent analytical lens for examining women's health topics and ensures that the selected articles represent distinct yet complementary dimensions of women's well-being.

Within each of these three categories, the choice of specific articles was guided by the WikiProject Women's Health list (Wikipedia, 2024n), a collaboratively curated resource that identifies the most relevant and frequently accessed articles related to women's health on English Wikipedia. This list incorporates community-based assessments of both quality and thematic importance, which consider not only pageviews but also editorial evaluation of coverage depth, accuracy, and significance within the field. Prioritizing articles

classified as higher-importance and widely referenced ensures that the sample reflects topics with notable relevance to women's health communication.

The present article represents an initial and exploratory segment of a broader research project, a reduced and purposefully selected sample of 12 articles was analyzed. This sample includes topics from the three health dimensions and corresponds to entries that: (a) are available in both English Wikipedia and Simple English Wikipedia; (b) address women's health directly; and (c) represent core and frequently consulted topics according to WikiProject Women's Health. Below, Chart 1 presents the articles analyzed in this study.

Chart 1 - Analyzed articles related to women's health

Health issue	Article	Wikipedia	
		English	Simple English
Physical Health	Sexually transmitted infection	<u>Sexually transmitted infection</u>	<u>Sexually transmitted disease</u>
	Polycystic ovary syndrome	<u>Polycystic ovary syndrome</u>	<u>Polycystic ovary syndrome</u>
	Contraception	<u>Birth control</u>	<u>Birth control</u>
	Menopause	<u>Menopause</u>	<u>Menopause</u>
Mental health	Major depressive disorder	<u>Major depressive disorder</u>	<u>Depression (mental illness)</u>
	Post-traumatic stress disorder	<u>Post-traumatic stress disorder</u>	<u>Post-traumatic stress disorder</u>
	Generalized anxiety disorder	<u>Generalized anxiety disorder</u>	<u>Generalized anxiety disorder</u>
	Postpartum depression	<u>Postpartum depression</u>	<u>Postpartum depression</u>
Public health	Abortion	<u>Abortion</u>	<u>Abortion</u>
	Sexual Abuse	<u>Sexual abuse</u>	<u>Sexual abuse</u>
	Female genital mutilation	<u>Female genital mutilation</u>	<u>Female genital mutilation</u>
	Violence against women	<u>Sexually transmitted infection</u>	<u>Sexually transmitted disease</u>

Source: Simple English Wikipedia (2023b, 2024a-2024e, 2024g-2024L) e Wikipedia (2024a-2024e, 2024g-2024m).

Regarding data collection, all articles were retrieved directly from their respective Wikipedia pages. To minimize potential discrepancies arising from the platform's constantly evolving content, every article was collected on the same date, ensuring consistency across the dataset. For the purposes of the analysis, a comparative approach was adopted, examining articles related to women's health in both the standard English version of Wikipedia and its Simple English counterpart. To guide the analysis, a comprehensive checklist was developed, incorporating a range of structural and content-related criteria. The elements included in this checklist are summarized in Chart 2.

Chart 2 - Checklist for comparing articles

Assessed Aspect	Analysis criteria
Illustrations	Not available
	Available, different from the original article
	Available, identical to the illustrations in the original article
Infobox	Not available
	Available
Completeness of topics (number of similar topics covered in relation to the original version)	Few or none (below 40% of the topics)
	Some (above 40% of the topics)
	Most (above 70% of the topics)
	All (above 95% of the topics)
References	Not available
	Available

Source: Drawn up by the authors.

The construction of the checklist is grounded in established methodological approaches used in Information Design, plain language studies, and evaluations of health information in digital environments. Although no standardized instrument exists specifically for comparing English and Simple English Wikipedia versions, the checklist draws on ID principles established by classical authors, such as Jacobson (2000), Horn (1999) and Garrett (2002), as well as on recent developments proposed by Jorente, Nakano and Padua (2020). Therefore, the checklist used in this study synthesizes these theoretical

foundations, functioning as a structured, conceptually informed tool for examining how simplification influences the presentation and integrity of women's health content on Wikipedia.

Each dimension included was selected because it represents a distinct aspect of how information is visually structured and epistemically validated on collaborative platforms such as Wikipedia. Together, these criteria enable a multidimensional comparison of the English and Simple English versions of the selected articles, going beyond linguistic simplification to examine how content is transformed in terms of accessibility and informational integrity.

Thus, illustrations were included as a key criterion because they perform a central role in Information Design, particularly in health communication, where visual representations support the comprehension of complex concepts (Jorente and Silva, 2022). According to ID principles, images serve as cognitive anchors that facilitate recognition, reduce textual overload, and support multimodal understanding. In simplified environments such as Simple English Wikipedia, illustrations may be retained, modified, or omitted, each choice affecting how users interpret and navigate the topic. Comparing the two versions allows to assess whether the simplification process preserves or reduces the visual supports that contribute to broader accessibility, especially for readers with lower literacy or limited familiarity with medical terminology.

In a similar note, the presence or absence of infoboxes represents another relevant structural dimension. Infoboxes are Information Design elements in Wikipedia articles, functioning as visual summaries that consolidate essential information into a concise and easily navigable format. Such structuring also contributes to wayfinding, helping readers understand where they are within an informational environment and how to navigate it efficiently (Garrett, 2002). When considered through this lens, infoboxes can be understood as visual summaries that condense key data into an immediately accessible format, reducing cognitive effort and improving orientation before deeper engagement with the full text. Assessing whether these elements are maintained or omitted in the Simple English versions therefore offers insight into how simplification practices reshape this organizational feature.

