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REVIEW

Bridging the health literacy gap: a review on evidence based patient information sheet

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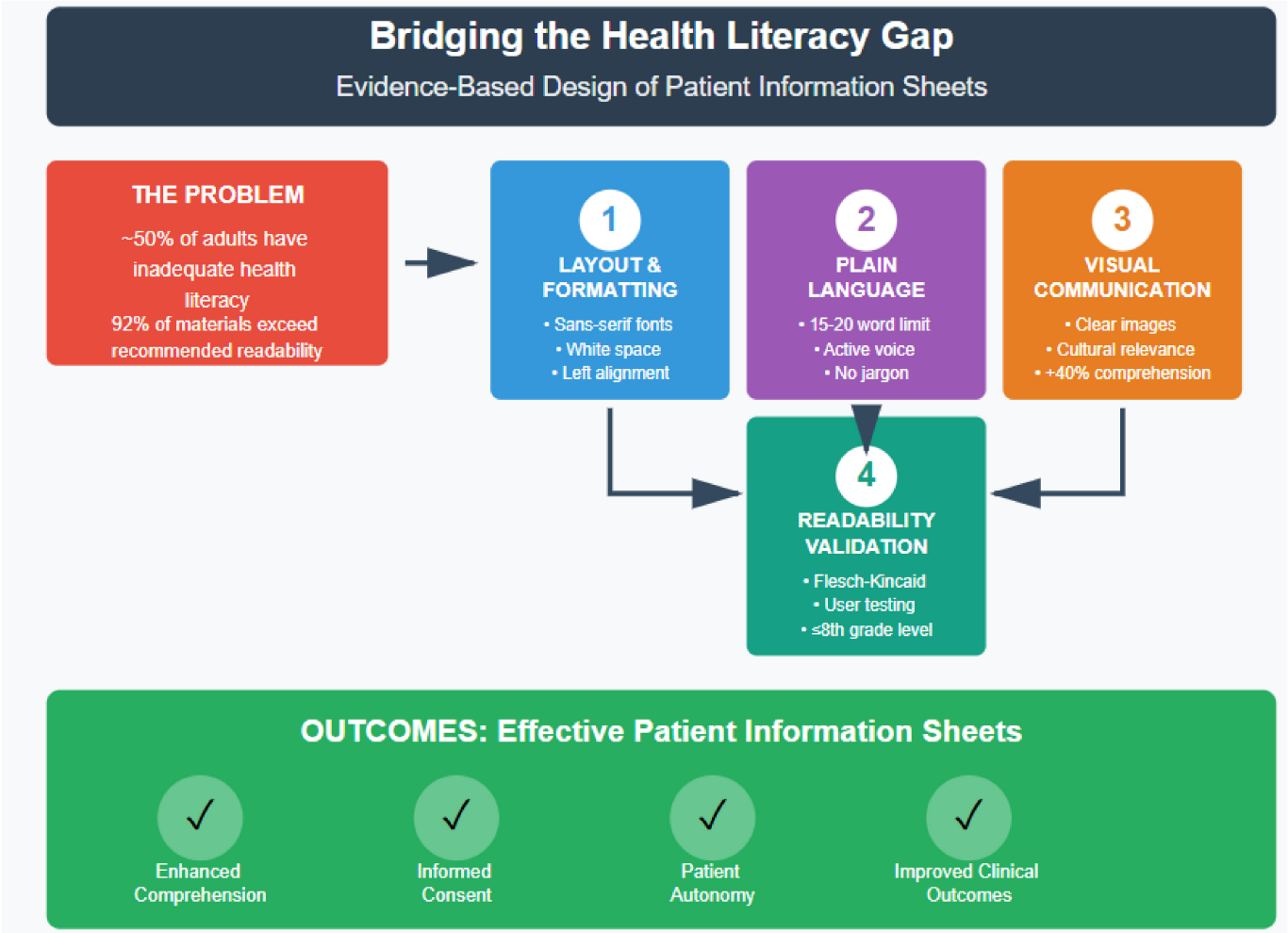
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Health literacy strongly influences the degree to which patients understand their health information, stick to treatment plans, and achieve better clinical outcomes. While patient-centered communication is widely valued in healthcare, many current patient information sheets are written above the reading level of most adults, which can reduce informed choices and make it harder for patients to follow treatment plans. This review brings together current evidence exploring methods for composing patient information that people can understand. It uses well-known models and recent research studies to point out the key features of clear materials and reduce gaps in health literacy. A narrative synthesis based on studies found in PubMed, Scopus, and Google Scholar and reviewed English-language articles published from 2005 to 2025 that examined readability, design choices, and how well patients understand educational materials and reviewed both empirical studies and systematic reviews in four themes: layout and formatting, simplifying language, visual communication, and validating readability. Research showed that close to half of adults worldwide have limited health literacy. At the same time, many patient education materials are written above an 11th-grade reading level, which is higher than the sixth- to eighth-grade level usually recommended. The results suggest that a clear layout, sans-serif fonts, enough white space, and information presented in a sensible sequence reduce readers' mental effort and make the content easier to understand. Plain language steps, like writing sentences that are about 15–20 words long, using active voice, and cutting medical jargon, can help people with low literacy understand health information more easily. Using visual aids that match the local culture may increase comprehension in these groups by up to 40%. Using established readability tools in a consistent way, and then confirming the results through user testing with the intended audience, helps ensure that the materials meet both ethical expectations and practical accessibility needs.. Using evidence-based design principles set by expert committees is an ethical duty because it supports patient autonomy, clear informed consent and fair healthcare for people with different literacy levels.

