International Journal of Nursing Sciences 11 (2024) 295–299

HOSTED BY

Contents lists available at ScienceDirect

International Journal of Nursing Sciences

journal homepage: http://www.elsevier.com/journals/international-journal-of-nursing-sciences/2352-0132

Discussion

Embracing the future: Integrating ChatGPT into China's nursing education system

Zhengxin Ni [a], Rui Peng [b], Xiaofei Zheng [b], Ping Xie [c, *]

[a] School of Nursing, Yangzhou University, Yangzhou, China
[b] Department of Bone and Joint Surgery and Sports Medicine Center, The First Affiliated Hospital of Jinan University, Guangzhou, China
[c] Department of External Cooperation, Northern Jiangsu People's Hospital, Nanjing, China

ARTICLE INFO

Article history:
Received 1 November 2023
Received in revised form
13 February 2024
Accepted 6 March 2024
Available online 7 March 2024

Keywords:
Artificial intelligence
ChatGPT
China
Examination
Licensure
Nursing education

ABSTRACT

This article delves into the role of ChatGPT within the rapidly evolving field of artificial intelligence, especially highlighting its significant potential in nursing education. Initially, the paper presents the notable advancements ChatGPT has achieved in facilitating interactive learning and providing real-time feedback, along with the academic community's growing interest in this technology. Subsequently, summarizing the research outcomes of ChatGPT's applications in nursing education, including various clinical disciplines and scenarios, showcases the enormous potential for multidisciplinary education and addressing clinical issues. Comparing the performance of several Large Language Models (LLMs) on China's National Nursing Licensure Examination, we observed that ChatGPT demonstrated a higher accuracy rate than its counterparts, providing a solid theoretical foundation for its application in Chinese nursing education and clinical settings. Educational institutions should establish a targeted and effective regulatory framework to leverage ChatGPT in localized nursing education while assuming corresponding responsibilities. Through standardized training for users and adjustments to existing educational assessment methods aimed at preventing potential misuse and abuse, the full potential of ChatGPT as an innovative auxiliary tool in China's nursing education system can be realized, aligning with the developmental needs of modern teaching methodologies.

What is known?

- ChatGPT, with its advanced text generation skills, quickly and efficiently delivers logically coherent responses. Built on a vast dataset, this artificial intelligence (AI) mimics human-like text, making it invaluable across diverse applications.
- ChatGPT has shown it can pass numerous medical licensing exams and support clinical tasks by aiding diagnostics, organizing patient data, and facilitating clinical decisions. Its integration into medical education and workflows is a significant trend in healthcare.

What is new?

- The current article summarizes research on ChatGPT's role in education, highlighting its ability to revolutionize teaching methods, boost student engagement, and enable personalized learning.
- The current article analyzes the feasibility of ChatGPT passing the nursing licensure exam in the mainland of China and integrating it into nursing education, offering targeted recommendations to maximize AI's benefits while mitigating its limitations in the educational sector.

1. Introduction

Artificial intelligence (AI) is quickly evolving, and its fast speed, high efficiency, high accuracy, and capacity for self-learning will continue to transform many facets of human activity [1]. A large language model (LLM) is a deep learning model with a sizable number of parameters that can produce natural language text after

* Corresponding author.
E-mail address: xieping2208@163.com (P. Xie).
Peer review under responsibility of Chinese Nursing Association.

https://doi.org/10.1016/j.ijnss.2024.03.006

automatically learning a language's grammar and semantic rules [2,3]. This represents a significant advancement in AI from theory to practice. Since its inception in 2022, ChatGPT 3.5, one of the exemplary LLM apps, has garnered considerable attention because of its interactive learning feature and real-time feedback mechanism in response to user inquiries [4,5]. Researchers have discovered that ChatGPT 3.5 often answered public health queries more thoroughly and compassionately than licensed medical professionals [6]. Because of this, more people have started to investigate and pay closer attention to ChatGPT's impact in various sectors. As an update to ChatGPT 3.5, ChatGPT 4.0 was launched in March 2023 and has a more comprehensive transformer architecture, better comprehension, and increased accuracy, security, and deviation management [7].

