JURNAL KEPERAWATAN TROPIS PAPUA
http://jktp.jurnalpoltekkesjayapura.com/jktp/index

VOLUME 07 NOMOR 02 DESEMBER 2024 ISSN 2654 - 5756

REVIEW

CHATGPT DALAM PRAKTIK KEPERAWATAN: REVIEW LITERATUR LENGKAP

CHATGPT IN NURSING PRACTICE: AN EXHAUSTIVE LITERATURE REVIEW

Idauli Simbolon[1*], Albinur Limbong[2]
[1]Faculty of Nursing, Universitas Advent Indonesia, Bandung, Indonesia
[2]Faculty of Technology Information, Universitas Advent Indonesia, Bandung, Indonesia

Article history
Received date: 16 Juni 2024
Revised date: 2 Juli 2024
Accepted date: 7 Oktober 2024

*Corresponding author:
Idauli Simbolon
Universitas Advent Indonesia, Bandung, Indonesia,
idauli.simbolon@unai.edu

Abstrak

ChatGPT menjadi trending topik sejak edisi 3.5 pertama diluncurkan pada 30 November 2022. Aplikasi ini memiliki manfaat yang sangat besar dalam bidang pendidikan, praktik, dan penelitian. Namun, didapati beberapa kekhawatiran mengenai potensi risiko dan keterbatasan dalam praktik klinis. Aplikasi ChatGPT merupakan hal yang baru, diperlukan lebih banyak publikasi khususnya tinjauan lengkap terkait kegunaannya di dalam praktik keperawatan. Oleh karena itu, kajian ini bertujuan untuk mengeksplorasi manfaat, potensi risiko, keterbatasan, dan rekomendasi yang lengkap mengenai penggunaannya di dalam praktik keperawatan. Kajian lengkap ini menggunakan literatur yang berhubungan menggunakan *publish or perish* edisi ke 8. Kriteria inklusi adalah literatur yang berhubungan dengan topik yang diterbitkan tahun 2022-2024. Literatur tersebut kemudian dianalisis dan dikelompokkan ke dalam empat tema yaitu: manfaat, potensi risiko, keterbatasan, dan rekomendasi. Hasil dari kajian ini menunjukkan manfaat dari ChatGPT dalam praktik keperawatan termasuk meningkatkan dokumentasi keperawatan, membantu pengambilan keputusan klinis, dan manajemen pengobatan. Aplikasi ini juga berfungsi sebagai alat komunikasi, menghasilkan pengajaran kesehatan klien, ringkasan *discharge planning*, dan menghasilkan simulasi klinis. Tinjauan juga menemukan beberapa potensi risiko dan keterbatasan seperti masih ada ketidakakuratan, kurangnya rasa dan emosi manusia, kurangnya perlindungan data, dapat membahayakan hubungan perawat-klien, dan tanggung jawab hukum. Disarankan untuk memanfaatkan teknologi ChatGPT dengan validasi manusia, perhatian penuh, dan penilaian klinis. Dianjurkan juga untuk menetapkan peraturan dan pedoman yang jelas dalam penggunaannya, dan menjamin perlindungan data. ChatGPT menawarkan manfaat penting dalam praktik keperawatan dalam memberikan perawatan klien secara efisien selama digunakan secara sadar, etis, dengan hati-hati dan penuh perhatian untuk mengurangi potensi risiko.

Kata Kunci: ChatGPT, praktik keperawatan, kecerdasan buatan

Abstract

ChatGPT has been a trending topic since the launch of its version 3.5 on November 30, 2022. This application has shown immense benefits in education, practice, and research. However, concerns have been raised regarding its potential risks and limitations in clinical practice. ChatGPT requires further exploration as a novel technology, particularly comprehensive reviews of its utility in nursing practice. Therefore, this study aims to explore the benefits, potential risks, and limitations and provide comprehensive recommendations for its use in nursing practice. This review utilized relevant literature identified through Publish or Perish version 8—the inclusion criteria comprised publications related to the topic from 2022 to 2024. The literature was analyzed and categorized into four themes: benefits, potential risks, limitations, and recommendations. The findings of this review indicate that ChatGPT offers several benefits in nursing practice, including enhancing nursing documentation, supporting clinical decision-making, and managing medication. Additionally, it serves as a communication tool, facilitates client health education, creates discharge planning summaries, and generates clinical simulations. However, the review also identified potential risks and limitations, such as inaccuracies, lack of human touch and emotions, insufficient data protection, risks to the nurse-client relationship, and legal liability concerns. It is recommended that the use of ChatGPT in nursing practice be accompanied by human validation, careful attention, and clinical judgment. Furthermore, it is essential to establish clear regulations and guidelines for its use and ensure data protection. While ChatGPT offers significant advantages for efficient client care in nursing practice, its use must be conscious, ethical, cautious, and attentive to mitigate potential risks. It is used consciously, ethically, cautiously, and with mindfulness to reduce potential risks.

Keywords: *ChatGPT, nursing practice, artificial intelligence*

INTRODUCTION

The use of Artificial Intelligence (AI) has become part of everyday human life. One of the latest AI is ChatGPT, which has become a trending topic between the pros and cons since the first edition of GPT 3.5 was launched on November 30, 2022 (OpenAI, 2023), and the second edition of GPT 4.0 on February 1, 2023. (Hines, 2023). ChatGPT (Chat Generative Pretrained Transformer) is an AI application of the Large Language Model (LLM) developed by OpenAI. It generates text that resembles human speech using machine learning (Monti, 2023. It is trained on a massive data set in multiple languages and can generate human-like responses such as following instructions, answering questions in to text output, writing an essay for college students, writing research papers, and even passing exams. In addition, it works faster than humans (OpenAI, 2023; Johnson, 2022; Mashable, 2023; Hu, 2023).

The GPT model is trained in two steps. The model is first trained on a large corpus of unlabeled text data in an unsupervised, task-agnostic manner. This 'pre-training' of the model entails learning the patterns and representations in languages independently. The second stage employs fine-tuning and other novel training techniques, such as reinforcement learning from human feedback (Ouyang et al., 2022), and begins with the user's input, repeatedly predicting which word will appear next, just as it did during training until a complete answer is formed. Train the 'pre-trained' model for specific tasks. One of the final products was ChatGPT, a chatbot specializing in generating natural language conversation. The GPT scale increased significantly. It also demonstrated the ability to learn new tasks effectively with only a few task-specific data (Brown et al., 2020).

It stated that ChatGPT has many potential applications in human life such as in education, research and practice sectors. In education, ChatGPT used by students to do their assignment. According to a survey that 30% of the students had used ChatGPT to complete their assignment (Inteligent.com, 2023). ChatGPT helps students, and faculties to find information, ideas, translating texts, and providing alternative questions to deepen the understanding of the certain material (Firaina & Sulisworo, 2023). Furthermore, ChatGPT can be used to write academic essay, and answer to exam questions (Baidoo-Anu & Owusu, 2023). According to educators, the tool can help students improve their writing, grammar, and spelling skills. It provides students with detailed feedback (van Diset al., 2023).