Keywords: health literacy, patient information sheet, readability, plain language, patient education

Graphical abstract



Introduction

The ability to locate, understand, and apply basic health information in order to make educated decisions about one's care and well-being is known as health literacy. Nearly half of adults worldwide have low health literacy, which is associated with worse treatment compliance and higher hospitalization rates (1, 2). People with low health literacy are more likely to misinterpret health information and struggle to follow care instructions, according to numerous studies, exhibit greater rates of medication errors and more difficulty comprehending medical instructions (3, 4). The intended audience for this manuscript is academics. Patient information sheets (PIS) and consent forms are examples of study materials that are crucial for educating patients and bolstering legitimate consent. education.

They assist patients in understanding what is expected of them and what exactly they are consenting to before any treatment occurs. There are many such sources that remain difficult to decode because of the use of technical terms and an abbreviated style of writing (5–8). Previous research indicates that most patient information leaflets are still written at an eleventh-grade level, although it is recommended that patient information should be presented at an easier grade level (9, 10). Aim for grades six to eight (9, 10). This can make it difficult for patients to grasp their treatment options and the treatment plan. It is important to be familiar with the risks and highlights of the procedure (11, 12). To address this issue, the authors have come up with several ideas that would make patient information more manageable.

According to the guidelines set by the Expert Consensus Conference (ECC), a simple structure and simplicity of language can be combined with readability testing. The guidelines provided by the Centers for Disease Control and Prevention provide a clear approach for constructing healthcare messages that can be easily understood. It appears from current research that incorporating other forms of media can be beneficial for increasing the reader's understanding of the key concepts. Selecting the appropriate

components, adapting the content to meet local cultural requirements, and using a feedback cycle for improving the end product can be key components on their own. Together with these concepts and current research on an international level, a research-based technique can be established for creating patient information sheets with a better focus on health literacy.

Materials and methods

In the current review, my methodical approach remained inclusive of a narrative synthesis method where the determining findings from a number of studies included in the literature were interpreted. In their search for literature, the current study remained inclusive of the databases that include PubMed, Scopus, and Google Scholar. This study remained pertinent to literature ranging from the year 2005 to 2025. Additionally, all publications registered in English remained inclusive. Among the areas considered in the current study include readability validation, language simplification, visualization, and structure.

Results and discussion

Layout and formatting

Prior studies indicate that the visual layout of PIS affects the readers to understand and remember the information (13–15). The ECC guidelines suggest using a booklet or bi-fold layout, keeping the text left-aligned, choosing a 12–14 point sans-serif font, and leaving enough white space to make the material easy to read. Similarly, Posch et al. (6) reported that when materials are poorly structured, they often fall short of expected standards for quality and accessibility. Recent studies suggest that a simple layout can help readers with limited literacy or visual impairments by lowering the amount of mental effort needed to process the information (16, 17). Avoiding full capitalization, long dense paragraphs, and technical subheadings can make the text easier to read (14).

A clear, structured layout can make information easier to understand, especially for patients who have trouble with functional literacy.