The completeness of topics was included to evaluate the extent to which informational content is preserved during simplification. While linguistic simplification aims to make texts more accessible, reductions in conceptual scope may compromise the integrity or usefulness of the information (Rodríguez-ferreira *et al.*, 2016). Assessing the proportion of topics retained from the original version makes it possible to identify whether simplification maintains essential content or results in omissions that could affect readers' understanding of women's health issues. This criterion aligns with previous studies on Wikipedia's readability and reliability (e.g. Candelario *et al.*, 2017; Simpson *et al.*, 2018; Suwannakhan *et al.*, 2019; Yacob *et al.*, 2020; Handler *et al.*, 2021), which emphasize that clarity must coexist with completeness for health information to be effective.

To evaluate informational completeness, each Simple English article was compared to its corresponding English Wikipedia version using a set of predefined thresholds. The proportion of topics retained from the original article was categorized into four levels:

- a) few topics - less than 40% of the original structure;
- b) some topics - between 40% and 70%;
- c) most topics - between 70% and 95%;
- d) all topics - above 95%.

These categories support a systematic identification of informational reductions or omissions resulting from the simplification process. The thresholds were established to differentiate between substantial, moderate, and minimal reductions in content, ensuring consistency in the comparative analysis across all selected articles.

Finally, the criterion addressing references relates to the reliability and verifiability of content, which are core principles of Wikipedia and essential dimensions of trustworthy health communication. The presence of citations to reputable sources supports the accuracy of claims and provides readers with pathways to more in-depth knowledge. This dimension was included not only for its general relevance to information quality, but also because previous research has examined reference patterns in medical and health-related

Wikipedia articles, highlighting their importance in ensuring evidence-based content (e.g. Mendes *et al.*, 2021). Given this background, reference analysis was incorporated into the checklist to verify whether this dimension is preserved, modified, or weakened in the Simple English versions of articles specifically related to women's health, an area where the accuracy and traceability of information are particularly critical due to the social implications associated with these topics.

In addition to enabling a structured comparison, the selected methodological criteria provide the analytical basis necessary to interpret how simplification practices in Wikipedia reshape the informational experience of readers, particularly in the context of women's health. Each criterion corresponds to a specific dimension of Information Design, such as visual hierarchy (illustrations), structural scaffolding (infoboxes), semantic scope (topic completeness), and epistemic grounding (references). By analyzing these dimensions in parallel, the study is able to identify patterns that reveal the underlying logic of simplification: what tends to be preserved, what is reduced, and what is deprioritized in the transformation from English to Simple English.

3 Information design

The field of Information Design (ID) has evolved from efforts to organize and communicate information in ways that support clarity and meaningful interpretation. Rather than focusing only on visual form, ID recognizes that informational processes always occur within concrete contexts of use. In his seminal work *Information Design*, Jacobson (2000) emphasizes that there is no universal method capable of ensuring the effectiveness of a communicational solution. Its success depends on contextual factors such as the environment in which information is presented, the media used to convey it, and the characteristics of the audiences who interact with it. From this perspective, ID operates as a contextual and adaptive practice, in which attention to real conditions of application is more decisive than strict adherence to predefined models or prescriptive rules.

In examining the foundations of ID, Horn (1999) contends that communicational effectiveness depends on the capacity to transform information into a resource that can be meaningfully used. This view assumes that ID must support both interpretation and action, drawing upon multiple dimensions of human experience. By integrating cognitive and functional considerations, this approach broadens the scope of ID and anticipates discussions that would become increasingly prominent in the digital landscape.

Building on this conceptual lineage, Garrett (2002) proposes a structured view of how digital experiences take form, emphasizing the need to coordinate decisions that range from highly abstract intentions to their concrete materialization in interfaces. His framework divides the design process into interrelated layers, through which strategic aims are progressively translated into functional arrangements and surface-level elements. Within this structure, ID occupies the skeleton plane by integrating functional and informational considerations into coherent decisions about how information is organized, presented, and aligned with interaction flows.

Thus, Garrett (2002) characterizes Information Design through three main aspects: grouping, which concerns the logical organization of informational elements in ways that reflect familiar cognitive structures; representation, which involves the visual form of information, including typographic, graphical, and symbolic choices that support clarity and intelligibility; and orientation, which helps users understand their position and perceive possible paths within the environment. By articulating these elements, ID transforms the conceptual architecture of a system into tangible interfaces that promote experiences that are functional and meaningful.

As digital environments have become increasingly participatory, the demands placed on ID have expanded in ways that reinterpret the principles outlined in earlier models. In this context, Jorente, Nakano and Padua (2020) argue that Information Design must accommodate modes of engagement characterized by collective authorship, continuous reinterpretation of content, and the circulation of information across fluid networks. Rather than designing solely for stable use scenarios, designers must anticipate and support

interactions that evolve through user participation itself. Souto and Fonseca (2023) underscore this shift by emphasizing that the effectiveness of digital interfaces increasingly depends on their capacity to sustain flexible and scalable informational experiences that adapt to diverse contributions and patterns of involvement.

In light of these developments, ID can be understood less as a set of techniques for arranging content and more as an epistemic framework that shapes how individuals encounter and make sense of the informational worlds they inhabit. Its contribution lies in establishing conditions that foster interpretive stability amid systems defined by constant variability, whether through the layering of structures, the negotiation of meaning among participants, or the temporal dynamics of digital interactions. By attending to how informational environments structure attention, delimit possibilities, and mediate forms of engagement, ID positions itself as a critical instrument for enabling individuals to act with discernment within increasingly complex communicational ecologies. This perspective becomes particularly salient in fields where the interpretive stakes are high and where the capacity to navigate information effectively bears concrete consequences for well-being, as in the case of health communication (Goldchmit, 2024), which the next section examines in depth.