As of January 20, 2024, 2,210 search results for "ChatGPT" were available on PubMed (Fig. 1). Since 2022, the number of published papers has risen monthly (Fig. 1), with 37 of these publications having a nursing-related focus. Because learning tool development and education development are inextricably linked, several studies have examined the potent data collection, text production, literature categorization, and self-correcting learning capabilities of ChatGPT 4.0 [8,9]. According to nursing experts, integrating AI into nursing education will fundamentally alter the current paradigm of nursing instruction, and this trend is inevitable [10,11]. To take advantage of this reform process, it is best to genuinely understand the LLMs represented by ChatGPT, identify opportunities and challenges that LLMs will bring to nursing education, and critically consider the potential value of this new learning tool for the innovation and development of nursing education, rather than passively accepting its impact.

This article summarizes the influence that ChatGPT has had on the field of education (specifically focusing on research progress in the field of nursing education), explores the feasibility of implementing ChatGPT in nursing education in the mainland of China, and discusses what should be done to adapt to this impending revolution in nursing education.

2. The impact and research progress of ChatGPT on medical education

Since its inception in 2022, ChatGPT has drawn a sizable user base because of its exceptional text production skills and quick response to customer demands. In 2023, opinions on ChatGPT's use in academics and education also sharply changed [12]. Starting in 2023 and owing to the initial lack of regulation around ChatGPT usage, prominent journals began prohibiting the use of ChatGPT as the author of papers [13], considering its use in article writing as plagiarism [14]. To address this issue, many publishing firms have demanded that writers attest that they did not employ AI tools while composing their articles. Furthermore, students have reportedly been utilizing ChatGPT to complete homework, worrying academic researchers, as they believe ChatGPT will diminish the value of schoolwork that requires text production, negatively impacting how the current educational system functions [14–17]. Unfortunately, because ChatGPT obtains its data from a large offline database rather than the Internet, it sometimes includes fictitious references in response to user requests and posed queries [18]. Thus, some scientists have suggested that ChatGPT jeopardizes scientific openness [19] and poses an ethical dilemma for papers about medicine [20,21].

Although the initial assessment of ChatGPT was more favorable [22] than negative, as the platform's user base grew and its use became more sophisticated, users gradually came to understand better how ChatGPT could be used as a tool for the advancement of various industries after actually using its potent personalized text generation feature [23]. At present, there is a growing interest among users in exploring ChatGPT's applications; they are not only attempting to study its capabilities but also striving to broaden its area of use by incorporating regulatory software like GPTZero, AI-Text-Classifier, and ChatGPT Detector. In addition, some studies have supported the increasing use of ChatGPT in education specifically [24], indicating its proficiency in answering multiple-choice otolaryngology and gynecological questions [25,26]. Furthermore, ChatGPT software has been successfully used to pass the American Heart Association (AHA) Basic Life Support (BLS) test [27] and the Plastic Surgery In-Training Exam (PSITE) [28]. ChatGPT has produced good outcomes in surgical education and training while resolving more complex medical biochemistry-related issues [30]. These findings demonstrate that ChatGPT's knowledge is suitable for teaching foundational courses. Another study found that ChatGPT answered subjective questions about urology with evidence-based medical knowledge and was more than 90% correct regarding queries concerning prostate illness [31]. However, while ChatGPT has offered helpful suggestions that professionals widely

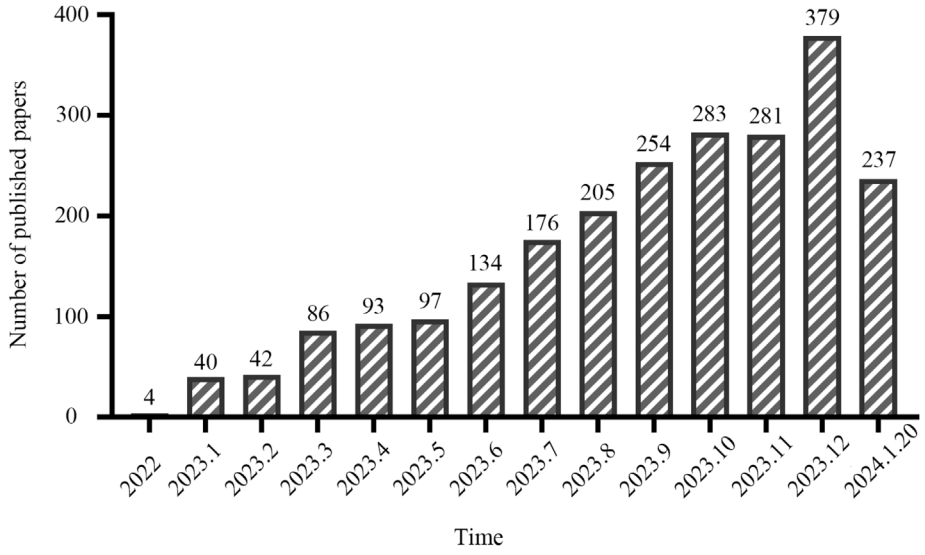

Fig. 1. A graph showing how many publications about "ChatGPT" were found on PubMed between 2022 and January 2024.

