

Received:
26 February 2023

Revised:
12 April 2023

Accepted:
23 April 2023

Published online:
15 May 2023

<https://doi.org/10.1259/bjr.20230203>

Cite this article as:

Sendur HN, Sendur AB, Cerit MN. ChatGPT from radiologists' perspective. *Br J Radiol* (2023) 10.1259/bjr.20230203.

COMMENTARY

ChatGPT from radiologists' perspective

¹HALIT NAHIT ŞENDUR, MD, ²AYLIN BILLUR ŞENDUR and ¹MAHI NUR CERIT

¹Department of Radiology, Gazi University, Faculty of Medicine, Mevlana Bulvarı, Yenimahalle, Ankara, Turkey

²Private Radiology Clinic, Kızılırmak Mah. 1443. Cad. No:25 1071 Plaza, Çankaya, Ankara, Turkey

Address correspondence to: Dr Halit Nahit Şendur

E-mail: hsendur@gazi.edu.tr

ABSTRACT

ChatGPT is a newly developed technology created by the OpenAI company. It is an artificial-intelligence-based large language model (LLM) and able to generate human-like text. The potential roles of ChatGPT in clinical decision support and academic writing have led to intense criticism of this technology in the scientific community. Therefore, radiologists also need to be familiar with LLMs such as ChatGPT.

ChatGPT is a large language model (Generative Pre-trained Transformer) developed by the OpenAI company. It has capabilities to understand natural languages and generate human-like text responses based on its extensive training data. In a simplistic approach, it enables communication between computers and humans. The invention of ChatGPT attracted the intense interest of the scientific community for its potential roles in clinical decision support and academic writing. It seems that the discussion about these issues will take much longer time and therefore, radiologists need to be familiar with the pros and cons of using ChatGPT.¹⁻⁹

In daily practice, the benefits of using clinical decision support tools should not be underestimated. By using these tools, adherence to widely accepted clinical guidelines can be increased, and prescription errors and unnecessary imaging orders can be reduced.¹⁰ However, these tools are not widely available particularly in the vast majority of institutions in developing countries. As an easily accessible and freely available tool, ChatGPT can be used at any time by radiologists from all around the world. Additionally, commercially available clinical decision support tools generally provide unidirectional recommendations that may limit their utility. However, ChatGPT provides its users an opportunity for open communication as further questions with adequate input may ensure understanding of the rationale behind the recommendations.

In clinical practice if adequate input is given, ChatGPT can be helpful to radiologists in the differential diagnosis of a specific lesion detected in any imaging modality and may provide information for further imaging technique which is more appropriate to establish a precise diagnosis.

For example, based on following description "A ten years old female underwent X-ray imaging and a sclerotic area adjacent to cortex at proximal metaphysis of femur was detected. The patient has pain in her thigh. What is your diagnosis?" ChatGPT provided information regarding a potential bone tumor and considered that osteoid osteoma is possible diagnosis. Additionally, the output of ChatGPT indicated that CT or MRI may be necessary to confirm the diagnosis. On the other hand, ChatGPT can provide useful follow-up recommendations for patients with seldomly encountered lesions. For example, based on following question "What is the appropriate follow up recommendation for a female who had flat epithelial atypia (FEA) on her breast biopsy result?" ChatGPT responded that although FEA is considered as a benign condition females with FEA had a slightly increased risk for developing breast cancer and close follow-up was recommended depending on the patient's risk factors. With the additional question of what the risk factors were that require short-term follow-up, ChatGPT adequately determined the patients that require short-term follow-up. These informations can be considered as beneficial and time saving particularly when the radiologist is inexperienced or not subspecialized and has a practice for general radiology. However, ChatGPT provides all this information regardless of the specialty of healthcare provider. This may have a potential negative effects on the role of radiologists in multidisciplinary teams, especially in institutions where communication between radiologists and clinicians is not well-established. In this scenario the information generated by ChatGPT can be used by clinicians and radiologists may lose their position in multidisciplinary teams. One recent article discussed the probability of the end of consulting infectious disease doctor due to

antimicrobial advice provided by ChatGPT.¹¹ The authors reported that although the antimicrobial regimens suggested by ChatGPT were appropriate for the diagnosis, the deficits in situational awareness, inference and consistency may jeopardize the safety of patients.¹¹ In this perspective, ChatGPT users should be aware of that the content generated by this technology necessitates human judgment in any case and verification of the output is of utmost importance in terms of accountability and responsibility of healthcare providers.