4 Simple language as an Information Design resource for health communication

Foundational work in Information Design has long emphasized that language is a core component of communicative clarity. Classical authors such as Horn (1999), Pettersson (2010), and Frascara (2015) argue that textual intelligibility, when aligned with visual and cognitive considerations, is essential for enabling users to process and act upon information. Against this disciplinary background, the contemporary movement toward simple or plain language represents not a break with tradition but the consolidation of longstanding concerns. Emerging in English-speaking countries in the 1970s and gaining traction particularly in governmental communication, simple language initiatives sought to simplify

writing and information organization to make content more intuitive and usable (Fischer, 2018).

As the plain language movement expanded internationally, culminating in the establishment of the International Plain Language Federation in 2007, it gained formal recognition as a framework for improving public communication. The Federation defines plain language as communication whose writing, structure, and design allow intended users to find, understand, and effectively use the content (International Plain Language Federation, 2024). In scholarly discussions, this principle is further developed by authors such as Petelin (2010), who argues that plain language is not a simplified or diminished form of discourse, but a purposeful effort to eliminate ambiguity, jargon, and structural obstacles that impede comprehension.

This orientation toward users' needs aligns with broader Information Design concerns: producing texts that are cognitively manageable and appropriately structured enhances comprehension for readers with varied literacy levels (Greene, 2018). As these developments unfolded, plain language shifted from a technique focused solely on rewriting to a strategic component within Information Design that supports the effective mediation of information. Mont'Alvão, Clemente and Ribeiro (2021) reinforces this connection by emphasizing the role of plain language in promoting social inclusion and enabling the exercise of citizenship. Communicative clarity, particularly when complex or specialized content is involved, becomes essential for ensuring that individuals can understand their rights and make autonomous decisions.

Complementing these perspectives, Goldchmit (2024) argues that contemporary health challenges require long-term integration between design and health practices. Within this context, ID emerges as a strategic field capable of leveraging networked resources to support the development of personalized and interactive information services. According to Goldchmit (2024), adaptability to emerging conditions is a defining characteristic of design, and it becomes especially relevant in dynamic health environments. When ID is approached as a participatory, evidence-based, and results-oriented practice, it

strengthens its role as a key resource for generating value in the health sector and expanding its social impact.

In sum, in the field of health communication, the articulation between Information Design and plain language reveals a conceptual and methodological movement that surpasses the merely instrumental function of simplifying texts. It instead establishes a mode of mediation grounded in inclusion, intelligibility, and socially situated action. This alignment highlights the capacity of ID to organize and structure information in ways that support cognitive assimilation, while plain language provides the discursive accessibility needed for users to navigate complex content with autonomy. Together, these perspectives offer a guiding orientation for the production of health information, fostering conditions in which individuals can understand available resources and exercise informed decision-making.

5 Information Design in the studied versions of Wikipedia

Wikipedia's emergence can be understood as part of a longer lineage of encyclopedic projects that sought to organize and disseminate human knowledge. Classical initiatives, from Diderot and d'Alembert's *Encyclopédie* to the *Encyclopaedia Britannica*, were grounded in the Enlightenment ideals of textual authority, stability, and expert-driven verification (Ayers; Matthews; Yates, 2008). Within these traditions, reliability was ensured through centralized editorial control and strict authorship hierarchies. The rise of digital technologies in the late twentieth century, however, challenged this model by enabling open, distributed, and iterative modes of knowledge organization inspired by free-software cultures and early online communities.

It was within this shifting epistemic landscape that Wikipedia was launched in 2001, initially as a complementary experiment to the more hierarchical and expert-oriented Nupedia. The adoption of the wiki model marked a decisive departure from the conventional editorial paradigm: instead of relying on a closed group of specialists, Wikipedia enabled real-time, collaborative editing by any willing participant. This reconfiguration displaced the locus of authority from centralized gatekeeping to a form of horizontal

negotiation among thousands of volunteers. As Ayers, Matthews and Yates (2008) observe, this transformation reframed the encyclopedia as a living document shaped by the collective actions and interpretive efforts of its contributors.