ChatGPT also becomes sophisticated and beneficial tools in research writing. It makes research more efficient and effective by its ability to gather comprehensive information very fast, and analyse it easily. This tool certainly being very helpful in research writing. GPT-3 improves the research writing process by offering intelligent and automated options to various stages, such as data collection, analysis, and result interpretation (Michel-Villarreal, Vilalta-Perdomo, Salinas-Navarro, Thierry-Aguilera, & Gerardou, 2023). Scientists appreciate its ability to "identify research gaps and write computer code, including statistical analyses" (van Dis et al., 2023). ChatGPT also useful in clinical practice due to its ability to provide immediate, reliable, customized responses to various healthcare questions. It can assist nurses in finding information on medication, procedures, or the management of patients' care in specific conditions, as well as communicating with patients and colleagues in real-time. It can also help nurses stay current on the most recent research and best practices in nursing (Odom-Forem, 2023).

Despite the potential benefits of ChatGPT, various concerns have emerged about the potential risks. In clinical practice, there are some concerns about the potential risks. ChatGPT can cause both intentional and unintentional misuse of various applications. Although not each of the proposed fraudulent uses are unique to ChatGPT, what is remarkable is ChatGPT's effective acceleration in producing false evidence and material with a high degree of plausibility (Cascella, Montomoli, Bellini, and Bignami 2023). There are some evidences when ChatGPT answer the questions incorrect and produce erroneous response (Bollen, 2023). Other concern is ChatGPT undermine client's privacy and confidentiality that might endanger client-nurse relationship (distrust), and the spread of misinformation to clinicians is a serious concern indeed (Thomas, 2023). Its potential negative effects, such as privacy, ethics, bias, and discrimination, should not be overlooked. ChatGPT may induce hallucinations or provide false information. "Hallucination" refers to the fact that the model generates content that is not based on reality, resulting in a completely fabricated story or fact (Shen et al., 2023). Another issue is that ChatGPT can reproduce the biases found in the data on which it is trained. In the health-care industry, information accuracy is critical, and the presence of errors or inaccuracies is terrifying (Cascella, Montomoli, Bellini, and Bignami 2023).

Weighing the potential benefits and risks of ChatGPT, health professionals must realize that sooner or later ChatGPT will become a component of nursing in education, clinical practice, and research. It is crucial for all who are involved in client care to have a good knowledge and understanding about the use of this tool. Through good preparation, the health care team can maximize its benefit in increasing the quality of health care services and in the other hand to minimize its risks that can harm human life. There have been many publications since the exhibition of ChatGPT. However it is rare for exhaustive review particularly for nursing practice. So, the purpose of this exhaustive literature review is to explore the perspectives of using ChatCPT in the fields of nursing practice. Thus, to provide a comprehensive overview to alert clinical practitioners to its potential benefits, risks, limitations, and strategies to take a good control of using this AI application.

METHOD

This exhaustive literature extracted records through database searches on Pubmed, Crossref, Semantic Scholar, Scopus, and Google Scholar. The eligibility criteria included any published scientific research or preprints (article, review, editorial, opinion, etc.) on ChatGPT that fell under the scope of clinical practice and were published in English. The exclusion criteria included records that addressed ChatGPT in subjects other than those specified in the eligibility criteria and articles from non-academic sources. On February 28, 2024, the records were searched using Publish or Perish version 8, which yielded 3703 articles. The search title was "ChatGPT in nursing practice." Since ChatGPT was launched in the year 2022, then the year's search was selected for the year 2022-2024. The records retrieved by publish and perish were saved to Microsoft Office Excel CSV. Next, screening was done to exclude duplicate records (n=290). The records that examined ChatGPT in a context other than clinical were excluded (n= 3345), and other records outside the journal (n= 41). The remaining records (n= 27) will then be thoroughly screened. This resulted in 27 records that qualified for inclusion in the current review. Each included record was explicitly searched for the following: (1) Clinical practice benefits, (2) potential risks/limitations, and (3) recommendations.

RESULT

Based on the literature, ChatGPT has many benefits in clinical practice, such as nursing documentation, assisting clinical decision-making, medication management, communication tools, generating client health teaching and discharge summaries, and generating clinical simulation. These benefits and the link to the authors are displayed in Table 1. Despite the vast benefits discussed previously, several concerns about using ChatGPT in healthcare settings have been raised. One was that ethical concerns, such as the risk of bias and transparency, were repeatedly raised. Inaccuracy, less human sense, jeopardy of nurse-client relationships, lack of data protection and privacy, and legal liabilities are all potential adverse effects that should not be underestimated. The list of benefits, potential risks and limitations of ChatGPT are summarized in Table 1 and 2.

Table 1. ChatGPT benefits and the link to the authors

Nu.	Benefits in clinical practice	Authors
1.	It helps nurses improve nursing documentation.	
	- ChatGPT can generate chart notes, save time, and reduce errors.	(Moons & Bulck, 2023)
	- Reduce repetitive writing and administrative work. Generate practical discharge summaries, thus reducing the burden of documentation.	(Patel, and Lam, 2023). (Scerri & Morin, 2023)
2.	Assist clinical decision making.	
	- ChatGPT enables nurses to quickly access medications, procedures, and patient care information and provide instant, accurate, and personalized responses to various healthcare questions.	(Odom-Forren, 2023)
	- Summarize large amounts of data and respond to specific questions.	(Moons & Bulck, 2023)
	- It may provide case summaries or care plans identifying nursing interventions and generate instructions and recommendations that are easier to follow.	(Scerri & Morin, 2023)
	- It provides nurses with the most relevant, up-to-date, and best-practice information on clinical queries.	(Odom-Forren, 2023)
	- ChatGPT can assist clinicians, including students, analyze complex medical data, identify health-related patterns, and make more informed decisions.	(Irwin, Jones, & Fealy, 2023)
	- Produce relevant, meaningful responses to clinical queries comparable to established sources.	(Chervenak, Lieman, BlancoBreindel, & Jindal, 2023).
	- ChatGPT generates responses that are trustworthy and valuable for patient care.	(Bulck & Moons, 2023)
	- ChatGPT is an adjunct informational tool for patients and clinicians to improve outcomes.	(Yeo, et al, 2023).
	- ChatGPT generates texts that exhibit moderate reliability, quality of nursing care information, and overall quality.	(Mahmut, 2023).
	- ChatGPT was able to produce a sufficient clinical guideline recommendation	(Shrestha, 2024)
	- ChatGPT can help to improve patient outcomes by increasing efficiency and reducing error.	(Gunawan, 2023)