accepted, it has also been shown to provide treatment regimens for patients with urinary tract tumors that are less accurate than those made by specialists based on patient imaging and biochemical results [32,33]. As a result, the above research suggests that ChatGPT may be used to teach practical clinical applications and subject-basic instruction but is still imperfect.

In November 2023, the Journal Science announced its decision to lift a restriction on AI enforced since January 2023 [34]. This change permits authors to utilize AI for writing and experimentation but prohibits the creation of AI-generated pictures. Many studies have also shown ChatGPT's usefulness in various sectors, and as a result, there is an increasing trend toward incorporating AI software into the workplace to support learning and office tasks. As users have started to use ChatGPT more regularly, they have recognized its quick retrieval, methodical sorting, and customized output functions as effective aids for learning and work, reinstating ChatGPT to its original role as an educational tool [35]. This shift in perception is clear, as individuals no longer regard ChatGPT as an independent creator, a revolutionary of human wisdom, or a thief who appropriates the fruits of others' labor [35,36].

3. The impact of ChatGPT on nursing education

3.1. ChatGPT research progress on nursing education

Research has shown that ChatGPT can assist nurses in medical record documentation [37], enhance patient education resources [38], and successfully boost patient communication efficiency [37]. One study discovered that ChatGPT successfully passed the Japanese registered nursing licensure test [39]. While experienced nursing educators produce National Council Licensure Examination for Registered Nurses (NCLEX-RN) questions for daily test practice, the actual NCLEX-RN exam uses computer-generated questions based on the college's current response scenario. When researchers generated NCLEX-RN test questions using ChatGPT, they discovered that the question quality was on par with those designed by teachers. This implies that students may be able to use it as a teaching tool to help them prepare for nursing qualifying tests [40]. Furthermore, simulated patient encounters and virtual reality simulations facilitated by ChatGPT and the Metaverse can provide nurses with a more immersive learning environment, thereby helping to improve their proficiency and confidence in delivering remote patient care [41].

3.2. Feasibility study of ChatGPT application in nursing education in the mainland of China

To advocate for the integration of ChatGPT in nursing education in China, it is imperative first to explore ChatGPT's knowledge base and capability to handle clinical nursing challenges. Consequently, we conducted a small-scale study to investigate ChatGPT's performance on China's National Nursing Licensure Examination (NNLE), aiming for clarity and logical coherence in our exploration. We chose 960 multiple-choice questions (MCQs) from the 2019−2022 NNLE test. Of these, 480 questions dealt with fundamental theory, while the other 480 questions covered operational and clinical practice. The MCQs for this study were collected from two publicly accessible websites, https://nurseslabs.com/ and https://wenku.baidu.com/. Among all the MCQs utilized, 58 included picture analysis questions and health policy questions with Chinese characters; as the text analysis and processing capabilities of LLMs are unable to analyze these types of questions, these questions were excluded due to the significant heterogeneity in image analysis capabilities among commonly used LLMs. We entered the remaining 902 multiple-choice questions (448 theoretical and 454 practical) into ChatGPT 4.0, Google Bard, Claude 2, and Bing dialog boxes and tallied the number of correctly answered questions for each of the four LLMs. Lastly, Chi-square analysis was performed using the SPSS 26.0 version to determine if there were statistical variations in the accuracy among the four LLMs when responding to NNLE questions. Answers to NNLE practical and theoretical multiple-choice questions provided by the four LLMs are shown in Fig. 2. According to these findings, ChatGPT4.0's accuracy was 81.49%, which was greater than Google Bard's (65.52%) ($P < 0.001$), Claude 2's (63.97%) ($P < 0.001$), and Bing's (68.29%) ($P < 0.001$). Additionally, while Bing's accuracy was significantly better than Claude 2's ($P = 0.037$), no statistically significant accuracy difference was observed between Google Bard and Claude 2 ($P = 0.544$).

