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Letter to Editor

ChatGPT's Capabilities for Use in Anatomy Education and Anatomy Research

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Dear Editors,

Recently, the discussion of an artificial intelligence (AI) - fueled platform in several articles in your journal has attracted the attention of many researchers [1, 2]. I believe that including such current discussions in your journal will guide my future work plans on similar topics. I wanted to present my views on academic cooperation and co-authorship with ChatGPT (Chat Generative Pre-Trained Transformer) to your journal.

Innovations brought by technology undoubtedly arouse curiosity in almost every branch of science. Researchers are among the professional groups that follow new technological developments most closely because the basic nature of research consists of concepts such as curiosity, innovation, and information sharing. Technology-based materials may be needed for anatomy education to be permanent and to be used pragmatically during clinical practices. Especially in recent years, tools such as augmented reality, virtual reality and 3D printing, which offer 3D images of anatomical structures, as well as social media platforms have started to be used in anatomy education [3]. Similarly, anatomy is a window of opportunity for the first trials of many innovative researches. Indeed, it did not take long for meet with AI-based chatbot platforms such as ChatGPT and Artificial Intelligence Support System (AISS) [4-8]. AISS was reported by several researchers about a year before ChatGPT. AISS is a chatbot equipped with only anatomy knowledge based on a machine learning platform and neural network module [8]. According to the developers of the AISS, students feel comfortable making mistakes with this chatbot, and therefore students' interaction with anatomy is at a high level. Recent studies with ChatGPT are also contributing to the critical role of these AI-based chatbots in anatomy education. Some studies questioned the current capabilities and potential of AI in anatomy education and anatomy research through interviews [5, 7]. In another study, students and ChatGPT were quizzed on anatomy and their knowledge was compared [6]. The results obtained from the studies are that ChatGPT is more successful than the students and has the potential to increase student participation. However, this AI software model will increase the likelihood of making errors in basic knowledge in anatomy as we move to complex topics. Sometimes the same anatomical knowledge will be presented differently depending on how widely the internet-based data is scanned [4]. This situation is likely to be overcome in the future with the

learning potential of AI. In this context, I think that the use of AI can help physicians and physiotherapists by increasing the dynamic connections between anatomy knowledge and clinical practices. Furthermore, advances in educational technologies cannot provide equal opportunities to students in every country and university. ChatGPT partially eliminates this limitation. At this point, educators who want to increase student participation can design an anatomy education supported by ChatGPT and create research opportunities for students. It is stated that AI chatbots can be more useful in anatomy education and can provide students with access to educational resources regardless of location or time [5].

Apart from chatbots, the use of AI in anatomy can be seen in anatomy teaching approaches where student-centered and active learning is supported. Artificial Neural Networks or Convolutional Neural Networks are modelled similar to neural networks in the human brain. Bayesian U-Net is used to diagnose pathological anatomical deviations based on supervised deep learning by learning the normal anatomical structure and utilizing various biomarkers [9]. AI-based tools other than ChatGPT can also be used to display, classify or scale differences in anatomical structures. Thus, it may have pragmatic benefits for clinicians in the management of disease processes. In some studies indicate that the interpretation of anatomical regions in ultrasound, magnetic resonance and computed tomography images integrated with AI is facilitated [10]. Similarly, in specialties (such as dermatology) that require visual-oriented clinical skills in the processes required for diagnosis and treatment, AI's functions in recognition on images, computer-aided diagnosis and decision-making algorithms can be useful. I think that the use of ChatGPT in research in these fields can produce innovative and practical solutions if they provide information from an accurate and reliable database. In addition, its contributions to the research cause its collaborative position in the research to be questioned.

In my opinion, the explanations under the heading "Promoting collaborative partnerships" in the third answer of this editorial, which includes an interview with ChatGPT, are satisfactory [2]. This supports traditional norms of authorship. Besides, concerns about co-authorship are already strictly protected by international organizations. The Committee on Publication Ethics (COPE) clearly rejects the contribution of AI tools such as ChatGPT or Large Language Models in co-authorship and explains several reasons for this in the COPE position statement. Responsibility for the study should be shared among the authors. However, it is unclear to what extent an AI can fulfil this criterion, which is one of the most basic requirements of authorship. What is known today about anatomy has been obtained by sharing the knowledge of many famous anatomists who lived in ancient history. ChatGPT is already collecting this information and making it available to the researcher. Can we talk about a real contribution at this point? Partly yes. AI can document this information quickly, but it can only make a general contribution when formulating a research question. For example, I asked it for an example of a research question that I use to examine the role of the pelvis in gait function. I received a response like "What is the effect of the anatomical and biomechanical properties of the pelvis on a person's balance, stride length, stride speed and gait efficiency during walking?". It is seen that the answers consist of general concepts. However, a researcher who has worked on the subject can broaden your horizons more during an in-depth conversation over a coffee. AI's contribution will not require its to be a co-author. Currently, ChatGPT or other AI tools are not yet capable of performing a literature search suitable for academic writing. However, if ChatGPT is developed in this field, it may be suitable for use by researchers. If ChatGPT has been used in research, I think it is necessary and sufficient to indicate in one sentence in the acknowledgments or method section how and in what way it contributed to the article. The data processing, collection and synthesis potential of ChatGPT is used for different purposes in every field [9]. For example, good agricultural practices or research on existing jurisprudence in law. No matter how it is used in areas whose subject is qualified professions, there is a fact that does not change. It alone is not an educator; it does not have the conscientious conviction of a judge and it does not have the skill of a doctor in caring for the sick. It should only be used as a complementary tool in the fields where it is used. It should be used by all health educators and researchers, including the field of anatomy, with awareness of its risks.

In conclusion, the expectations of this new AI technology in anatomy are on students. The 3D model feature and its potential contribution to case-based learning practice during clinical applications can be further developed in the future. On the other hand, it is clear that ChatGPT cannot be a co-author of a publication. If ChatGPT is a co-author of a publication, who and how will prepare the response letters to the referee comments on this issue? While contributing to this editorial discussion, I thought that the reviewer assigned to review an academic

publication could prepare a reviewer comment with the help of ChatGPT. I hope this will never happen. Otherwise, we may soon encounter a journal publisher consisting of AI authors and reviewers.

Yours sincerely,

Keywords: Anatomy, Artificial Intelligence.

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