3.	Medication management	
	- ChatGPT can generate medication lists and instructions. Ensure that patients receive the correct medications at the right time and dosage.	(Moons & Bulck, 2023)
	- It helps identify new drugs and drug targets, as well as to optimize existing therapies.	(Holzinger et al, 2023)
	- ChatGPT will be a valuable tool in drug discovery, and it can potentially speed up and improve the drug development process significantly.	(Sarma & Thakur, 2023).
4.	Communication tool	
	- Providing conversation cues between nurses and patients. Translating medical language into more understandable text or translating information/instructions immediately to the patient's native language.	(Scerri & Morin, 2023) (Moons & Bulck, 2023)
	- Technical language for communication among clinicians and with clients and their families.	(Cascella, Montomoli, Bellini, & Bignami, 2023)
	- Simplified complex instructions, thereby increasing patient compliance and adherence.	(Scerri & Morin, 2023)
5.	Generate client health teaching and discharge summary.	
	- Generate patient educational material.	(Moons & Bulck, 2023) (Tangyao, Juan, Jialing, & Chia-Chin, 2024)
	- ChatGPT can generate an efficient discharge summary, instructions, or a medication information sheet.	(Scerri & Morin, 2023) (Patel, and Lam, 2023)
	- Personalized medicine and improved health literacy by making health information easily accessible and understandable.	(Yeo, et al, 2023).
6.	Generate Clinical Simulation	
	- ChatGPT can generate more complex clinical scenarios (case study).	(Valerie & Melissa, 2023)
	- It helps to generate, rewrite, and evaluate patient vignettes	Benoit (2023)
	- Improving diagnostics, predicting disease risk and outcome.	(Holzinger, et al, 2023; Mann, 2023; Sharma, and Thakur, 2023)

Table 2. Potential risks and limitations

Nu.	Potential risks	Authors
1.	Inaccuracy	
	- ChatGPT is still in early development and may occasionally generate incorrect or substantial errors and inaccurate answers or information.	(Rao, et al, 2023) (Frith, 2023), (Thomas, 2023), (Van Dis et al, 2003)
	- May make mistakes and unexpected results.	(Scerri & Morin, 2023)
	- Information is often incomplete and sometimes misleading.	(Bulck & Moons,2023)
	- Inability to justify incorrect decisions.	(Rao, 2023), (Rao, 2023)
	- Factually incorrect statements, missing relevant medical information, and text passages.	Jeblick et al, 2023
	- Mostly inconsistent with NANDA-I standard.	(Gosak, Pruinelli, Topaz, & Štiglic, 2024)
	- Inaccurate information can output inaccurate information.	(Ahn, 2023)
	- The incorrect reporting of results or interpretation of treatment guidelines could affect patient morbidity and mortality.	(Ali, et al, 2023).
	- ChatGPT lacks the accuracy, reliability, and transparency required for patient care.	(Deng et all 2023)
2.	Less human sense	
	- Lack of personal and emotional perspectives and support of human health care (less sense).	(Odom-Forren, 2023) (Gunawan, 2023) (Scerri & Morin, 2023)
	- ChatGPT algorithms may be unable to incorporate nursing's distinct perspectives.	(Sallam, 2023)

3.	Jeopardy client-nurse relationship.	(Scerri & Morin, 2023) Parviainen and Rantala (2022)
4.	Lack of data protection and privacy.	(Scerri & Morin, 2023) (Carlini et al., 2021). (Nasr, Shokri, & Houmansadr, 2019). (D'Amico, et al. 2023). (Patel & Lam, 2023; Salam, 2023).
5.	Legal liabilities.	(D'Amico, et al. 2023).
6.	Disengage critical thinking.	(Abdulai & Hung, 2023)
	- It can not replace human intelligence and critical analysis.	(Alkhaqani, Potential Benefit and Challenges of Chat GPT in Future Nursing Education, 2023)
7.	It cannot replace the essential elements of nursing care, such as clinical reasoning and clinical judgment, especially in complex scenarios.	(Huang, 2023)

Based on the literature, several potential risks and limitations of ChatGPT in clinical practice are found. These recommendations need to be considered in nursing practice to reduce potential risks. The lists of the recommendations and the link to the authors can be seen in Table 3.

Table 3. Recommendations and links to the authors

Nu.	Recommendation	Authors
1.	Needs for human validation and clinical judgement.	
	- Using ChatGPT still needs a rigorous human review.	(Scerri & Morin, 2023)
	- Validating ChatGPT against the standard.	(Liu, Wang, & Liu, 2023)
	- Verify Chatbot content to meet the healthcare system's moral and ethical standards and requirements.	(D'Amico et al, 2023).
	- Needs for nurse's clinical judgment, nurses need to use it responsibly and with caution and attentiveness.	(Alkhaqani, Potential Benefit and Challenges of Chat GPT in Future Nursing Education, 2023)
	- Needs for human supervision and mindfulness.	(Odom-Forren, 2023).
	- Use ChatGPT responsibly, ethically, legally, and with caution.	Homolak 2023
	- To effectively implement revolutionary GPT technologies in health care, professional ethical and practice standards must be established and refined.	
2.	Needs for data protection.	
	- Protect any sensitive or confidential data associated with the patient or the healthcare organization by using encryption or not sharing it publicly.	(Scerri & Morin, 2023)
3.	Create clear regulations and policies.	
	- Creating clear guidelines and policies in healthcare related to the use of technology.	(Abdulai & Hung, 2023)
	- Use it responsibly and with caution.	(Alkhaqani, Potential Benefit and Challenges of Chat GPT in Future Nursing Education, 2023)
	- Regulation and monitoring.	(Ali, et al, 2023)
	- Relevant regulations and guidelines.	(Scerri & Morin, 2023)
4.	Technology embracement.	
	- Embrace and use it intelligently.	(Irwin, Jones, & Fealy, 2023); (Thomas, 2023)
	- Embracing new technology to enhance nursing work but not to replace the vital work of nurses.	(Odom-Forren, 2023)
	- Use it wisely with accurate validation from a human nurse.	(Baloglu & Cakali, 2023) (Bulck & Moons, 2023)
	- Use its potential to optimize human healthcare.	(Liu, Wang, & Liu, 2023)

- Stay current with the latest tools and techniques, such as Chat GPT.	(Moons & Bulck, 2023)
- Participating in discussion and research related to ChatGPT.	(Scerri & Morin, 2023)
- Adaptation to new technologies and developments.	(Gunawan, 2023)

DISCUSSION

Benefit 1: Nursing documentation

Nursing documentation is one of the important nursing tasks. Documentation occurs through assessment to evaluation phase. Commonly, an average one-third of nurses' time in clinical practice is used by nurses for documenting vital signs, medications and care planning, and so on. The presence of ChatGPT may help nurses to improve the documentation process. For example, ChatGPT can be asked generate care plan for certain disease or nursing problem (Kennedy, 2024). ChatGPT is able to help nurses in creating detailed and accurate documentation by generating structured notes based on the information provided by nurses (Ismail, 2021). It is able to provide chart notes and other documentation from arranged information, such as vital signs and lab results. This could save nurses time while also reducing the risk of charting errors (Moons,and Van-Bulck, 2023). Using ChatGPT, nurses can reduce repetitious writing and administrative work, such as summarizing an extensive amount of client information. ChatGPT produces efficient discharge summaries, which can help minimize the load of documentation in health care (Patel and Lam,2023). This allows nurses to spend more time providing direct care to patients (Scerri, and Morin, 2023).