Moreover, the nursing expertise exhibited by ChatGPT 4.0 suggests its capability to pass the Chinese nursing qualification test and serve as a professional tool to support nursing programs. Given that ChatGPT 4.0 operates on text dialog input, users may easily extend their knowledge content and structure by obtaining details of pertinent knowledge points within the constraints of user text input. This instantaneous feedback can swiftly resolve issues during the learning process and eliminate the need for time-consuming information retrieval, thereby offsetting the discontinuity and inefficiency of conventional learning modalities. Using a systematic and standardized language and knowledge structure framework to search user queries and display knowledge points, ChatGPT 4.0 may prevent fragmented learning in overly expansive topic knowledge systems. Theoretically, these results support the use of ChatGPT in nursing education in the mainland of China.

4. Optimizing ChatGPT for responsible use in nursing education

Implementing a robust regulatory framework to guarantee the proper utilization of ChatGPT as a learning tool in nursing education is extremely important. It is widely acknowledged that ChatGPT's strong text generation and integration capabilities may increase users' productivity at work and in their learning processes [42]. Nevertheless, there is currently insufficient oversight of ChatGPT usage in Chinese institutions. Some nursing students may exploit loopholes in the outdated assessment system and use ChatGPT as a shortcut. Therefore, updating and modifying the current assessment system is vital due to the increasing trend of AI software usage. Given AI's inevitable popularization and promotion, ChatGPT must be utilized by the proper regulatory framework to prevent students from misusing this technology.

Initially, educational institutions must provide pupils with opportunities to consistently understand ChatGPT's application and teach them the proper and intentional method of querying ChatGPT. This approach guarantees that students acquire accurate and worthwhile information, increasing their learning efficiency. Simultaneously, educational institutions should consider modifying their methods of teaching assessment, lowering the percentage of extracurricular text work, increasing the amount of practical and operational tasks, and raising the percentage of student performance in the classroom in the total evaluation. By implementing these steps, teachers may motivate their students to engage in more interactive and practical learning rather than simply depending on written answers provided by ChatGPT. Additionally, increasing the quantity of nursing literature read using ChatGPT's auxiliary reading feature may enhance the clinical knowledge and scientific literacy of nursing staff members. Furthermore, to maintain the fairness and accuracy of qualifying exams, the administrative system should be strengthened to prevent ChatGPT and other comparable LLM software from being employed during the examination period.