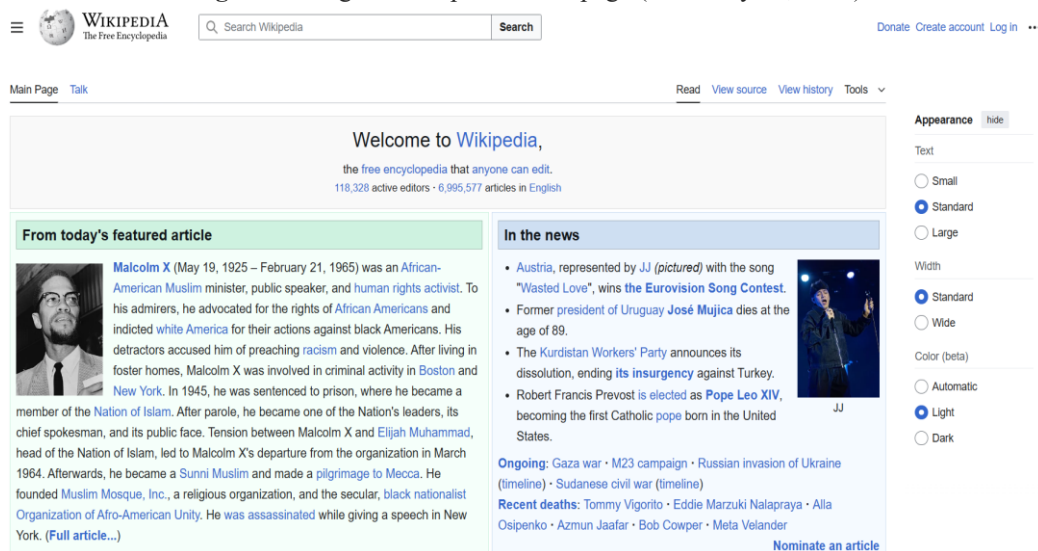
These transformations also introduced new epistemological implications. The platform's openness requires the development of community-based regulatory mechanisms, such as policies, guidelines, and editorial practices that seek to maintain informational rigor while accommodating the fluidity inherent to collaborative authorship. Consequently, Wikipedia's transformation illustrates a broader shift in how knowledge is produced and validated in digital environments: authority becomes procedural rather than positional, and reliability emerges from transparent and iterative practices rather than from predetermined expert credentials. This sociotechnical configuration is central for understanding how Wikipedia organizes, structures, and communicates information, particularly when comparing different linguistic versions and their respective design strategies.

The scale of Wikipedia's multilingual ecosystem is perhaps most clearly illustrated by its English edition, the first and largest version of the project, which surpassed six million articles in 2024 (Wikipedia, 2024f). Its extensive coverage reflects years of continuous volunteer contributions, but it also introduces barriers for readers who may struggle with the linguistic or conceptual complexity of its entries. To broaden accessibility, the Simple English Wikipedia was created as a complementary environment that aims to recalibrate language without reducing informational substance. Its guidelines emphasize basic vocabulary and clear sentence structures as tools for making complex topics more approachable, while still requiring articles to remain accurate, detailed, and informative (Simple English Wikipedia, 2023a).

In order to examine how Information Design is adapted across the two environments, it is essential to analyze the structure of their respective home pages. As entry points to the platform, home pages function as demonstrations of each environment's organizational and presentational logic, revealing the

design strategies that guide users' navigation, access to content, and initial comprehension. Figure 1 illustrates the home page of the English Wikipedia.

Figure 1 - English Wikipedia home page (as of May 19, 2025)



Source: Wikipedia (2024f).

The English Wikipedia home page presents a comparatively complex structure, characterized by a wide array of informational modules, such as featured articles, thematic highlights, trivia sections, and current events. This abundance of links and categories supports efficient navigation for experienced users, yet it may also generate visual overload for individuals with limited familiarity with the platform or lower levels of digital literacy.

Beyond this structural complexity, Wikipedia provides a universal “Appearance” menu that allows users to customize various interface elements. This menu includes options for adjusting font size, modifying the width of text containers, and changing the background color of pages, the latter of which remains in testing but is already accessible in both the English and Simple English versions. Figure 2 illustrates how these customization features appear in the Simple English Wikipedia.

Figure 2 - Simple English Wikipedia home page (as of May 19, 2025)



Source: Simple English Wikipedia (2023a).

The Simple English Wikipedia adopts a markedly more minimalist visual design than the English version, relying predominantly on a single color, blue, to structure its interface. This reduction in visual complexity aligns with the underlying philosophy of Simple English, which emphasizes clarity and ease of navigation. The streamlined interface supports these goals by minimizing potential distractions and cognitive load, while still maintaining the informational quality and coherence of the content.

It is noteworthy that the Simple English Wikipedia version lacks a news section, as its page is updated less frequently, reflecting the less frequent updates to its home page. As of May 19, 2025, the most recent update occurred on March 17, 2023. In contrast, the English home page is updated daily with new information and current events, which provides access to more recent content and creating a more dynamic and interactive user experience.

In summary, the structural and design differences between the English and Simple English Wikipedia reflect the distinct priorities of each platform

regarding the efficiency and effectiveness of content assimilation by its users and diverse audiences. Whereas the English version provides a broader range of information and interactive features, the Simple English version emphasizes simplified navigation and streamlined visual presentation.

These observed structural and visual differences between the English and Simple English Wikipedia underscore the role of Information Design in shaping how content is perceived and navigated. The English version's complex layout and interactive features illustrate strategies that prioritize comprehensive access to information for experienced users, supporting exploration and engagement through multiple pathways. In contrast, the Simple English version demonstrates how ID principles can be employed to enhance clarity and reduce cognitive load, thereby facilitating comprehension for users with diverse linguistic or digital literacy backgrounds. These design choices highlight the capacity of ID to mediate the balance between informational richness and accessibility, illustrating that effective knowledge communication depends on aligning content presentation with users' cognitive and perceptual capacities.

6 Women's health on Wikipedia

Wikipedia has become a central platform for disseminating health information, operating as a dynamic and widely accessible space for knowledge exchange. Its high visibility in search engines, combined with continuous updates from a globally distributed community of editors, ensures that health-related content reaches diverse audiences, including medical professionals, patients, and the general public. This accessibility establishes Wikipedia as a key resource in global public health, where the circulation of accurate and timely information can influence individual decision-making and societal awareness (Heilman *et al.*, 2011). The sustained expansion of health-related articles demonstrates the platform's function as a living repository of knowledge, reflecting both the growth of scientific content and the adaptation of information to meet the needs of users with different literacy levels and sociocultural backgrounds (Maia; Costa; Lima, 2014).