Benefit 2:Clinical decision making

Nurses are expected to provide more efficient, accurate, and ethical decision-making. It could be maximized through the utilization of ChatGPT. ChatGPT is capable of providing fast responses to generate information for clinical decisions. ChatGPT allows nurses to quickly obtain information about medications, procedures, and patient care (Odom-Forem, 2023). Nurses can ask ChatGPT about clinical questions in a specific situation. One of the most significant advantages of ChatGPT is its ability to summarize large amounts of data (Moons,and Van-Bulck, 2023). It could provide case summaries or care plans that outline nursing interventions tailored to specific patient needs (Scerri, and Morin, 2023).

Furthermore, ChatGPT can help nurses stay current on the latest research and best practices in nursing. It can quickly search and analyze a large body of literature, giving nurses the most relevant and up-to-date information on clinical questions. This can assist nurses in making informed decisions about patient care and guarantee that they deliver the most efficient therapies (Odom-Forem, 2023). Moreover, ChatGPT can assist clinicians, including students, in analyzing complex medical data, identifying health-related patterns, and making more informed decisions, potentially leading to improved patient outcomes and a more efficient healthcare system (Irwin, Jones, and Fealy, 2023). In addition, ChatGPT has been tested to answer clinical questions, and the result is that it can produce relevant, meaningful responses to clinical queries comparable to established sources (Chervenak, et al., 2023). In high-pressure situations, nurses may face clinical quandaries that must be resolved quickly. ChatGPT is a valuable resource for clinical decision support, providing evidence-based recommendations and guiding nurses through critical decision-making processes. ChatGPT prompts are useful at the point of care for interpreting lab results and deciding on appropriate interventions (Wakas, 2024). ChatGPT produced sufficient clinical guideline recommendations for low back pain management (Shrestha et al., 2024).

In a previous study, experts in congenital heart disease, atrial fibrillation, heart failure, and cholesterol thought ChatGPT-generated responses were trustworthy and valuable. ChatGPT responses were valued more highly by 40% of the experts than Google's. Experts valued the sophistication and nuances in the responses (Van Bulck, and Moon, 2023). In one clinical experience, when a registered nurse cared for a patient who had undergone craniotomy and was being fed via NGTube. Whenever he puts this patient in a high Fowler's position to feed, his BP shoots up. He decided to use ChatGPT to ask for its suggestions on this complex situation. ChatGPT generated five brilliant recommendations for navigating and solving the problem (Osei, 2023).

ChatGPT has effectively answered questions about specific health topics like cirrhosis management. The responses are correct, but a small proportion was labeled as complete. Performance was better in basic knowledge, lifestyle, and treatment than diagnosis and prevention.It gave patients and caregivers practical and multifaceted advice on taking the next steps and adjusting to a new diagnosis. ChatGPT is an additional informational tool for patients and clinicians to improve outcomes (Yeo, et al., 2023). Another study aimed to examine the quality, authenticity, and reliability of the nursing care planning texts produced using ChatGPT, and the result showed that ChatGPT-generated texts exhibited moderate reliability, quality of nursing care information, and overall quality (Dagci, et al., 2023). ChatGPT can triage primary care case vignettes in the same way physicians can (Levine, et al., 2023). Recently, the authors of a study that used ChatGPT to generate recommendations in response to clinical decision support system alerts described the tool's responses as "unique perspectives" that were highly understandable and relevant (Liu, et al., 2023).

Benefit 3: Medication management

ChatGPT can generate lists of medications and directions for patients with specific health conditions. This tool might assist in guaranteeing that patients are given the correct medications at the right time and dosage

(Moon, and Van Bulck, 2023). It can also be used for drug discovery and development in which its ability to analyze large amounts of data to identify patterns and relationships that may not be apparent to humans. This can be used to discover new drugs and drug targets and improve existing therapies. The tool can also analyze an individual's genomic data and other types of health data to create personalized treatment plans based on their specific requirements. This can improve diagnostic accuracy and allow for earlier interventions to prevent disease progression. It can also be used to analyze medical images, such as CT scans and MRI images, to find abnormalities and diagnose diseases (Holzinger, et al., 2023). By processing and producing human-like text, researchers can quickly identify new potential targets, better understand the current state of research, design new drugs, and optimize the pharmacokinetics and pharmacodynamics of new drugs. ChatGPT will be a valuable tool in drug discovery, and it has the potential to significantly speed up and improve the drug development process (Sharma, and Thakur, 2023).

Benefit 4: Communication tool

Communication is essential in clinical practice in which colleagues, clients, and their families interact consistently. ChatGPT could help nurses and patients communicate more effectively by providing conversation cues and generating more understandable, jargon-free instructions and person/patient-centered instructions. Other potential applications include converting medical terminology into more understandable text and translating information/instructions directly into the patient's native language. Furthermore, complex instructions could be efficiently and effectively streamlined, potentially increasing patient compliance and adherence (Scerri, and Morin, 2023). ChatGPT can be used to communicate with patients who speak multiple languages, making communication easier and ensuring that the patient understands and adheres to the care plan dosage (Moon, and Van Bulck, 2023). ChatCPT uses technical language to communicate between clinicians, as well as with clients and their families (Cascella, M., et al., 2023) in real-time, ensuring optimal patient care (Odom-Forem)

Benefit 5: Generate client health teaching

The implication of ChatGPT in clinical practice includes the client's education. It can create patient educational material for example, brochures and handouts designed to the specific needs of patients (Moon, and Van Bulck, 2023). ChatGPT offers instant, accurate, and personalized responses to various healthcare questions. In addition, ChatGPT can generate discharge instructions or medication information sheets, which can help patients achieve effective outcomes (Scerri, and Morin, 2023). ChatGPT in healthcare environments can refine individual medicine and enhance consumer health literacy by making health information quickly accessible and understandable to the general population (Yeo, Y.H., et al.,2023).