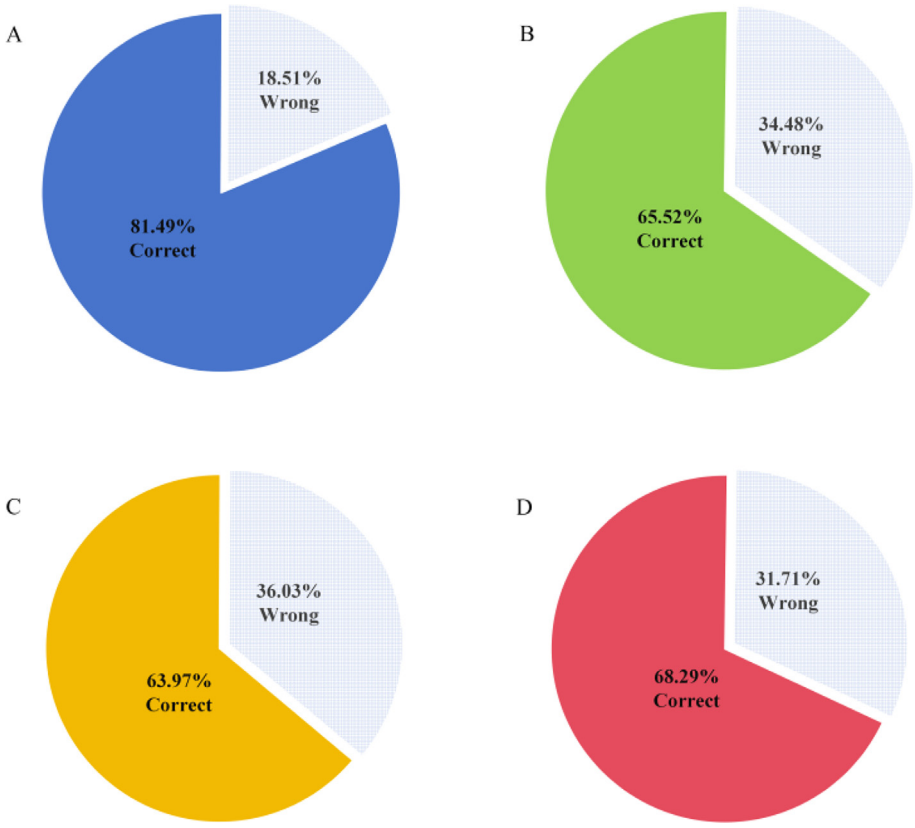

Fig. 2. Comparison diagram of answer accuracy of ChatGPT4.0, Google Bard, Claude 2 and Bing. A: ChatGPT4.0. B: Google Bard. C: Claude 2. D: Bing.

In summary, these research findings suggest that ChatGPT is a promising tool for teaching and learning that may help improve the efficacy of nursing education [43]. However, there is a pressing need to update the current nursing education and evaluation system to fully realize the benefits of ChatGPT and prevent possible misuse. We believe that effective instruments can only reach their full potential and avert possible drawbacks by implementing a robust regulatory framework.

5. Conclusion

This article assessed ChatGPT's potential to enhance nursing education in China, spotlighting its role in interactive learning and feedback. We discussed the initial challenges and the positive changes resulting from regulatory interventions. Emphasizing ChatGPT's ability to assist nursing licensure and education, we advocate for implementing a robust regulatory framework to ensure its effective use. However, we also suggest that further exploration is needed to understand ChatGPT's long-term impact fully. Future studies should concentrate on assessing AI tools to enhance nursing education and clinical preparedness, emphasizing conducting more randomized controlled trials to evaluate these interventions rigorously.

CRediT authorship contribution statement

Zhengxin Ni: Methodology, Formal analysis, Data curation, Writing - original draft. **Rui Peng:** Methodology, Validation, Formal analysis, Resources, Data curation, Formal analysis. **Xiaofei Zheng:** Conceptualization, Validation, Writing - review & editing, Supervision. **Ping Xie:** Conceptualization, Validation, Writing - review & editing, Supervision.

Data availability statement

The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Declaration of competing interest

The authors declare that they have no competing interests.

Acknowledgments

We would like to thank Dr. Wenyi Gan for his helpful guidance on the use of Google Bard, Claude 2, Bing and ChatGPT.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ijnss.2024.03.006.

References

[1] Baronchelli A. Shaping new norms for AI. Philos Trans R Soc Lond B Biol Sci 2024;379(1897):20230028. https://doi.org/10.1098/rstb.2023.0028.
[2] Eppler M, Ganjavi C, Ramacciotti LS, Piazza P, Rodler S, Checcucci E, et al. Awareness and use of ChatGPT and large language models: a prospective cross-sectional global survey in urology. Eur Urol 2024;85(2):146–53. https://doi.org/10.1016/j.eururo.2023.10.014.
[3] Guevara M, Chen S, Thomas S, Chaunzwa TL, Franco I, Kann BH, et al. Large language models to identify social determinants of health in electronic health records. NPJ Digit Med 2024;7(1):6. https://doi.org/10.1038/s41746-023-00970-0.
[4] Stokel-Walker C. AI bot ChatGPT writes smart essays - should professors worry? Nature 2022; Dec 9. https://doi.org/10.1038/d41586-022-04397-7.
[5] Graham F. Daily briefing: will ChatGPT kill the essay assignment? Nature 2022