In terms of information quality, Mendes *et al.* (2021) reported that, at the time of their analysis, Wikipedia contained approximately 155,000 health-related articles supported by over 950,000 references, the majority of which were drawn from high-impact medical journals. This extensive network of sources reflects the community's effort to anchor content in recent and reliable scientific evidence. Furthermore, articles undergo an evaluation process that includes peer-review mechanisms, which are necessary for entries to achieve the platform's highest quality classifications. Health-related articles, in particular, tend to exhibit higher quality standards on average compared to other thematic areas within Wikipedia, indicating a relative emphasis on accuracy and evidential rigor in this domain (Mendes *et al.*, 2021).

In this lens, it is noted that the coverage of women's health on Wikipedia has expanded substantially over time, reflecting both the platform's capacity to incorporate new knowledge and its responsiveness to societal concerns (Wang; Zhang, 2020). Between 2010 and 2017, articles increasingly addressed topics such as violence, discrimination, reproductive health, family planning, and other conditions specific to women. Wang and Zhang (2020) note that this growth followed a complex trajectory, shaped by social and cultural contexts, including intensified public debates on gender-based violence and reproductive rights during the period analyzed. These patterns suggest that Wikipedia operates as a dynamic environment where the representation of women's health is continually negotiated, influenced by both informational standards and contemporary social priorities.

However, the accessibility of women's health content on Wikipedia is a critical factor in promoting equitable access to knowledge (Menking, 2019). In this context, initiatives such as Simple English Wikipedia, which systematically adapts language and structure for audiences with varying literacy levels, demonstrate the importance of inclusive strategies that reduce barriers to information. The lexical and syntactic configuration of Simple English Wikipedia plays a crucial role in mitigating comprehension difficulties in technical texts, enhancing clarity and facilitating engagement with complex medical content (Fitzroy, 2022). This mediating function is particularly

significant in the context of women's health, where the platform provides an accessible terminological repertoire, bridging everyday language and specialized medical vocabulary. By doing so, Simple English Wikipedia creates conditions for users with diverse health literacy levels to access, interpret, and appropriate knowledge about women's health, expanding the potential for informed decision-making and social engagement with health information (Ningtyas *et al.*, 2022).

The analysis of women's health articles in both the English and Simple English Wikipedia requires careful consideration of the content simplification process. This process is exemplified in Chart 3 through the article "Generalized Anxiety Disorder," which illustrates the methodology employed for lexical and structural simplification.

Chart 3 - Text simplification in the article Generalized Anxiety Disorder

Original Sentence	Generalized anxiety disorder (GAD) is a mental and behavioral disorder, specifically an anxiety disorder characterized by excessive, uncontrollable and often irrational worry about events or activities. Worry often interferes with daily functioning, and individuals with GAD are often overly concerned about everyday matters such as health, finances, death, family, relationship concerns, or work difficulties.
Phase 1: Lexical and Structural Simplification	
Simplified sentence	Generalized anxiety disorder (GAD) is an anxiety disorder characterized by excessive and irrational worry about events or activities. This worry often interferes with daily functioning
Phase 2: Adapting to Simple English	
Simple English Sentence	Generalized anxiety disorder (also known as GAD) is an anxiety disorder which consists of excessive and irrational worry of everyday things. This worry tends to interfere with normal daily functioning.

Source: Drawn up by the authors.

As an example of the textual simplification process, the article on Generalized Anxiety Disorder illustrates lexical and structural adjustments. In the transition from the original to the simplified version, it is noted that technical terms such as "mental and behavioral disorder" and "uncontrollable" were removed; additional details such as specific concerns about health, finances and other aspects of daily life were also omitted. The sentence is reformulated in a more direct way, while maintaining essential elements, such as the description

of the disorder and its impact on daily functioning. In the final version, in Simple English, the language is adjusted according to the Basic English controlled vocabulary (Ogden, 1930), replacing expressions such as “events or activities” with “everyday things”, and adapting the structure to short and clear sentences. Thus, by applying this standard, found in all the analyzed articles, the complexity of the text is reduced while maintaining the integrity of the essential information.

The examination of the textual simplification process demonstrates how structural and lexical adaptations in Simple English Wikipedia facilitate access to complex medical information. By reducing linguistic complexity while preserving essential content, these adjustments enable broader audiences to engage with knowledge on women's health, bridging gaps in literacy and promoting more equitable access to information.

The strategies applied across articles underscore the central role of ID in mediating comprehension, ensuring that health content remains accurate and accessible to diverse user groups. Having established the principles and mechanisms underlying content simplification, it becomes possible to investigate how these strategies manifest in practice. Differences in structure, visual presentation, and textual organization across articles reflect the ways in which information is curated and adapted for different audiences, revealing patterns that illuminate the accessibility and framing of women's health topics on Wikipedia.

7 Characteristics of women's health articles in English and Simple English

As seen in the previous discussion, Wikipedia's coverage of women's health reflects the platform's responsiveness to social and educational needs. As a widely accessed resource, Wikipedia plays a significant role in shaping public understanding of issues that affect women, ranging from reproductive health and mental well-being to exposure to violence and other social determinants. In this context, accessibility becomes a critical factor: simplifying complex information without compromising accuracy is essential for promoting equitable knowledge

and enabling users with diverse literacy levels to engage meaningfully with health topics.

