

A SCOPING REVIEW OF THE THESIS ON THE APPLICATION OF CHATGPT IN NURSING PRACTICE

Pham Van Hiep¹, Nguyen Bich Huong², Pham Thi Hang³, Nguyen Thi Thanh Tra⁴,
Phan Thi Hoai⁵, Hoang Ngoc Phuong⁶, Le Tu Minh Hoang⁷, Nguyen Du Khanh⁸

1.2.3.4.5.6.7.8.National OtorhinorhinoLOGY Hospital of Vietnam

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ABSTRACT

Objective: To have an overview of the use of ChatGPT in nursing practice, we conducted this study with the aim of studying the overview of the use of ChatGPT in nursing practice, as well as the strengths and limitations of ChatGPT and its possible impacts, to provide reference information for the future development of a larger language model more suitable for nursing practice. **Method:** A scoping review.

Results: Studies on the application of ChatGPT in nursing practice show the great potential of this technology in improving work efficiency and quality of care. However, the use of ChatGPT needs to be closely managed to ensure that it does not lose the core values of the nursing profession, while taking advantage of the benefits that this technology brings. **Conclusion:** ChatGPT has great potential in supporting nursing practice, but also poses many challenges in terms of ethics, confidentiality and reliability.

Keywords: ChatGPT, AI, nursing practice

* First author Pham Văn Hiep

Phone number: 0986175299

Email: tranghiep92@gmail.com

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1. INTRODUCTION

Artificial intelligence (AI) is defined as a machine system that can make predictions, recommendations, and decisions affecting the real or virtual environment based on human-defined goals [1]. In recent years, with the rapid development of computer science, AI technology, represented by machine learning, deep learning, and natural language processing, has achieved incredible advances and achievements in the healthcare field and is widely used in clinical practice, demonstrating diagnostic performance that is not inferior to, or even better than, humans in some cases [2, 3]. In the nursing field, AI also plays an important role, including optimizing nursing processes [4], providing more personalized care [5], making healthcare more accessible [6], etc.

ChatGPT is an AI chatbot developed by OpenAI [7]. Since its release in November 2022, ChatGPT has garnered widespread attention and interest within the academic and scientific community. Based on deep learning algorithms and natural language processing techniques, and

trained with massive amounts of data from the internet, books, and articles, ChatGPT can automatically identify user input and generate appropriate responses to simulate human-to-human dialogue and interactive feedback [8]. In the field of clinical medicine, ChatGPT has demonstrated its ability to support disease diagnosis, and the accuracy rate of ChatGPT-3 is reported to be approximately 93.3% in 10 differential diagnoses [9]. At the same time, ChatGPT also shows great potential in supporting nursing. For example, ChatGPT can help nurses improve documentation by standardizing terms and concepts, thus reducing the workload of nurses [10].

To gain an overview of the use of ChatGPT in nursing practice, we conducted this study with the goal of researching the use of ChatGPT in nursing practice, as well as its strengths and limitations and potential impacts, in order to provide reference information for the future development of a more suitable big language model for nursing practice.

2. RESEARCH SUBJECTS AND METHODS

2.1. Research Subjects

The research subjects are scientific articles and documents related to the use of ChatGPT in nursing practice.

Selection Criteria:

- Publications and research papers related to the use of ChatGPT in nursing practice;
- Location: Worldwide;
- Language: English;
- Publication: 2022-2025.

Exclusion Criteria:

- Duplicate publications and articles;
- Publications and articles that do not provide original data;
- Publications and articles without full text.

2.2 Methods, Search Strategies, and Data Sources

- This survey was conducted according to the PRISMA-ScR (PRISMA extension for Scoping Reviews) guidelines, which is a checklist for conducting a comprehensive review.

- Research Design: A scoping review
- We conducted a systematic search on PubMed, Embase, and CINHAL databases using the keywords: (ChatGPT) AND (Nursing practice).