Dec 12. https://doi.org/10.1038/d41586-022-04437-2.
[6] Ayers JW, Poliak A, Dredze M, Leas EC, Zhu Z, Kelley JB, et al. Comparing Physician and artificial intelligence chatbot responses to patient questions posted to a public social media forum. JAMA Intern Med 2023;183:589–96. https://doi.org/10.1001/jamainternmed.2023.1838.
[7] Lim ZW, Pushpanathan K, Yew SME, Lai Y, Sun CH, Lam JSH, et al. Benchmarking large language models' performances for myopia care: a comparative analysis of ChatGPT-3.5, ChatGPT-4.0, and Google Bard. EBioMedicine 2023;95:104770. https://doi.org/10.1016/j.ebiom.2023.104770.
[8] Alsadhan A, Al-Anezi F, Almohanna A, Alnaim N, Alzahrani H, Shinawi R, et al. The opportunities and challenges of adopting ChatGPT in medical research. Front Med 2023;10:1259640. https://doi.org/10.3389/fmed.2023.1259640.
[9] Younis HA, Eisa TAE, Nasser M, Sahib TM, Noor AA, Alyasiri OM, et al. A systematic review and meta-analysis of artificial intelligence tools in medicine and healthcare: applications, considerations, limitations, motivation and challenges. Diagnostics 2024;14(1):109. https://doi.org/10.3390/diagnostics14010109.
[10] Liu J, Liu F, Fang J, Liu S. The application of chat generative pre-trained transformer in nursing education. Nurs Outlook 2023;71(6):102064. https://doi.org/10.1016/j.outlook.2023.102064.
[11] Tam W, Huynh T, Tang A, Luong S, Khatri Y, Zhou W. Nursing education in the age of artificial intelligence powered Chatbots (AI-Chatbots): are we ready yet? Nurse Educ Today 2023;129:105917. https://doi.org/10.1016/j.nedt.2023.105917.
[12] Feng Y., Han J., Lan X. After one year of ChatGPT's launch: reflections on artificial intelligence in scientific writing. Eur J Nucl Med Mol Imag 2024. https://10.1007/s00259-023-06579-5. [Accessed 10 January 2023].
[13] Stokel-Walker C. ChatGPT listed as author on research papers: many scientists disapprove. Nature 2023;613(7945):620–1. https://doi.org/10.1038/d41586-023-00107-z.
[14] Graham A. ChatGPT and other AI tools put students at risk of plagiarism allegations, MDU warns. BMJ 2023;381:1133. https://doi.org/10.1136/bmj.p1133.
[15] Qu X, Yang JM, Chen T, Zhang W. Reflections on the implications of the developments in ChatGPT for changes in medical education models. Sichuan Da Xue Xue Bao Yi Xue Ban 2023;54(5):937–40. https://doi.org/10.12182/20231360302 [in Chinese].
[16] Sahu PK, Benjamin LA, Singh Aswal G, Williams-Persad A. ChatGPT in research and health professions education: challenges, opportunities, and future directions. Postgrad Med J 2023;100(1179):50–5. https://doi.org/10.1093/postmj/qgad090.
[17] Lourenco AP, Slanetz PJ, Baird GL. Rise of ChatGPT: it may Be time to reassess how we teach and test radiology residents. Radiology 2023;307(5):e231053. https://doi.org/10.1148/radiol.231053.
[18] Ariyaratne S, Iyengar KP, Nischal N, Chitti Babu N, Botchu R. A comparison of ChatGPT-generated articles with human-written articles. Skeletal Radiol 2023;52(9):1755–8. https://doi.org/10.1007/s00256-023-04340-5.
[19] Tools such as ChatGPT threaten transparent Science; here are our ground rules for their use. Nature 2023;613(7945):612. https://doi.org/10.1038/d41586-023-00191-1.
[20] Salvagno M, Taccone FS, Gerli AG. Can artificial intelligence help for scientific writing? Crit Care 2023;27(1):75. https://doi.org/10.1186/s13054-023-04380-2.
[21] Liebrenz M, Schleifer R, Buadze A, Bhugra D, Smith A. Generating scholarly content with ChatGPT: ethical challenges for medical publishing. Lancet Digit Health 2023;5(3):e105–6. https://doi.org/10.1016/S2589-7500(23)00019-5.
[22] Shen Y, Heacock L, Elias J, Hentel KD, Reig B, Shih G, et al. ChatGPT and other Large Language models are double-edged swords. Radiology 2023;307(2):e230163. https://doi.org/10.1148/radiol.230163.
[23] Lubowitz JH. ChatGPT, an artificial intelligence chatbot, is impacting medical literature. Arthroscopy 2023;39(5):1121–2. https://doi.org/10.1016/j.arthro.2023.01.015.
[24] Lee H. The rise of ChatGPT: exploring its potential in medical education. Anat Sci Educ 2023;Mar 14. https://doi.org/10.1002/ase.2270.