Thus, the analysis focused on women's health articles in both the English and Simple English versions of Wikipedia. A multi-dimensional approach was applied, examining the textual, visual, and structural adaptations implemented in the simplified environment. In this context, the following dimensions were examined: (1) visual elements, including images and illustrations, assessed for their presence, modification, or omission, given their role in facilitating comprehension of complex medical concepts and providing cognitive anchors for readers; (2) structural elements, particularly infoboxes, evaluated for their capacity to summarize essential information concisely, guide navigation, and reduce cognitive load; (3) informational completeness, determined by comparing the proportion of topics retained from the original English version, categorized into four levels to systematically identify reductions resulting from textual simplification; and (4) references, analyzed to ensure the reliability, traceability, and accuracy of content, which is especially critical in the context of women's health.

The first dimension examined in the analysis concerns visual elements, which play a central role in conveying health information on Wikipedia. Images support the comprehension of complex concepts, provide cognitive scaffolding, and complement textual content by illustrating key ideas. In the Simple English Wikipedia, illustrations are often adapted to enhance accessibility, ensuring that visual information remains clear and interpretable for readers with varying levels of literacy or familiarity with specialized terminology. Chart 4 presents a comparative overview of how images are treated in the Simple English versions of women's health articles relative to their original English counterparts.

Chart 4 - Comparison of Illustrations in Wikipedia articles in its Simple English version in relation to its original version (as of December 1, 2024)

Health issue	Article	Illustration		
		Not available	Available, different	Available, identical
Physical Health	Sexually transmitted infection		X	
	Polycystic ovary syndrome			X
	Contraception			X
	Menopause			X
Mental health	Major depressive disorder		X	
	Post-traumatic stress disorder		X	
	Generalized anxiety disorder	X		
	Postpartum depression	X		
Public health	Abortion			X
	Sexual Abuse	X		
	Female genital mutilation			X
	Violence against women	X		

Source: Drawn up by the authors.

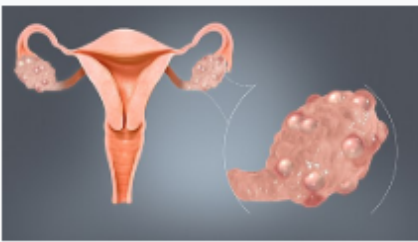
The analysis of images in Simple English Wikipedia articles reveals a combination of visual and textual adaptation strategies. Of the 12 articles examined: four did not include any illustrations; three presented images that differed from the original English version; and five retained identical visuals. These patterns reflect deliberate choices regarding accessibility and comprehension: decisions to retain, modify, or omit images are guided by the goal of simplifying communication without diminishing content depth. Even when illustrations are preserved, their captions are simplified, offering clear explanations that enhance the interpretability of visual information for readers with diverse literacy levels or limited familiarity with technical terminology.

From an Information Design perspective, these visual adaptations illustrate the careful balance between clarity, usability, and informational integrity. By selectively modifying or simplifying images and captions, Wikipedia editors apply core ID principles, ensuring that visual elements function as cognitive anchors that reduce complexity and guide readers' attention to key concepts. The variations observed reflect strategic decisions

about how to optimize comprehension while maintaining the accuracy of the content.

Sequentially, infoboxes were examined as a key structural element in Wikipedia articles. Typically located in the upper right corner, these boxes present essential information in a concise and organized format. By providing a clear and structured summary, infoboxes reduce cognitive load and support efficient navigation of complex health topics. Their design allows users to quickly grasp essential aspects of a subject before engaging with the full text, reinforcing both comprehension and retention. Figure 3 illustrates a standard infobox as presented in Wikipedia articles.

Figure 3 - Wikipedia Infoboxes

Polycystic ovary syndrome	
Other names	Hyperandrogenic anovulation (HA), ^[1] Stein-Leventhal syndrome ^[2]
	
	A polycystic ovary
Medical specialty	Gynecology, endocrinology
Symptoms	Irregular menstrual periods, heavy periods, excess hair, acne, pelvic pain, difficulty getting pregnant, patches of thick, darker, velvety skin ^[3]
Complications	Type 2 diabetes, obesity, obstructive sleep apnea, heart disease, mood disorders, endometrial cancer ^[4]
Duration	Long term ^[5]
Causes	Genetic and environmental factors ^{[6][7]}
Risk factors	Obesity, not enough exercise, family history ^[8]
Diagnostic method	Based on anovulation, high androgen levels, ovarian cysts ^[4]
Differential diagnosis	Adrenal hyperplasia, hypothyroidism, high blood levels of prolactin ^[9]
Treatment	Weight loss, exercise ^{[10][11]}
Medication	Birth control pills, metformin, GLP-1, anti-androgens ^[12]
Frequency	2% to 20% of women of childbearing age ^{[8][13]}

Source: Simple English Wikipedia (2024h).

In health-related articles, infoboxes serve a critical function by consolidating and highlighting essential information, including symptoms, treatment options, risk factors, and epidemiological data. Infoboxes also enhance the overall structure of articles, providing visual orientation that helps users locate key information and contextualize the surrounding narrative. Chart five illustrates how these strategic Information Design elements are incorporated across articles on women's health in the Simple English Wikipedia, revealing both the presence and absence of these organizational aids in the analyzed entries.

Chart 5 - Presence of infoboxes in Simple English Wikipedia articles on women's health (as of December 1, 2024)

Health issue	Article	Infobox	
		Not available	Available
Physical Health	Sexually transmitted infection	X	
	Polycystic ovary syndrome		X
	Contraception	X	
	Menopause	X	
Mental health	Major depressive disorder	X	
	Post-traumatic stress disorder	X	
	Generalized anxiety disorder	X	
	Postpartum depression	X	
Public health	Abortion	X	
	Sexual Abuse	X	
	Female genital mutilation		X
	Violence against women	X	

Source: Drawn up by the authors.

