

Opinion



The use of ChatGPT in occupational medicine: opportunities and threats

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Abbreviations

AI: artificial intelligence.

Competing interests

The authors declare that they have no competing interests.

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ABSTRACT

ChatGPT has the potential to revolutionize occupational medicine by providing a powerful tool for analyzing data, improving communication, and increasing efficiency. It can help identify patterns and trends in workplace health and safety, act as a virtual assistant for workers, employers, and occupational health professionals, and automate certain tasks.

However, caution is required due to ethical concerns, the need to maintain confidentiality, and the risk of inconsistent or inaccurate results. ChatGPT cannot replace the crucial role of the occupational health professional in the medical surveillance of workers and the analysis of data on workers' health.

Keywords: Artificial intelligence; Occupational medicine; Workplace

ChatGPT (Generative Pre-trained Transformer) is a language model developed by OpenAI and based on deep learning. It has been trained on a vast amount of textual data to understand and generate responses to natural language queries. The emergence of ChatGPT has been the subject of discussion on the benefits and drawbacks of the use of this technology.

In medicine, ChatGPT can be used for various tasks, including medical writing assistance, diagnostic assistance, prescription assistance, and medical education. Some researchers have been interested in the use of ChatGPT in scientific writing,^{1,2} as well as its relevance in various medical fields, such as public health,^{3,4} neurosurgery,⁵ radiology,⁶ toxicology,⁷ etc. However, this technology also has the potential to generate spam, ransomware and other malicious output, which is a major concern for our society.⁸ An in-depth debate on the potential uses, threats, and limitations of these tools is therefore needed.

The aim of this brief communication is to discuss the potential role of ChatGPT in occupational medicine, and the opportunities and threats of its use in this field.

Occupational medicine is a field that deals with the health and safety of workers in the workplace. This field has become increasingly important in recent years, as the number of occupational diseases and accidents is rising steadily.^{9,10} However, there are a number of challenges associated with this field, including the need for up-to-date and accurate

information on workplace risks, and the need for effective communication between workers, employers as well as occupational health professionals.

ChatGPT has a number of features that make it a promising tool for meeting these challenges. First, it can interactively collect data from workers about their exposure to chemical, physical, and psychological risks in the workplace. It can ask specific questions about the types of hazardous substances used, the machinery and equipment used, and the safety measures in place. Second, ChatGPT can analyze textual data from various sources, such as scientific articles, safety manuals and incident reports, to assess the level of risk associated with various hazardous chemicals and physical conditions in the workplace. It can then generate comprehensive reports summarizing identified chemical and physical hazards and potential risks, and develop tailored recommendations for preventing occupational illness and accidents and improving safety. As a result, it can reduce the workload of occupational health professionals as well as save them time.

ChatGPT can also act as a virtual assistant for workers, employers, and occupational health professionals, providing quick answers to their questions about occupational health and safety, such as ergonomics, stress management, or the prevention of common occupational hazards. In addition, ChatGPT can be used for training and education by creating interactive educational materials on occupational hazards and safety practices for employees to improve their awareness and understanding. It also enhances the knowledge and competency of occupational health professionals by providing quick access to content and simulated scenarios. Finally, its ability to understand and generate content in multiple languages can be beneficial in international workplaces where language barriers may exist.

ChatGPT, therefore, has the potential to revolutionize the field of occupational medicine by providing a powerful tool for analyzing data, improving communication, and increasing efficiency.

However, we need to adopt this powerful technology with caution since they are not without risks. The use of ChatGPT in occupational medicine can present several challenges and threats. First, it is important to consider the ethical concerns of using ChatGPT, such as the responsibility of physicians when using this technology, equal access to technology for all workers, and transparency in the application of artificial intelligence. In addition, it is crucial to safeguard the confidentiality of workers' medical data and company trade secrets, and as the protection of such information is essential. However, using ChatGPT may pose a threat to maintaining confidentiality and lead to the disclosure of sensitive data. Moreover, using ChatGPT results to decide on medical interventions could lead to malpractice or legal liability for health problems. In fact, ChatGPT may provide inconsistent or inaccurate results, which may lead to misdiagnosis or incorrect recommendations. This can have negative consequences for employees and employers. Therefore, users should not blindly rely on the results of ChatGPT answers on important issues, and should undergo a process of expert confirmation.

