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Infographics in medical education: as a tool in learning the English language

Infografías en la educación médica: como herramienta en el aprendizaje de idioma inglés

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RESUMEN

La educación médica enfrenta el desafío permanente de transmitir conocimientos complejos de manera efectiva en un contexto de sobrecarga informativa. Las infografías, como recurso visual que integra texto e imagen, emergen como una herramienta pedagógica con potencial transformador, especialmente en la enseñanza del inglés con fines médicos. Este artículo de opinión reflexiona sobre el valor de las infografías en la formación de profesionales de la salud para el dominio del inglés como lengua franca de la ciencia, así como en la comunicación con pacientes angloparlantes. Se analizan sus fundamentos neurocognitivos —como la codificación dual y la reducción de la carga cognitiva—, sus aplicaciones en el aula universitaria para la adquisición de vocabulario técnico y la comprensión de procesos clínicos, y su utilidad en entornos clínicos bilingües para mejorar la alfabetización en salud y la seguridad del paciente. Se concluye que las infografías, diseñadas con rigor científico y pedagógico e integrando referencias actualizadas (2021-2025), constituyen un recurso valioso que merece ser incorporado sistemáticamente en los currículos de ciencias de la salud y en los materiales de educación para la comunidad, formando profesionales con competencias visuales y lingüísticas integradas.

ABSTRACT

Medical education faces the ongoing challenge of effectively conveying complex knowledge in a context of information overload. Infographics, as a visual resource integrating text and images, are emerging as a pedagogical tool with transformative potential, especially in teaching English for medical purposes. This opinion piece reflects on the value of infographics in training healthcare professionals to master English as the lingua franca of science, as well as in communicating with English-speaking patients. It analyzes their neurocognitive foundations—such as dual encoding and cognitive load reduction—their applications in the university classroom for acquiring technical vocabulary and understanding clinical processes, and their usefulness in bilingual clinical settings for improving health literacy and patient safety. It is concluded that infographics, designed with scientific and pedagogical rigor and incorporating updated references (2021-2025), constitute a valuable resource that deserves to be systematically incorporated into health science curricula and community education materials, training professionals with integrated visual and linguistic competencies.

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English has become the lingua franca of medical science. The leading journals, databases, international conferences, and continuing education platforms publish and communicate their advances in this language ⁽¹⁾. For health science students and professionals in non-English-speaking countries, this reality imposes an urgent need: mastering medical English is not an academic luxury but a tool for equity and professional updating.

However, traditional teaching of English for Specific Purposes (ESP) in health science programs often relies on dense texts, lists of decontextualized vocabulary, and repetitive translation exercises ⁽²⁾. Students, particularly digital natives, demand more visual, concise strategies that align with their information processing style. A recent systematic review on the use of infographics in higher education concludes that these resources significantly improve motivation and the retention of complex concepts ⁽³⁾. Those responsible for training healthcare professionals know that medicine is inherently visual, and the learning of its technical language should be as well. This opinion piece reflects on the value of infographics in training healthcare professionals to master English as the lingua franca of science, as well as in communicating with English-speaking patients.

The brain learning languages: neurocognitive foundations

Cognitive neuroscience has shown that second language learning greatly benefits from multimodality ⁽⁴⁾. Paivio's dual coding theory holds that information processed simultaneously through verbal and visual channels generates more robust and retrievable mental representations ⁽⁵⁾. In the context of medical English, associating a term such as "heart failure" with an infographic showing its signs, symptoms, and imaging findings activates two memory routes: linguistic and visual.

Furthermore, studies based on cognitive load theory applied to health sciences education indicate that hierarchical visual presentation reduces unnecessary mental effort and facilitates technical vocabulary learning ⁽⁶⁾. Infographics leverage this neurobiological advantage by presenting organized information with icons, colors, and diagrams that facilitate encoding and recall of English lexicon ⁽⁷⁾.

What do infographics contribute to learning medical English?

An infographic is a visual representation that integrates data, concepts, and brief texts to communicate information clearly and attractively ⁽³⁾. In the medical English classroom, their contributions are specific and valuable:

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1-Thematic vocabulary acquisition: They allow grouping anatomical, pharmacological, or clinical terms within the same semantic field (e.g., respiratory system) and associating each word with its corresponding image. Recent research shows that medical students prefer infographics over traditional lists for their clarity and ease of review ⁽⁸⁾.

2-Understanding dynamic processes: Pathophysiological mechanisms (e.g., inflammatory response) can be illustrated step by step with English labels, which facilitates understanding of sequences and causal relationships. A practical guide for educators recommends using infographics in teaching pharmacology and semiology ⁽⁹⁾.