2.3. Research Selection

Two researchers worked independently in two steps:

Step 1: Abstracts of the found articles were filtered to remove duplicates and imported into the Endnote X7 document management software. Researchers carefully read the titles and abstracts. Articles that met the criteria were selected, while those that did not were excluded.

Step 2: Studies with suitable titles and abstracts were read in full. If deemed relevant to the research objectives, they were selected and information was collected.

In these two steps, if there was a conflict between the two researchers, they would discuss and reach a consensus.

2.4. Data Extraction

Author, year of publication, location, study design, study subjects, sample size, age, gender, assessment tools, assessment time, results, conclusions, strengths and limitations of the study.

3. RESULTS

A total of 108 articles were found in the database. After exclusion, 5 articles were selected for full reading and were found to meet the inclusion and exclusion criteria and were included in the study (see diagram below).

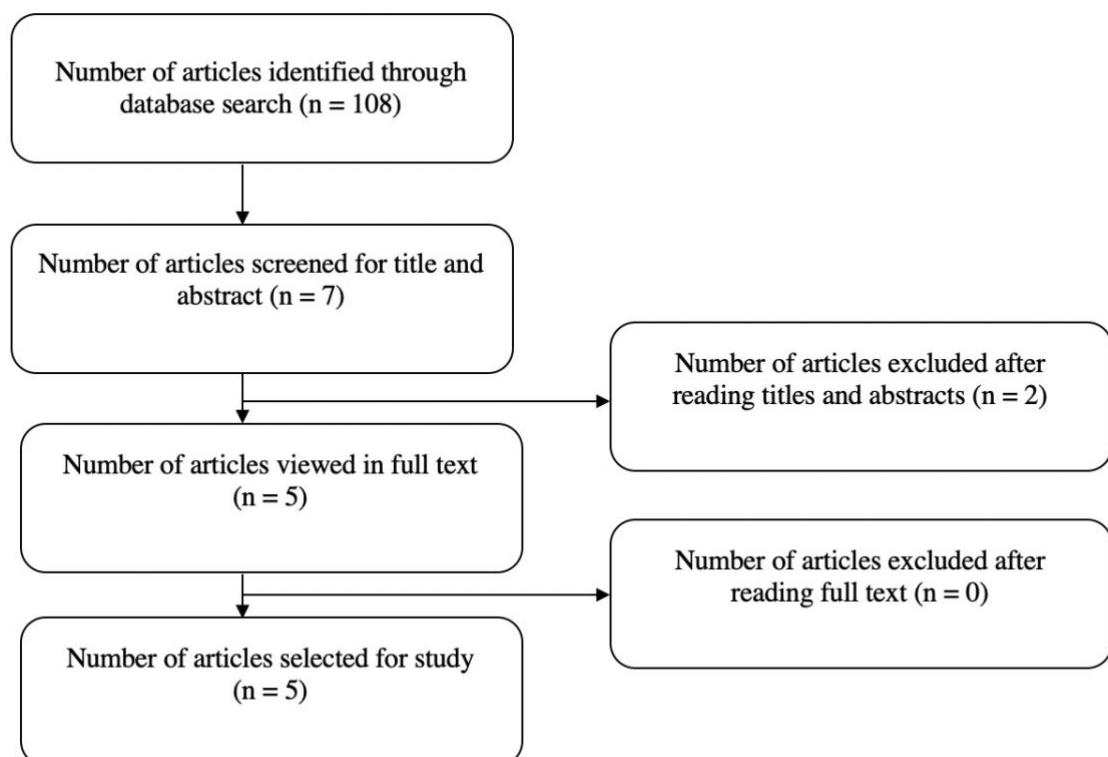


Table 1. Main results from relevant articles

Author	Year	Country	Research Design	Subject	Sample Size	Results	Conclusion
Abdul-Fatawu Abdulai et al. [11]	2023	Not specified	Analysis, synthesis (Commentary and qualitative analysis)	Nursing education, research, and practice	Not specified	ChatGPT may undermine ethical values in nursing.	Conclusion: Careful consideration of ChatGPT use in nursing is necessary. Recommendation: Develop ethical guidelines and regulations for AI use in nursing.