The use of ChatGPT in occupational health education and training should be carefully considered taking into account the possibility of inaccuracy, including situations where it could create information that is erroneous or misleading, or what is described in the area of artificial intelligence (AI) as “hallucinations.”¹¹ Critical thinking and cross-referencing AI-generated content with reliable sources are crucial. Educators should emphasize seeking expert advice when in doubt to ensure students understand facts and avoid inaccuracies.

Inaccurate medical information could also compromise the safety of patients. Occupational health professionals may unintentionally endanger the safety and well-being of the workers in their charge by making judgments based on AI-generated content. Employers may incur high costs because of errors brought on by unreliable AI-generated recommendations, including legal liability, workers' compensation claims, and reputational harm.

Furthermore, ChatGPT cannot replace the crucial role of the occupational physician in the medical surveillance of employees, the interaction with employees who need personalized support or advice, the specific knowledge of the company and its occupational risks and the analysis of data on the health of employees.

Companies deploying AI-based systems, including ChatGPT, should be transparent about how decisions are made and take responsibility for any negative consequences. ChatGPT's performance must be regularly evaluated and validated to ensure that it continues to provide accurate and reliable information. In addition, strict security measures must be put in place to protect the confidentiality of employee medical data and corporate secrets.

To conclude, integrating Chatbot Technology such as ChatGPT into the field of occupational health and safety could be promising. Chatbots could provide useful information and advice on occupational risks and preventive measures. However, it is important to consider the potential challenges and limitations of using chatbots, and to ensure that they are used in a way that complements human interaction and supports overall safety in the workplace.

Ethics statement

Ethical approval was not required and the Declaration of Helsinki is not applicable, as our work did not involve human subjects.

REFERENCES

1. Dergaa I, Chamari K, Zmijewski P, Ben Saad H. From human writing to artificial intelligence generated text: examining the prospects and potential threats of ChatGPT in academic writing. *Biol Sport* 2023;40(2):615-22.
[PUBMED](#) | [CROSSREF](#)
2. Salvagno M, Taccone FS, Gerli AG. Can artificial intelligence help for scientific writing? *Crit Care* 2023;27(1):75.
[PUBMED](#) | [CROSSREF](#)
3. Jungwirth D, Haluza D. Artificial intelligence and public health: an exploratory study. *Int J Environ Res Public Health* 2023;20(5):4541.
[PUBMED](#) | [CROSSREF](#)
4. Biswas SS. Role of Chat GPT in public health. *Ann Biomed Eng* 2023;51(5):868-9.
[PUBMED](#) | [CROSSREF](#)
5. Haemmerli J, Sveikata L, Nouri A, May A, Egervari K, Freyschlag C, et al. ChatGPT in glioma adjuvant therapy decision making: ready to assume the role of a doctor in the tumour board? *BMJ Health Care Inform* 2023;30(1):e100775.
[PUBMED](#)
6. Lecler A, Duron L, Soyer P. Revolutionizing radiology with GPT-based models: Current applications, future possibilities and limitations of ChatGPT. *Diagn Interv Imaging* 2023;104(6):269-74.
[PUBMED](#) | [CROSSREF](#)

7. Sabry Abdel-Messih M, Kamel Boulos MN. ChatGPT in clinical toxicology. *JMIR Med Educ* 2023;9:e46876.
[PUBMED](#) | [CROSSREF](#)
8. van Dis EA, Bollen J, Zuidema W, van Rooij R, Bockting CL. ChatGPT: five priorities for research. *Nature* 2023;614(7947):224-6.
[PUBMED](#) | [CROSSREF](#)
9. Hämäläinen P, Leena Saarela K, Takala J. Global trend according to estimated number of occupational accidents and fatal work-related diseases at region and country level. *J Safety Res* 2009;40(2):125-39.
[PUBMED](#) | [CROSSREF](#)
10. Driscoll T, Takala J, Steenland K, Corvalan C, Fingerhut M. Review of estimates of the global burden of injury and illness due to occupational exposures. *Am J Ind Med* 2005;48(6):491-502.
[PUBMED](#) | [CROSSREF](#)
11. Ji Z, Lee N, Frieske R, Yu T, Su D, Xu Y, et al. Survey of hallucination in natural language generation. *ACM Comput Surv* 2023;55(12):1-38.
[CROSSREF](#)