Language and content simplification

The ECC 13 and CDC 14 frameworks recommend that sentences contain approximately 15–20 words, are written in active voice and technical jargon is replaced with plain, everyday language. For example, "Take one tablet twice a day" is better than "This medication should be administered bi-daily. Over a 30-year review of patient materials, 92% were written above the recommended reading level (9) and Wilson et al. (10), also examined this issue, In the authors reported that only 2% of education materials published in journals met the sixthgrade reading level standard. The use of clear, straightforward language and a more conversational tone can facilitate reader comprehension and may also support trust (18). Adapting content to the relevant cultural and language context can increase acceptance especially in multilingual populations (19, 20).

This means that plain language writing facilitates inclusion, enhances the ability of individuals to recall important information, and also considers ethical responsibilities associated with informed consent.

Visual communication

Visuals, including infographics, diagrams, and culturally relevant images, can supplement the text to facilitate understanding of the key message. Both the ECC and CDC recommend that each visual depict only one key message and include a concise caption. In a study by Wang and co-authors (16), visuals enhanced low-literacy participants' comprehension and long-term recall. For this study, realistic graphics (e.g., photographs and diagrams) are used to supplement the analysis. Simplify content for readers. For example, the website might define how to correctly take a medication or how to care for oneself after surgery. The website may promote patient engagement (15, 21). All visuals must be examined to ensure they are culturally relevant for the target audience and do not utilize stereotypes or ambiguous references. Text should utilize clear, neutral phrasing so that readers are less likely to misunderstand or misread the text.

Matching clear visuals with plain text has been shown to enhance comprehension as much as 40% (22, 23).

Readability assessment and validation

Readability analysis is also an important element associated with evidence-based communication. Readability analysis assists the researcher in verifying the readability of the message depending on the target audience. Flesch-Kincaid Grade Level Reading, SMOG Reading, Gunning Fog Index, among others, are applied to measure the complexity of the message or message content (13, 24). According to a statement given by Colemane al. (13), it is important to apply automated analysis tools in conjunction with user testing. This helps ensure that the ultimate message or content is understandable in the message context. Chan et al. (9) stated that readability readability hasn't really changed much over time the last 30 years which suggests that readability should be reviewed and reported on a regular basis In this study, the team used the National

Adult Literacy Agency's (22) checklists and ran hands-on feedback sessions to carry out a careful qualitative check of the content.

Implication: Readability tests ensure that the information conveyed through the written word meets readability and ethical requirements prior to dissemination.

Recommendation

Based on this review, healthcare institutions and research organizations should require evidence-based design principles when creating patient information materials. All documents must be checked with a standard readability test and written at a sixth- to eighth-grade reading level. When developing culturally relevant patient materials, healthcare professionals should collaborate with plain language specialists and patient advocacy groups to ensure content is clear, respectful, and accessible. This collaboration leads to more effective results. Documents should have a clear structure, straightforward language, and visual aids that meet the needs of the intended audience. Quality should be improved continually through repeated user testing with intended participants. Patients from diverse backgrounds should be included to ensure the materials are clear and accessible. Institutional policies should treat health literacy as an essential ethical responsibility and provide the resources and training to support it. Ongoing staff training should focus on practical methods for clear patient communication.

Conclusion

Reducing gaps in health literacy requires rewriting dense, jargon-filled patient materials in plain language. This means using shorter sentences, clear headings, and concrete examples that align with what patients need to know and do. Technical terms should be translated into language most readers can understand. My approach uses evidence-based design principles, including clear structure, plain language, supportive visuals, and regular readability checks. These strategies make patient information sheets easier to understand and help patients make informed decisions about their care. Autonomy is a person's ability to make informed choices and direct their actions. In academic writing, it often refers to the control individuals or groups have over decisions affecting them, and how this control is shaped by social, legal or institutional factors. Following guidance from the ECC and CDC, as well as using newer digital formats, can help present health information more clearly for people with varying literacy levels and support ethical communication.

Author contributions

AV conceptualized the study, conducted the literature search and data extraction, synthesized the evidence across thematic domains, drafted the manuscript, and prepared the final version for submission. PC contributed to the study design, provided critical intellectual input during manuscript development, reviewed and revised the content for scientific accuracy, and approved the final manuscript. Both authors have read and agreed to the published version of the manuscript.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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