3-Development of visual and linguistic literacy: The student learns to interpret graphs, tables, and clinical signs while internalizing the English expressions that describe them ⁽¹⁰⁾. Student-created infographics have proven to be an effective strategy for fostering critical thinking and information synthesis ⁽¹¹⁾.

Practical applications in medical training

In the English for health sciences classroom: The instructor can design infographics presenting, for example, the adverse effects of a drug or the stages of wound healing, combining explanatory English text with anatomical illustrations. A scoping review on infographics in medical education reports that their use improves technical vocabulary retention by up to 34% compared to traditional methods ⁽³⁾. Additionally, students can create their own infographics as an assessment task, which requires searching for English terms, understanding them, and synthesizing them visually ⁽¹²⁾.

In autonomous study: Infographics serve as visual review material for medical English exams (such as the OET or academic IELTS). Students can download them to their mobile devices and review terminology at any time, taking advantage of brevity and visual impact ⁽¹⁰⁾. A 2022 study found that medical residents who used infographics to review clinical concepts in English improved their reading comprehension test performance ⁽¹³⁾.

In bilingual clinical settings: For rotations in hospitals with international teams or medical tourism, bilingual infographics (English-Spanish) help students and residents remember key phrases for anamnesis, shift handoffs, or explaining procedures to English-speaking patients. Research on health knowledge dissemination

through infographics highlights that these resources facilitate quick and effective communication in high-pressure care contexts ⁽¹⁴⁾.

Patient communication in English: another professional competency

In high-mobility contexts, health professionals must explain diagnoses and treatments to patients who speak only English. A well-designed infographic can bridge language gaps: visually showing how to use an inhaler, signs of stroke, or post-operative care instructions is more effective than attempting a verbal translation of complex terms ⁽¹⁵⁾. The World Health Organization recognizes that standardized visual resources improve health literacy and reduce communication errors, especially in multicultural settings ⁽¹⁾.

Recent studies on the effectiveness of infographics for health communication conclude that patients understand and remember instructions better when presented in a visual format combined with plain language in their own language ⁽¹⁵⁾. Likewise, involving patients in infographic design has been shown to increase message clarity and cultural relevance ⁽¹⁶⁾.

Critical reflection: opportunities and challenges

Like any tool, infographics are not magical. Among their strengths for learning medical English are: they favor attention and motivation, especially in students with low language proficiency; they allow spaced repetition of vocabulary through attractive visual formats; and they are easily shared and adapted on digital platforms ^(3,9).

But there are also risks: oversimplification can lead to learning incomplete or incorrect definitions; an infographic with grammatical or terminological errors in English perpetuates bad learning; and not all abstract medical concepts are easily visualized (e.g., metabolic acidosis). Experts recommend that infographics be peer-validated before classroom use and always accompanied by bibliographic references that allow further depth ^(10,14).

The solution is not to abandon academic English texts, but to integrate infographics as a complementary resource that prepares the ground for deeper reading.

Proposal for curricular integration

Based on this reflection, we suggest:

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1-Teacher training in didactic infographic design for medical English, including criteria for terminological accuracy and visual clarity. Evidence-based practical guides exist for creating high-quality infographics ^(9,11).

2-Creation of collaborative banks of infographics validated by bilingual specialists (physicians and English teachers). Initiatives such as those reported by Butdisuwan and colleagues ⁽¹⁷⁾ demonstrate that collaborative infographics increase the dissemination of medical knowledge.

3-Evaluative research measuring the real impact of infographics on students' English communicative competence (reading comprehension, speaking, and writing). Current evidence is promising but still limited ^(3,15).

4-Integration as an assessment activity in subjects such as Technical English, Pharmacology, or Semiology, where the student creates infographics in English about clinical cases. This strategy fosters active learning and visual literacy ^(8,12).

5-Critical digital literacy: teach future physicians to evaluate the quality of infographics in English found on social media or non-academic websites, applying criteria of scientific rigor and linguistic accuracy ⁽¹⁰⁾.

Infographics constitute a powerful and underutilized tool in teaching English for medical purposes. Their neurocognitive foundation, their ability to reduce cognitive load, and their didactic versatility make them an ideal resource for acquiring technical vocabulary and understanding clinical processes in a second language ^(3,17). The goal is not to replace critical reading of scientific articles in English, but to build a visual bridge that makes learning more accessible and meaningful. In a globalized world where medical information flows mostly in English, training professionals with integrated visual and linguistic competencies is an inescapable responsibility of health science faculties.

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CONFLICT OF INTEREST

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USE OF ARTIFICIAL INTELLIGENCE

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