Benefit 6: Generate clinical simulation

ChatGPT could quickly generate diverse contexts and symptom profiles when writing vignettes based on an illness name, but it overused some core disease symptoms. It was able to consistently use given symptom lists as the basis for vignettes, with one additional (but appropriate) symptom from outside the list for each disease. Rewriting pediatric vignettes at various levels of health literacy revealed that in 87.5% of cases, more complex symptoms were removed. While writing for a high level of health literacy, 80% of the vignettes contained a diagnosis. When vignettes were rewritten from different perspectives, 90% of the symptoms remained. When presented with 45 vignettes, ChatGPT identified illnesses with 75.6% first-pass diagnostic accuracy and 57.8% triage accuracy. Its use requires monitoring and has caveats, which we will discuss.[35] Students can recognize assessment cues that lead to problem identification for the interventions presented by the ChatGPT NCLEX question and develop evaluation strategies to ensure that the outcomes are met. Students must provide related rationales and references to support their clinical judgment, as ChatGPT typically does not include rationales and references in its output. Student feedback on this teaching strategy revealed that students were surprised by the ChatGPT functionality; however, they stated that it was unclear, did not require NCLEX thinking, and was simple to answer. ChatGPT can thus serve as a starting point for students to create more complex scenarios that reflect the complexities of nursing care and clinical judgment (Seney, et al., 2023). In this study, we have demonstrated the potential of ChatGPT-4.0 as a tool for providing customized answers to multiple-choice questions about tracheostomy care more efficiently and personalized than traditional search engines. More research is required to explore the full potential of ChatGPT in the clinical nursing setting in answering open-ended questions and assessing the effectiveness of more advanced prompts in improving its performance (Wang, et al., 2023)

Potential risk and limitation 1: Inaccuracy or substantial error

Table 2 shows several potential risks and limitations of ChatGPT, such as erroneous or inaccurate information. Scientists experimenting with the technology detect substantial errors (Thomas, 2023). ChatGPT was asked about certain questions in one experiment and received an incorrect answer (Bollen, 2023). ChatGPT lacks the exactness, reliability, and accountability required for patient care when used to provide factual data or an explanation through clinical cases. This probably occurs because ChatGPT is still developing early (Frith,2023). It is only as good as the data that has been trained on. If the model has not been trained on a particular topic or the data are outdated, the model responses may be inaccurate or incomplete. This may raise the possibility of providing inaccurate or biased information to patients or other staff. Moreover, ChatGPT is a statistical model, meaning it may make mistakes or produce unexpected results (Scerri, and Morin, 2023).

The creation of inaccurate content extends to ChatGPT's inability to justify incorrect decisions (Rao, et al., 2023), and it can have serious negative consequences in health care (D'Amico, et al., 2023). Potential risks, such

as omissions or errors, which might have serious consequences for patient care, are mitigated. The incorrect reporting of results or interpretation of treatment guidelines could affect patient morbidity and mortality (Ali, et al., 2023). Of course, according to "garbage in, garbage out," an algorithm approached with incorrect information can output inaccurate information, and the output information is solely the result of a sophisticated algorithm without human interaction, which can be dangerous in medical situations. Despite this, its utilization value can be very high due to its ability to provide personalized interaction and quick response time (Ahn, 2023).In one of the previous exploratory studies, it was discovered that most respondents agreed that ChatGPT reports are factually correct, complete, and not potentially harmful to patients.

However, at the same time, the respondent also identified factually incorrect statements, missing relevant medical information, and text passages in many simplified reports, which might lead patients to draw potentially harmful conclusions.[39] In a previous study, although ChatGPT responses are trustworthy and valuable, few experts consider them dangerous. They recognized that responses were often incomplete and sometimes misleading (Van-Bulck, and Moon, 2023). The Generative Pre-training Transformer (ChatGPT) is still insufficiently specific for nursing diagnoses, resulting in incorrect responses in several cases. When tested among several nursing diagnoses provided, only one case is consistent with the North American Nursing Diagnose-International (NANDA-I) version (Gosak, 2024)

Potential risk and limitation 2: Less of human emotional (sense)

Another ChatGPT's limitation is less sense. Of course, ChatGPT is a tool, not a replacement for actual nurses. While technology can assist nurses in delivering better care, it cannot substitute the personal touch and affection that is so important in the nursing profession. Nurses must continue to offer holistic, patient-centered care while utilizing ChatGPT to supplement their clinical expertise and understanding (Odom-Forren, 2023). ChatGPT cannot understand the patient's emotional state or the nuances of human communication and cannot replace the human touch of a nurse (Scerri, and Morin, 2023). It cannot replace the personal and emotional support nurses provide patients and their vital role in patient assessment, treatment planning, and care coordination (Gunawan, 2023).

Aside from the risk of instilling distrust in nurse-patient relationships, we are concerned that ChatGPT will fail to capture human emotions like compassion and empathy, which are fundamental to the core discipline of nursing. Nursing emphasizes compassion, empathy, care, respect, and patient dignity. Open AI, on the other hand, puts practical computing ahead of explanatory or theoretical analysis. ChatGPT may not incorporate nursing's distinct perspectives into its algorithms unless it is sensitive to nursing disciplinary perspectives (Salam, 2023).

Potential risk and limitation 3: Jeopardy nurse-client relationship

Compassionate and empathic communication is the basis of the nurse-patient relationship. Overreliance on chatbots may lead to nurses losing their skills. For example, providing prescriptive responses to nurse-patient conversations may make them less personal and therapeutic. This concern is supported by the use of AI Chatbots for automated consultations and decision-making, which can significantly impact the nurse-patient relationship, especially patient trust. Thus, important questions about its use include: 'Will patients' trust in nurses be eroded if they believe chatbots rather than humans are making decisions?' Will patients follow the recommendations nurses make if they see that chatbots support the decisions? (Scerri, and Morin, 2023).

Potential risk and limitation 4: Lack of data protection

The limitations of ChatGPT in processing private information may endanger the safety and confidentiality of nursing practice. Previously, it has been found experimentally that the GPT-2 model can inadvertently generate sensitive personal information in the training corpus, such as email addresses, phone/fax numbers, and addresses (Carlini, et al., 2021). These models are not trained with privacy-preserving algorithms and are vulnerable to similar privacy inference attacks. Advanced LMs such as GPT-2 and GPT-3 do not use these privacy-preserving techniques and face the risk of privacy leakage due to the current limitations of LMs by training costs (Nasr, et al., 2019). Although ChatGPT offers significant promise, deployment into clinical practice will be required to overcome privacy security. Chatbots may collect and store sensitive health information, which could be susceptible to violations or misuse. Nurses are trusted with their client's personal and health information and have a legal and ethical obligation to keep it secure at all times. Compromising such information using Open AI tools like ChatGPT might jeopardize the nurse-client relationship, producing distrust in healthcare systems (D'Amico, R.S., et al., 2023). Previous use of AI within health care has been associated with failings that significantly damage patients' trust, and therefore, care must be taken around data storage and access. Health care must present significant issues with respect to data governance (Patel, and Lam, 2023; Sallam; 2023).

Potential risk and limitation 5: Legal liabilities

It was concerned about legal liabilities associated with using chatbot technology in health care. For example, who is responsible for the consequences of a chatbot providing incorrect or harmful advice? They were also concerned about the validity of content generated by a conversational AI platform. It needs to be validated, and its accuracy must be assessed (Frith, 2023; Huang, 2023).