[25] Hoch CC, Wollenberg B, Lüers JC, Knoedler S, Knoedler L, Frank K, et al. ChatGPT's quiz skills in different otolaryngology subspecialties: an analysis of 2576 single-choice and multiple-choice board certification preparation questions. Eur Arch Oto-Rhino-Laryngol 2023;280(9):4271–8. https://doi.org/10.1007/s00405-023-08051-4.
[26] Li SW, Kemp MW, Logan SJS, Dimri PS, Singh N, Mattar CNZ, et al. ChatGPT outscored human candidates in a virtual objective structured clinical examination in obstetrics and gynecology. Am J Obstet Gynecol 2023;229(2). https://doi.org/10.1016/j.ajog.2023.04.020. 172.e1-172.e12.
[27] Zhu LX, Mou WM, Yang T, Chen R. ChatGPT can pass the AHA exams: open-ended questions outperform multiple-choice format. Resuscitation 2023;188:109783. https://doi.org/10.1016/j.resuscitation.2023.109783.
[28] Gupta R, Herzog I, Park JB, Weisberger J, Firouzbakht P, Ocon V, et al. Performance of ChatGPT on the plastic surgery inservice training examination. Aesthet Surg J 2023;43(12):NP1078–82. https://doi.org/10.1093/asj/sjad128.
[30] Ghosh A, Bir A. Evaluating ChatGPT's ability to solve higher-order questions on the competency-based medical education curriculum in medical biochemistry. Cureus 2023;15(4):e37023. https://doi.org/10.7759/cureus.37023.
[31] Caglar U, Yildiz O, Meric A, Ayranci A, Yusuf R, Sarilar O, et al. Evaluating the performance of ChatGPT in answering questions related to benign prostate hyperplasia and prostate cancer. Minerva Urol Nephrol 2023;75(6):729–33. https://doi.org/10.23736/S2724-6051.23.05450-2.
[32] Pan A, Musheyev D, Bockelman D, Loeb S, Kabarriti AE. Assessment of artificial intelligence chatbot responses to top searched queries about cancer. JAMA Oncol 2023;9(10):1437–40. https://doi.org/10.1001/jamaoncol.2023.2947.
[33] Gabriel J, Gabriel A, Shafik L, Alanbuki A, Larner T. Artificial intelligence in the urology multidisciplinary team meeting: can ChatGPT suggest European Association of Urology guideline-recommended prostate cancer treatments? BJU Int 2023; Nov 27. https://doi.org/10.1111/bju.16240.
[34] Policies E. Change to policy on the use of generative AI and large language models. Science 2023. https://www.science.org/content/blog-post/change-policy-use-generative-ai-and-large-language-models. [Accessed 10 January 2023].
[35] Kitamura FC. ChatGPT is shaping the future of medical writing but still requires human judgment. Radiology 2023;307(2):e230171. https://doi.org/10.1148/radiol.230171.
[36] Mesko B. The ChatGPT (generative artificial intelligence) revolution has made artificial intelligence approachable for medical professionals. J Med Internet Res 2023;25:e48392. https://doi.org/10.2196/48392.
[37] Moons P, Van Bulck L. Using ChatGPT and Google Bard to improve the readability of written patient information: a proof-of-concept. Eur J Cardiovasc Nurs 2023:zvad087. https://doi.org/10.1093/eurjcn/zvad087.
[38] Dağcı M, Çam F, Dost A. Reliability and quality of the nursing care planning texts generated by ChatGPT. Nurse Educ 2023:1–6. https://doi.org/10.1097/NNE.0000000000001566.
[39] Taira K, Itaya T, Hanada A. Performance of the large language model ChatGPT on the national nurse examinations in Japan: evaluation study. JMIR Nurs 2023;6:e47305. https://doi.org/10.2196/47305.
[40] Cox RL, Hunt KL, Hill RR. Comparative analysis of NCLEX-RN questions: a duel between ChatGPT and human expertise. J Nurs Educ 2023;62(12):679–87. https://doi.org/10.3928/01484834-20231006-07.
[41] Sharma M, Sharma S. A holistic approach to remote patient monitoring, fueled by ChatGPT and Metaverse technology: the future of nursing education. Nurse Educ Today 2023;131:105972. https://doi.org/10.1016/j.nedt.2023.105972.
[42] Mohammad B, Supti T, Alzubaidi M, Shah H, Alam T, Shah Z, et al. The pros and cons of using ChatGPT in medical education: a scoping review. Stud Health Technol Inform 2023;305:644–7. https://doi.org/10.3233/SHTI230580.
[43] Gosak L, Pruinelli L, Topaz M, Štiglic G. The ChatGPT effect and transforming nursing education with generative AI: discussion paper. Nurse Educ Pract 2024;75:103888. https://doi.org/10.1016/j.nepr.2024.103888.