Author	Year	Country	Research Design	Subject	Sample Size	Results	Conclusion
							Strength: In-depth analysis of the ethical impact of ChatGPT. Limitation: Lack of empirical data, primarily based on theoretical analysis.
Pauletta Irwin et al. [12]	2023	Not specified	Analysis, synthesis (Commentary and qualitative analysis)	Nursing and midwifery education and practice	Not specified	ChatGPT has the potential to improve nursing education and practice.	Conclusion: Responsible integration of ChatGPT is necessary. Recommendation: Integrate AI into nursing education and clinical practice. Strength: Comprehensive analysis of ChatGPT's potential and challenges. Limitation: Lack of empirical data, primarily based on theoretical analysis.
Aycan Kucukkaya et al. [13]	2024	Not specified	Systematic review	ICU nursing education and practice	5 studies	ChatGPT improves clinical decision-making in ICU.	Conclusion: ChatGPT needs careful management to ensure safety and effectiveness. Recommendation: Develop ethical guidelines and regularly update data. Strength: Detailed analysis of ChatGPT application in ICU. Limitation: Limited number of synthesized studies (5 studies).
Benjamin Bohn et al. [14]	2024	Germany	Qualitative descriptive	Nurses and ChatGPT	35 (round 2), 23 (round 3)	ChatGPT generates answers similar to nurses.	Conclusion: ChatGPT can support nursing procedures. Recommendation: Use ChatGPT to support care planning and overcome language barriers. Strength: Direct comparison between ChatGPT and nurses.

Author	Year	Country	Research Design	Subject	Sample Size	Results	Conclusion
							Limitation: Small sample size, focused only on a few specific areas.
Erhan Elmaoḡlu et al. [15]	2023	Turkey	Systematic review	ChatGPT application in nursing	16/32 articles	ChatGPT improves the efficiency of reporting, documentation, and communication with patients.	Conclusion: ChatGPT has great potential in nursing but ethical issues need to be addressed. Recommendation: Further research on the long-term impact of ChatGPT in education and care. Strength: Comprehensive analysis of ChatGPT application in nursing. Limitation: Lack of empirical data, primarily based on literature review.

The studies were conducted primarily in 2023 and 2024, reflecting recent interest in the application of ChatGPT in nursing practice. The authors come from various countries, demonstrating global interest in this topic.

4. DISCUSSIONS

4.1. Characteristics of the research design

Studies on the application of ChatGPT in nursing practice show a diversity of approaches, from general

qualitative analyses to systematic studies and in-depth surveys. Specifically, Abdul-Fatawu Abdulai et al. (2023), Paulette Irwin et al. (2023) focused on evaluating the impact of ChatGPT through commentary and qualitative analysis, emphasizing the role of this tool in education, research and nursing practice [11, 12]. Aycan Kucukkaya et al. (2024) used a systematic review method to provide a detailed look at the potential and challenges of ChatGPT in the intensive care unit (ICU) [13]. Benjamin Bohn et al. (2024) applied a qualitative

descriptive research method, directly comparing ChatGPT responses with the opinions of nurses, thereby evaluating the accuracy and usefulness of the tool [14]. Finally, Erhan Elmaoğlu et al. (2023) synthesized and analyzed 16 articles, providing an overview of ChatGPT applications in nursing practice [15]. These studies not only clarify the potential of ChatGPT in supporting nurses but also open up new directions for the application of artificial intelligence in the healthcare industry. The studies provide an initial basis for integrating ChatGPT into nursing practice, thereby improving the quality of patient care and the work efficiency of nurses. The applicability of these studies lies in their ability to help healthcare administrators, educators, and researchers better understand how to leverage ChatGPT to improve nursing training, research, and practice.

4.2.Characteristics of the research subjects

Studies on the application of ChatGPT in nursing have considered many different subjects, reflecting the diversity in approaches and research objectives. Abdul-Fatawu Abdulai et al.