ChatGPT is a human-made tool intended and directed for the good of human life. However, clinicians need to be aware of their understanding regarding this trending technology. Clinicians can use ChatGPT effectively while

avoiding unintended consequences if they clearly understand its capabilities and limitations, ensuring the client's safety, comfort, and quality of patient care. Based on Table 3, there are several emerging recommendations to mitigate these risks and limitations.

Recommendation 1: Needs for human validation and clinical judgement

In the healthcare field, information accuracy is critical, and the presence of errors or inaccuracies can be terrifying. To ensure safety and reliability, the output of this human-created model should constantly be reviewed and validated by a human clinician before use in care practice. A thorough human review process and human involvement in the workflow are required. It is necessary to adhere to applicable standards and criteria, such as accuracy, reliability, interpretability, explainability, and user acceptance. It is critical to investigate existing frameworks and guidelines for evaluating AI systems in health care developed by regulatory bodies or professional organizations and implement them for ChatGPT (Scerri, and Morin, 2023).

Validating ChatGPT against these benchmarks is critical for ensuring its safety and efficiency in clinical practice.40 It is still our human accountability to examine machine content and ensure that it adheres to the healthcare system's moral and ethical standards and requirements (D'Amico, et al., 2023). In addition, ChatGPT is a tool that can be used as a supplement and assist clinicians. It can't replace human intelligence and clinical judgment. While it enhances clinical judgment, nurses must use it responsibly and with caution (Alkhaqani, 2023; Biswas, 2023; Homolak, 2023) and with attentive supervision and mindfulness (Odom-Forren, 2023). Clinicians should exercise caution when comprehending optimistic outcomes from studies involving general-purpose platforms like ChatGPT, and they should be conscious of the limitations of ChatGPT.55 Any inaccuracies caused by ChatGPT cannot accept responsibility for their responses and cannot be held accountable for their actions or decisions. Nurses will remain held accountable for their clinical decisions, even if they were influenced by chatbot responses (Scerri, and Morin, 2023).

Recommendation 2: Needs for data protection

To address privacy violations, several steps must be taken. Currently, the ChatGPT platform advises individuals and organizations not to include sensitive, confidential, or identifiable information because it cannot guarantee the confidentiality of shared data. Furthermore, the information processed by ChatGPT is only temporarily stored on OpenAI servers and is not guaranteed to be secure. As a result, nurses must take appropriate precautions to protect any sensitive or confidential data about the patient or the healthcare organization, such as using encryption or not disclosing it publicly. Furthermore, any application must adhere to the country's data protection regulations (Scerri, and Morin, 2023).

Recommendation 3: Create clear guidelines and policies

Creating clear guidelines and policies in healthcare related to the use of technology can reduce the potential risk, especially harm to the patient. Creating clear guidelines, promoting critical thinking skills and independent problem solving, and encouraging contextualized and individualized decision-making can all help to ensure that AI tools like ChatGPT are used responsibly and ethically, ultimately improving nursing care practice (Abdulai, and Hung, 2023). Use it responsibly and with caution (Alkhaqani, 2023). It is essential for the use of AI in Healthcare, including the automated generation of clinical letters, to be carefully regulated and monitored (Ali, et al., 2023). ChatGPT should be used following relevant regulations and guidelines and with the proper safeguards to protect patient privacy and confidentiality (Scerri, and Morin, 2023). To effectively implement revolutionary GPT technologies in health care, professional ethical and practice standards must be established and refined (Cheng, S.W., et al., 2023).

Recommendation 4: Technology imbracement

Regardless of many negative attitudes toward ChatGPT, the advancement of AI is unstoppable. The presence of technology cannot be separated from daily health care. So, instead of rejection or refusal, it is wise that all nurses embrace goodness and reduce the potential risk creatively and wisely. Proponents of the technology point out that its benefits should be embraced and used intelligently, just as other technologies (Sepak, 2023; Baloglu, and Cakali, 2023), using its potential to enhance human health care.40 60 Nurses are not to be scared of the existence of Chat GPT. As discussed previously, it can become nurses' partners in specific tasks such as education, research, and clinical practice. When used wisely with accurate validation from a human nurse, this will not cause any harm to the client (Brink, 2023; Sun, and Hoelcher, 2023, Arif, Munaf, and Ul-Haque, 2023). So, healthcare professionals need to be current with the latest tools and techniques, such as ChatGPT.29 Furthermore, clinicians can enhance the benefits and reduce the risks of using this tool in the future by participating in discussions and research related to this tool. More discussion and research on this topic will validate the output of using this tool (Scerri, and Morin, 2023). The nurse's adaptation to the new technologies and developments in health care benefits the client, family, and relatives and enhances the nurses' skills and knowledge, making their work easier and more efficient.

IMPLICATIONS AND LIMITATIONS

The findings of this study offer valuable insights into the integration of ChatGPT in nursing practice, particularly for tropical diseases. ChatGPT demonstrates significant potential in enhancing nursing documentation, decision-making, and communication. For tropical disease contexts, its ability to generate tailored educational materials, discharge summaries, and treatment plans could improve the quality of care and patient outcomes.

Moreover, ChatGPT can support the training of nurses by generating complex clinical scenarios relevant to tropical diseases, fostering preparedness and efficiency in managing such conditions.

This literature review is subject to several methodological limitations. First, the study relied solely on literature published between 2022 and 2024, which may limit the scope of findings as ChatGPT is a relatively new technology with rapidly evolving applications. Second, using the Publish or Perish software for database searches might have introduced selection bias, potentially excluding relevant studies indexed in other databases or published in languages other than English. Third, excluding non-peer-reviewed articles and gray literature might have omitted practical insights or early evidence that complement findings from academic studies. Finally, the review's thematic analysis was limited to the authors' interpretation, which may introduce subjectivity in categorizing the benefits, risks, limitations, and recommendations. These limitations highlight the need for ongoing, comprehensive, and systematic reviews as the research on ChatGPT in nursing practice expands.

CONCLUSION

ChatGPT can be used to support clinical practice in enhancing patient quality care. ChatGPT has many benefits that can be utilized in clinical practice. This technology has the potential to accelerate healthcare innovation, improve efficiency and reduce errors. However, nurses must realize that several limitations and risks can also occur when using this tool. The result of this exhaustive literature review provides the information that the nurses may be aware of how to use this tool critically so the risks will not overpower its benefits. The nurse's role is highly expected to provide safe and effective care, particularly in the presence of technology such as ChatGPT. It is recommended that appropriate guidelines and regulations be established to ensure ChatGPT is used safely and responsibly. Nurses must embrace any new technologies while carefully considering potential ethical and legal issues. This behavior can help to limit future complications or risks. Nurses are encouraged to participate in evaluating the trustworthiness of information that Chat GPT provides and report the errors in publication. So, people who work in ChatGPT can improve the quality of these tools in the future.