The presence of infoboxes in Simple English Wikipedia articles on women's health is generally limited. Among the 12 articles examined, only Polycystic Ovary Syndrome and Female Genital Mutilation include this feature, while the others lack it entirely. This absence constitutes a notable limitation, as infoboxes play a critical role in summarizing and visualizing essential information. Without these structural aids, users may face challenges in

efficiently accessing key data, reducing the overall clarity and navigability of the articles.

From an Information Design perspective, infoboxes exemplify how structural elements can enhance comprehension and usability in health-related articles. By condensing critical information into a visually distinct and organized format, they serve as navigational anchors that allow readers to quickly locate and interpret essential content. The limited presence of infoboxes in the analyzed Simple English Wikipedia articles highlights how omissions of such elements can increase cognitive effort, requiring users to parse dense textual information without visual guidance.

Furthermore, to evaluate the completeness of information in Simple English Wikipedia articles, each entry was compared to its corresponding English version to determine the proportion of topics retained during simplification. The retained content was classified into four levels: few topics retained (less than 40%), some topics retained (40-70%), most topics retained (70-95%), and all topics retained (over 95%). This categorization allows for a systematic assessment of how much content from the original articles is preserved in the simplified versions. The results of this analysis are presented in Chart 6.

Chart 6 - Completeness of topics covered in Simple English Wikipedia articles compared to their original versions (as of December 1, 2024)

Health issue	Article	Quantity of topics similar to the original version			
		Few (<40%)	Some (>40%)	Most (>70%)	All (>95%)
Physical Health	Sexually transmitted infection		X		
	Polycystic ovary syndrome	X			
	Contraception			X	
	Menopause		X		
Mental health	Major depressive disorder		X		
	Post-traumatic stress disorder		X		
	Generalized anxiety disorder	X			
	Postpartum depression		X		
Public health	Abortion				X
	Sexual Abuse		X		
	Female genital mutilation		X		
	Violence against women	X			

Source: Drawn up by the authors.

The assessment of informational completeness across the 12 Simple English Wikipedia articles reveals notable variability in the proportion of content retained from the original English versions. Specifically, three articles preserved few topics (less than 40% of the original content), seven retained some topics (between 40% and 70%), one preserved most topics (70%-95%), and only one article maintained nearly all content (over 95%). These results suggest that, despite the simplification process being intended to maintain accessibility, substantial portions of information are frequently omitted. Such reductions can create meaningful gaps in knowledge, limiting readers' ability to fully understand the complexity of women's health issues and potentially shaping their perception of the topics in ways that omit nuanced or critical details.

From an Information Design perspective, these findings highlight the challenges inherent in balancing linguistic simplification with informational integrity. When textual content is reduced, structural and visual elements become even more crucial, as they can guide navigation, emphasize key points,

and provide cognitive scaffolding that compensates for omitted content. In this sense, the interplay between text reduction and strategic Information Design becomes central: simplification alone is insufficient if it is not accompanied by design interventions that preserve meaning, contextual relationships, and interpretive clarity.

Within this framework, the use of reliable and current sources emerges as a fundamental aspect of Wikipedia's credibility and the overall quality of its content. References serve to substantiate the information presented, providing the scientific and empirical basis for claims and ensuring that readers can trust the accuracy of the material. Beyond supporting factual correctness, citations also offer pathways to additional resources, allowing users to deepen their understanding of the subjects covered. Chart 7 illustrates the distribution and presence of references in the Simple English Wikipedia articles analyzed.

Chart 7 - Use of references in Simple English Wikipedia articles (as of December 1, 2024)

Health issue	Article	References	
		Not available	Available
Physical Health	Sexually transmitted infection		X
	Polycystic ovary syndrome		X
	Contraception		X
	Menopause		X
Mental health	Major depressive disorder		X
	Post-traumatic stress disorder		X
	Generalized anxiety disorder	X	
	Postpartum depression		X
Public health	Abortion		X
	Sexual Abuse	X	
	Female genital mutilation		X
	Violence against women		X

Source: Drawn up by the authors.

Most Simple English Wikipedia articles are supported by references, which reflects positively on the reliability and quality of their content. Nevertheless, the absence of citations in the articles on Generalized Anxiety

Disorder and Sexual Abuse constitutes a notable limitation, particularly given the sensitive nature of these topics, which involve mental health and public health concerns. The lack of referenced sources in these cases may compromise the validity and trustworthiness of the information, underscoring the importance of rigorous documentation when addressing subjects with significant social and health implications.

Taken together, the analyses of images, infoboxes, informational completeness, and references reveal how simplification in the Simple English Wikipedia affects both accessibility and informational integrity. While textual adaptations reduce linguistic complexity, the variable presence of visual and structural elements indicates that simplification is not uniformly supported by design strategies. Gaps in content, limited use of infoboxes, and inconsistent referencing highlight areas where readers may encounter increased cognitive effort or incomplete understanding of women's health topics.

From an Information Design perspective, these findings emphasize the critical role of visual and structural supports in mediating comprehension. Illustrations and well-structured summaries serve as cognitive anchors that can offset reductions in textual content, guiding readers' attention and enhancing interpretability. The effective integration of these design elements is essential for ensuring that simplified health information remains both accessible and substantively complete, particularly for topics with social and clinical relevance such as reproductive health, mental well-being, and exposure to violence.