Academic writing is a cumbersome work that requires nuanced skills. The ability of academic writing improves with time and experience. Therefore, great efforts are necessary to become a productive author. ChatGPT has potential to expedite the process by assisting in hypothesis creation, literature search and draft generation with significant reduction in time and efforts.^{4,12,13} However, there are several drawbacks of the utilization of this technology. First of all, it should be noted that currently ChatGPT has limited processed data about the events after 2021. Therefore, authors who decided to utilize this technology should be aware of that ChatGPT-generated texts are lacking of recent advancements and this issue is very important particularly when conducting a study in an active area of

research. For example, in a hot research topic such as ultrasound based liver fat quantification, although ChatGPT could not be able to provide the latest articles, it could successfully provide relevant articles on this subject. On the other hand, there is a strong concern in terms of plagiarism for ChatGPT generated texts.^{12,13} ChatGPT had training with publicly available data and this may lead an undesirable increase in similarity of the texts with previously published articles. Therefore, paraphrasing and editing the generated texts by human authors are mandatory. Furthermore, the responses provided by ChatGPT may be incorrect and biased which necessitates the users to check the output.^{3,4}

In conclusion, our impression is that ChatGPT has potential to contribute to the clinical practice and research area. This contribution may increase with the potential future developments in this technology. However, cautious approach with human judgment is of great importance. It is obvious that we will not only hear about ChatGPT but also use this type computer generated data more frequently. Therefore, radiologists as well as all clinicians should be aware of the role of ChatGPT in medicine and familiarize themselves with this rapidly evolving technology.

REFERENCES

- Dahmen J, Kayaalp ME, Ollivier M, Pareek A, Hirschmann MT, Karlsson J, et al. Artificial intelligence bot chatgpt in medical research: the potential game changer as a double-edged sword. *Knee Surg Sports Traumatol Arthrosc* 2023; **31**: 1187–89. <https://doi.org/10.1007/s00167-023-07355-6>
- Gordijn B, Have HT. ChatGPT: evolution or revolution? *Med Health Care Philos*. 2023 Jan 19. doi: <https://doi.org/10.1007/s11019-023-10136-0>
- The Lancet Digital Health. ChatGPT: friend or foe? *Lancet Digit Health*. 2023 [https://doi.org/10.1016/S2589-7500\(23\)00023-7](https://doi.org/10.1016/S2589-7500(23)00023-7)
- Lecler A, Duron L, Soyer P. Revolutionizing radiology with GPT-based models: current applications, future possibilities and limitations of chatgpt. *Diagnostic and Interventional Imaging* 2023. <https://doi.org/10.1016/j.diii.2023.02.003>
- Ufuk F. The role and limitations of large language models such as chatgpt in clinical settings and medical journalism. *Radiology* 2023; **307**(3): e230276. <https://doi.org/10.1148/radiol.230276>
- Šlapeta J. Are ChatGPT and other pretrained language models good parasitologists *Trends Parasitol*. 2023 Mar 00039-9. <https://doi.org/10.1016/j.pt.2023.02.006>
- Beltrami EJ, Grant-Kels JM. Consulting chatgpt: ethical dilemmas in language model artificial intelligence. *Journal of the American Academy of Dermatology* 2023. <https://doi.org/10.1016/j.jaad.2023.02.052>
- Ismail A, Ghorashi NS, Javan R. New Horizons: The Potential Role of OpenAI's ChatGPT in Clinical Radiology. *J Am Coll Radiol*. 2023 Mar 00259-4. <https://doi.org/10.1016/j.jacr.2023.02.025>
- Shen Y, Heacock L, Elias J, Hentel KD, Reig B, Shih G, Moy L. ChatGPT and Other Large Language Models Are Double-edged Swords. *Radiology*. 2023
- Sutton RT, Pincock D, Baumgart DC, Sadowski DC, Fedorak RN, Kroeker KI. An overview of clinical decision support systems: benefits, risks, and strategies for success. *NPJ Digit Med*. 2020
- Howard A, Hope W, Gerada A. ChatGPT and antimicrobial advice: the end of the consulting infection doctor? *Lancet Infect Dis* 2023; **23**: S1473-3099(23)00113-5: 405–6. [https://doi.org/10.1016/S1473-3099\(23\)00113-5](https://doi.org/10.1016/S1473-3099(23)00113-5)
- Biswas S. ChatGPT and the future of medical writing. *Radiology* 2023; **307**(2): e223312. <https://doi.org/10.1148/radiol.223312>
- 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>