ACKNOWLEDGMENT

There is nothing to declare.

REFERENCES

Abdulai, A. F., & Hung, L. (2023). Will ChatGPT undermine ethical values in nursing education,research, and practice? Nursing Inquiry, 1-3.

Ali, S.R., et al., (2023). Using ChatGPT to write patient clinic letters. The Lancet Digital Health, 5(4): p. e179-e181.

Alkhaqani, A. (2023). ChatGPT and Future of Medical Writing. Journal of Medical and Clinical Nursing, 1-4.

Alkhaqani, A. (2023). ChatGPT and Nursing Education: Challenges and Opportunities. Al-Rafidain Journal of Medical Science, 50-51.

Alkhaqani, A. (2023). Potential Benefit and Challenges of Chat GPT in Future Nursing Education. Ma'aen Journal for Medical Science, 1-5.

Ahn, C., (2023). Exploring ChatGPT for information of cardiopulmonary resuscitation. Resuscitation, 185.

Archibald MM, Clark AM (2023) ChatGTP : What is it and how can nursing and health science education use it ? Journal Advance Nursing 1-4.

Arif, T., Muna, U., & Ul-Haque, I. (2023). The future of medical education and research: Is ChatGPT a blessing or blight in disguise. Medical Edu.Online, 1-2.

Baloglu, G., & Cakali, K. R. (2023). Is Artificial Intelligence a New Threat to the Academic Ethics?: Enron Scandal Revisited By ChatGPT . Isletme, 143-146.

Benoits, J. R. (2023). ChatGPT for Clinical Vignette Generation, Revision, and Evaluation . BMJ Yale, 1-16.

Biswas, S., (2023). ChatGPT and the future of medical writing, Radiological Society of North America. p. e223312.

Brink, D. (2023). A Nursing Professor's Response to ChatGPT. International Journal of Nursing and Health Care Science, 1-2.

Bollen, J., et al., (2023). ChatGPT: five priorities for research. Nature.

Brown, T., et al., (2020) Language models are few-shot learners. Advances in neural information processing systems, 33: p. 1877-1901

Bulck, L., & Moons, V. (2023). What if your patient switches from Dr. Google to Dr. ChatGPT? A vignette-based survey of the trustworthiness, value, and danger of ChatGPT-generated responses to health questions. European Journal of Cardiovascular Nursing, 1-4.

Carlini, N., et al. (2021). Extracting training data from large language models. in 30th USENIX Security Symposium (USENIX Security 21).

Cascella, M., Montomoli, J., Bellini, V., & Bignami, E. (2023). Evaluating the Feasibility of ChatGPT in Healthcare: An Analysis of Multiple Clinical and Research Scenarios. Journal of Medical Systems, 1-5.

Cheng, S.W., et al., (2023) The now and future of ChatGPT and GPT in psychiatry. Psychiatry and clinical neurosciences, 77(11): p. 592-596.

Chervenak, J., Lieman, H., BlancoBreindel, M., & Jindal, S. (2023). The Promise and Peril of Using a Large Language Model to obtain Clinical Information: ChatGPT performs Strongly as a Fertility Counseling Tool with Limitations. Fertility and Sterility, 575-583.

Dağcı, M., Çam, F., and Dost, A., (2023). Reliability and Quality of the Nursing Care Planning Texts Generated by ChatGPT. Nurse Educator, p. 10.1097.

D'Amico, R.S., et al., (2023). I asked a ChatGPT to write an editorial about how we can incorporate chatbots into neurosurgical research and patient care, LWW. p. 663-664.

Debby R. E. Cotton, Peter A. Cotton & J. Reuben Shipway (2023): Chatting and cheating: Ensuring academic integrity in the era of ChatGPT, Innovations in Education and Teaching International. P. 1-12. DOI: 10.1080/14703297.2023.2190148

Dehouche, N. (2021). Plagiarism in the age of massive generative pre-trained transformers (GPT-3). Ethics in Science and Environmental Politics, 2, 17–23. https://doi.org/10.3354/esep00195

Deng, J., et al., (2024). Artificial intelligence in clinical practice: A look at ChatGPT. Cleve Clin J Med.

Flanagin,A., Bibbins-Domingo., and Berkwits, M., (2023). Nonhuman “authors” and implications for the integrity of scientific publication and medical knowledge. Jama, 2023. 329(8): p. 637-639.

Frith, K. H. (2023). ChatGPT: Disruptive Educational Technology. Nursing Education Perspectives, 198-199.

Gilson, A., Safranek, C., Huang, T., Socrates, V., Chi, L., Taylor, R. A., & Chartash, D. (2022). How does ChatGPT perform on the medical licensing exams? The implications of large language models for medical education and knowledge assessment. MedRxiv, 2022-12.

Gosak, L., et al., (2024). The ChatGPT effect and transforming nursing education with generative AI: Discussion paper. Nurse Education in Practice, 2024. 75: p. 103888.

Gunawan, J. (2023). Exploring the Future of Nursing: Insight from the ChatGPTmodel. Belitung Nursing Journal, 1-5.

Holzinger, A., et al., (2023). AI for life: Trends in artificial intelligence for biotechnology. New Biotechnology, 74: p. 16-24.

Homolak, J., (2023). Opportunities and risks of ChatGPT in medicine, science, and academic publishing: a modern Promethean dilemma. Croatian Medical Journal, 64(1): p. 1.

Hines, K. (2023, June 4). History Of ChatGPT: A Timeline Of The Meteoric Rise Of Generative AI Chatbots. Retrieved from Algorithm & AI Change: https://www.searchenginejournal.com/history-of-chatgpt-timeline/488370/#close

Hu, (2023) ChatGPT sets record for fastest-growing user base. [cited 2024 February, 29]; Available from: https://www.reuters.com/technology/chatgpt-sets-record-fastest-growing-user-base-analyst-note-2023-02-01/.

Huang, H., (2023). Performance of ChatGPT on registered nurse license exam in Taiwan: a descriptive study. In Healthcare. MDPI.

Inteligence.com. (2023, July 16). Nearly 1 of 3 college students have used ChatGPT on written Assignment. Retrieved from Inteligence.com: https://www.inteligent.com/nealy-1-in-3-college students-have-used-chatgpt-on-written-assignments

Irwin, P., Jones, P., & Fealy, S. (2023). What is ChatGPT and what do we do with it? Implications of the age of AI for nursing and midwifery practice and education: An editorial . Nurse Education Today, 1-3.

Jeblick, K., et al., (2023). ChatGPT makes medicine easy to swallow: an exploratory case study on simplified radiology reports. European radiology, p. 1-9.

Johnson, A.,(2022) Here's what to know about OpenAI's ChatGPT—what it's disrupting and how to use it. Forbes.