Ultimately, the Simple English Wikipedia demonstrates a commitment to broadening access to knowledge, yet the observed disparities suggest that linguistic simplification must be complemented by deliberate Information Design interventions. Only through the combined application of clear textual structure, visual aids, and reliable sourcing can simplified health content maintain clarity and trustworthiness, supporting informed engagement with complex women's health issues.

8 Final considerations

The advent of Information and Communication Technologies (ICTs) has profoundly transformed access to information, especially in the Web 2.0 era. In this context, Wikipedia stands out as one of the most accessed platforms in the world, offering free and open access to a vast repository of knowledge. However, despite its contribution to the socialization of information, the complexity of its content can pose comprehension challenges for a significant portion of the population, particularly for those with limited language proficiency, such as children, individuals with cognitive impairments, or people with lower levels of literacy. In this regard, Simple English Wikipedia emerges as an initiative aimed at addressing such needs.

The analysis conducted in this study highlights the potential and the challenges of applying Information Design principles within the Simple English Wikipedia. While the platform demonstrates clear efforts to make complex health content more accessible, the findings reveal inconsistencies in the implementation of structural and informational resources. For instance, although illustrations are often adapted to enhance comprehension, their presence is uneven across articles, and only a limited number of entries include infoboxes, key structural elements that summarize and organize essential information. Similarly, the proportion of topics retained from the original English versions varies considerably, indicating that linguistic simplification sometimes results in the omission of relevant content, which may affect users' understanding of women's health issues.

These results underscore the central role of Information Design in mediating comprehension. Visual elements and structured summaries function as cognitive anchors that guide users' attention, reduce cognitive load, and support the assimilation of essential knowledge. When such resources are missing or inconsistently applied, simplified texts alone may not be sufficient to convey the full scope of information, particularly for subjects of high social and clinical relevance. The lack of references in articles addressing sensitive topics further highlights the need for rigorous documentation to preserve credibility and trustworthiness.

In this sense, the Simple English Wikipedia illustrates both the promise and the limitations of combining linguistic simplification with Information Design. While plain language facilitates accessibility, the integration of structural and visual aids, along with comprehensive content coverage and reliable referencing, is essential to ensure that simplified health information is easier to read and also substantively complete. Addressing these gaps would strengthen the platform's capacity to support informed decision-making and equitable access to critical health knowledge.

This study presents inherent limitations derived from its scope and design. As an initial and exploratory segment of a broader research project, it is based on a deliberately reduced sample of 12 articles, which constrains the generalizability of the findings. The restricted corpus, although purposefully selected to represent core women's health topics available in both English and Simple English Wikipedia, does not capture the full range of thematic, linguistic, or structural variability present across the platform. Future work will expand this analysis to a larger and more diverse corpus, allowing for more robust comparisons and the identification of broader patterns.

Overall, the findings suggest that enhancing the accessibility of health information in digital encyclopedias requires not only attention to simplified language but also a systematic application of Information Design principles. By coordinating textual clarity, structural organization, visual supports, and reliable sourcing, platforms like Wikipedia can better fulfill their role as inclusive and trustworthy sources of knowledge for diverse audiences.

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Perspectivas do design da informação no uso da linguagem simples em verbetes sobre saúde das mulheres na Wikipedia

Resumo: O Design de Informação desempenha papel essencial na ampliação da acessibilidade e da compreensão de informações complexas em saúde, especialmente no contexto da saúde da mulher, em que terminologias especializadas e conteúdos sensíveis exigem estratégias capazes de tornar o conhecimento claro e aplicável. Plataformas amplamente consultadas, como a Wikipedia, evidenciam os desafios de comunicar informações de saúde de forma eficaz e, também, o potencial de utilização de estratégias de design e simplificação da linguagem, como demonstrado na versão Simple English, que reduz barreiras cognitivas e amplia o acesso a informações essenciais. A partir dessa perspectiva, o presente estudo examina como os recursos de Design de Informação são estruturados e adaptados em artigos sobre saúde da mulher na Wikipedia em Inglês e em Inglês Simples, com o objetivo de avaliar se a simplificação da linguagem e as estratégias de design permitem preservar a integridade das informações, ao mesmo tempo em que ampliam sua acessibilidade. Para isso, foi realizada uma análise comparativa de 12 artigos, considerando os conteúdos em inglês e em sua versão simplificada. Os resultados destacam a importância de elementos visuais e estruturais na facilitação da compreensão, de modo a evidenciar que ilustrações e resumos organizados podem compensar a redução da complexidade textual. De forma geral, o estudo demonstra que a combinação de Design de Informação e simplificação da linguagem em recursos digitais de saúde contribui para a clareza e a usabilidade das informações sobre saúde da mulher, o que reforça a relevância de conteúdos acessíveis para apoiar decisões de saúde informadas.

Palavras-chave: Design da Informação; e-saúde; saúde das mulheres; linguagem simples

Authorship and Responsibility Statement

Conception and design of the study: Isabela Correa Macena, Maria José Vicentini Jorente

Data collection: Isabela Correa Macena

Data analysis and interpretation: Isabela Correa Macena

Writing: Isabela Correa Macena

Critical review of the manuscript: Maria José Vicentini Jorente

Data availability statement

The entire dataset supporting the results of this study has been published within the article itself.

Corresponding authorship

Isabela Correa Macena
ic.macena@unesp.br

Editor-in-chief

Thiago Henrique Bragato Barros

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