(2023), Pauletta Irwin et al. (2023) focused on ethical issues, principles and challenges related to the use of ChatGPT in nursing education, research and practice [11, 12]. Aycan Kucukkaya et al. (2024) targeted healthcare professionals and nursing students in the ICU environment, aiming to assess the clinical decision support and educational capabilities of ChatGPT [13]. Benjamin Bohn et al. (2024) directly compared ChatGPT responses with the opinions of 35 nurses, thereby assessing the accuracy and reliability of the tool [14]. Finally, Erhan Elmaoğlu et al. (2023) synthesized and analyzed relevant scientific articles, focusing on specific applications of ChatGPT in nursing such as reporting, documentation and patient communication [15]. The studies provide a comprehensive view of the potential and challenges of ChatGPT in nursing from various perspectives. Studying diverse subjects helps us better understand how ChatGPT can be integrated into nursing practice, while identifying and addressing related ethical and legal issues. The applicability of these studies is demonstrated by their provision of

useful information for healthcare managers, educators and researchers in developing and implementing ChatGPT applications in nursing.

4.3.Main results and conclusions of the studies

The main results and conclusions from studies on the application of ChatGPT in nursing show the enormous potential of this technology in improving work efficiency and quality of care. Abdul-Fatawu Abdulai et al. (2023) and Pauletta Irwin et al. (2023) both emphasized that ChatGPT can enhance the effectiveness of nursing education and practice, but also warned about ethical challenges, information security, and the risk of over-reliance on AI [11, 12]. Aycan Kucukkaya et al. (2024), focusing on the ICU environment, concluded that ChatGPT can support clinical decision-making and education, but ethical guidelines and risk management need to be established to ensure safety and effectiveness [13]. Benjamin Bohn et al. (2024), based on direct comparisons with nurse opinions, showed that ChatGPT has the potential to generate similar responses, particularly in the aggregation and classification of patient

information, but caution is needed to avoid ethical and accuracy risks [14]. Finally, Erhan Elmaoğlu et al. (2023) concluded that ChatGPT can improve reporting efficiency, documentation and communication with patients, as well as support education and care planning, but ethical and information reliability issues need to be considered [15]. Studies show that ChatGPT has the potential to revolutionize the nursing field, but needs to be implemented cautiously and responsibly. Its applicability lies in providing a basis for healthcare managers, educators and nurses to make informed decisions about integrating ChatGPT into practice. These studies also call for ongoing reflection and dialogue on the role of AI in nursing, to ensure that this technology is used ethically and effectively, maximizing benefits for patients and the community.

4.4.Strengths and Limitations

Studies on the application of ChatGPT in nursing have revealed clear strengths and limitations of this technology. In terms of strengths, ChatGPT stands out with its natural language processing capabilities, effectively supporting nursing education, research, and practice. This

tool can save time and improve the efficiency of nurses' work, while also helping to overcome language barriers and provide information quickly. However, ChatGPT also has notable limitations. First, this tool does not guarantee information security, especially sensitive patient information. Second, ChatGPT cannot replace the empathy, intuition, and experience of nurses, which are crucial elements in patient care. Third, there is a risk that ChatGPT may produce inaccurate or outdated information, particularly in clinical decisions. Ultimately, the use of ChatGPT can lead to over-reliance on AI, diminishing critical thinking skills and professional ethics among nurses. Studies analyzing these strengths and limitations provide a comprehensive view of the potential and risks of ChatGPT in nursing. This allows us to make informed decisions about integrating this technology into practice, ensuring its responsible use and maximum benefit for patients and the community. The applicability of this analysis lies in its provision of essential information for developing guidelines and regulations on the use of ChatGPT in nursing, as well as for developing

training and education programs to help nurses use this tool effectively and safely.

5.CONCLUSION

ChatGPT offers significant potential in supporting nursing practice, but also presents numerous challenges regarding ethics, security, and reliability. The use of ChatGPT needs to be strictly managed to ensure that it does not undermine the core values of the nursing profession, while simultaneously leveraging the benefits this technology offers.

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