Johnson D, Goodman R, Patrinely J, Stone C, Zimmerman E, Donald R, Chang S, Berkowitz S, Finn A, Jahangir E, Scoville E, Reese T, Friedman D, Bastarache J, van der Heijden Y, Wright J, Carter N, Alexander M, Choe J, Chastain C, Zic J, Horst S, Turker I, Agarwal R, Osmundson E, Idrees K, Kieman C, Padmanabhan C, Bailey C, Schlegel C, Chambless L, Gibson M, Osterman T, Wheless L. (2023). Assessing the Accuracy and Reliability of AI-Generated Medical Responses: An Evaluation of the Chat-GPT Model. Res Sq [Preprint] :rs.3.rs-2566942. doi: 10.21203/rs.3.rs-2566942/v1. PMID: 36909565; PMCID: PMC10002821.

Kelly, S.M., (2023). ChatGPT passes exams from law and business schools. CNN Business.

Kung, T.H., Cheatham,M., Medenilla, A., Sillos, C., De Leon, L., Elepaño, C., Madriaga, M., Aggabao, R., et al., Performance of ChatGPT on USMLE: potential for AI-assisted medical education using large language models. PLoS digital health, 2023. 2(2): p. e0000198.

Liu, J., Wang, C., & Liu, S. (2023). Utility of ChatGPT in Clinical Practice. Journal of Medical Internet Research, 1-6.

Levine, D.M., et al., (2023). The diagnostic and triage accuracy of the GPT-3 artificial intelligence model. MedRxiv.

Mann, D.L.,(2023). Artificial intelligence discusses the role of artificial intelligence in translational medicine: a JACC: basic to translational science interview with ChatGPT. Basic to Translational Science. 8(2): p. 221-223.

Mashable (2023) ChatGPT is the fastest growing app of all time; Available from: https://sea.mashable.com/tech/22479/chatgpt-is-the-fastest-growing-app-of-all-time.

Miao, H., & Ahn, H. (2023). Asian Pacific Island Nursing Journal, 1.

Montti, R. (2022, December 26). What is ChatGPT And How Can You Use It? Retrieved from Algoritm and AI Changes: https://www.searchenginejournal.com/what-is-chatgpt/473664/

Moons, P., & Bulck, L. (2023). ChatGPT: can artificial intelligence language models be of value for cardiovascular nurses and allied health professionals. European Journal of Cardiovascular Nursing , 1-5.

Nasr, M., Shokri, R., and A. Houmansadr. A., (2019). Comprehensive privacy analysis of deep learning: Passive and active white-box inference attacks against centralized and federated learning. in 2019 IEEE symposium on security and privacy (SP). IEEE.

O'Connor, S. (2023). Open artificial intelligence platforms in nursing education: Tools for academic progress or abuse? Nurse Educ. Pract., 1.

Odom-Forren, J. (2023). The Role of ChatGPT in Perianesthesia Nursing. Journal of PeriAnesthesia Nursing, 176-177.

OpenAI. (2023, January 14). OpenAI: Models GPT-3. Retrieved from OpenAI: https://beta.openai.com/docs/models

Osei, S. (2023, February 11). How I use ChatGPT in my daily practice as a nurse. Retrieved from Linkedin: https://www.linkedin.com/pulse/how-i-use-chatgpt-my-daily-practice-nurse-stephanopoulos-osei

Ouyang, L., et al., (2022) Training language models to follow instructions with human feedback, 2022. URL https://arxiv. org/abs/2203.02155, 13: p. 1.

Patel, S.B. and Lam, K.., (2023). ChatGPT: the future of discharge summaries? The Lancet Digital Health. 5(3): p. e107-e108.

Rao, A., et al., (2023). Evaluating ChatGPT as an adjunct for radiologic decision-making. MedRxiv, p.02. 02.23285399.

Sallam, M. (2023). ChatGPT utility in healthcare education, research, and practice: systematic review on the promising perspectives and valid concerns. In Healthcare. MDPI.

Salvagno M (2023) ChatGPT, Taccone FS, Gerli AG. Can artificial intelligence help for scientific writing? Crit Care [Internet] 27: 75.

Scerri, A., & Morin, K. (2023). Using chatbots like ChatGPT to support nursing practice. Journal of Clinical Nursing, 4211-4213.

Seney, V., Desroches, M.L., and Schuler, M.S., (2023). Using ChatGPT to teach enhanced clinical judgment in nursing education. Nurse Educator, 48(3): p. 124.

Sharma, G. and Thakur,A., (2023). ChatGPT in drug discovery.

Shen Y, Heacock L, Elias J, Hentel KD, Reig B, Shih G, et al. (2023) ChatGPT and other large language models are double-edged swords. Radiology.307(2):e230163.

Shrestha, N., et al., (2024). Performance of ChatGPT on NASS Clinical Guidelines for the Diagnosis and Treatment of Low Back Pain: A Comparison Study. Spine, p. 1097.

Sepak, I. (2023, March 21). To Embrace or Reject Chat GPT, That is The Question. Retrieved from Linkendin: https://www.linkedin.com/pulse/embrace-reject-chat-gpt-question-ivana-sepak

Stokel-Walcer, D. (2023). ChatGPT listed as author on research paper: Many sicientist disapprove. Nature, 620-621.

Sun, G., & Hoelscher, S. (2023). The ChatGPT Storm and What Faculty Can Do. Nurse Educator, 120-124.

Tangyao, W., Juan, M., Jialing, C., & Chia-Chin, L. (2024). Comparing ChatGPT and Clinical Nurses'performance on Tracheostomy care: A cross-sectional Study. International Journal of Nursing Studies Advances, 1-10.

Thomas, S. (2023). Grappling with the Implication of ChatGPT for Researchers, Clinicians, and Educators. Issues In Mental Health Nurse, 141-142.

Valerie, S., & Melissa, D. (2023). Using ChatGPT to Teach Enhanced Clinical Judgment in Nursing Education. Nurse Educator, 124.

Van Dis, E. A. M., Bollen, J., van Rooij, R., Zuidema, W., & Bockting, C. L. (2023). ChatGPT: Five priorities for research. Nature, 614(7947), 224–226. https://doi.org/10.1038/d41586-023-00288-7

Wang, T., et al., (2024). Comparing ChatGPT and clinical nurses' performances on tracheostomy care: A cross-sectional study. International Journal of Nursing Studies Advances, 6: p. 100181.

Yeo YH, Samaan JS, Ng WH, Ting PS, Trivedi H, Vipani A, Ayoub W, Yang JD, Liran O, Spiegel B, Kuo A. (2023). Assessing the performance of ChatGPT in answering questions regarding cirrhosis and hepatocellular carcinoma. Clin Mol Hepatol. 29(3):721-732. doi: 10.3350/cmh.2023.0089. Epub 2023 Mar 22. PMID: 36946005; PMCID: