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Letter to the Editor-Brief Communication

The role of artificial intelligence in cosmetic and functional gynecology: Stepping into the third millennium



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ABSTRACT

Cosmetic and functional gynecology have gained popularity among patients, but the scientific literature in this field, particularly regarding the cosmetic aspect, is lacking. The use of evidence-based medicine is crucial to validate diagnostic tools and treatment protocols. However, the advent of artificial intelligence (AI) offers a promising solution to address this issue. ChatGPT, a sophisticated language model, can revolutionize AI in medicine, enabling accurate diagnosis, personalized treatment plans, and expedited research analysis. Cosmetic and functional gynecology can leverage AI to develop the field and improve evidence gathering. AI can aid in precise and personalized diagnosis, implement standardized assessment tools, simulate treatment outcomes, and assess under-skin anatomy through virtual reality. AI tools can assist clinicians in diagnosing and comparing difficult cases, calculate treatment risks, and contribute to standardization by collecting global evidence and generating guidelines. The use of AI in cosmetic and functional gynecology holds significant potential to advance the field and improve patient outcomes. This novel combination of AI and gynecology represents a groundbreaking development in medicine, emphasizing the importance of appropriate and correct AI usage.

Dear Editor,

Cosmetic and functional gynecology have become increasingly popular among patients over the past years. Despite the rapidly growth of interest, scientific literature is partially lacking in this field (especially regarding the cosmetic aspect). This issue has gained so much attention from clinicians that diagnostic tools and treatment protocols need to be validated through the evidence-based medicine approach. For example, a recent systematic review addressing the usage of hyaluronic acid in vulva and vagina showed that at present time only three original articles have been published addressing the injection in vulva and vagina, only one with esthetic purpose and no-one with hyaluronic acid alone [1].

However, as we can state that the urgent need for evidence in cosmetic gynecology is real, we are facing an incredible event that will change the future of humanity and science forever: the advent of artificial intelligence (AI). Since late 2022, the development and release of chatGPT on the OpenAI platform has been astonishing scientists all over the world for its ability and implications [2]. The advent of ChatGPT, a highly sophisticated language model, has revolutionized the landscape of AI, significantly impacting the medical field. ChatGPT demonstrates unparalleled natural language understanding and generation capabilities. This groundbreaking innovation has enabled seamless human-computer interactions, expediting knowledge dissemination, and augmenting decision-making processes. In medicine, ChatGPT has incredible abilities to perform accurate diagnosis, personalized treatment plans, and expedited research analysis. By continuously refining its learning algorithms and assimilating vast medical data repositories, ChatGPT holds immense potential for further advancements in healthcare, ultimately transforming patient outcomes and enhancing global medical standards [3].

On this regard, cosmetic and functional gynecology, for its novelty, can introduce ChatGPT in the development of this field from the early

beginning. Specifically, cosmetic and functional gynecology could be the first medical specialty entirely developed with the help of AI in order to achieve better evidence in a faster method.

AI could be used in a variety of ways. For example to diagnose more precisely and in a personalized way some conditions. The visual analog scale (VAS) or the Female Sexual Function Index (FSFI) score can be implemented with automatic AI modeling calculation in order to assess patient symptoms and conditions in a more standardized way.

Regarding the esthetic purpose, AI can produce models to show the patient the possible result of treatment and to meet her expectations. This item could be extremely useful for the hyaluronic filler injection in vulva. At the same time, virtual reality developed by AI could be used to assess the under-skin anatomy for every single patient during esthetic outpatient procedures or surgical sessions. This live-injection with AI usage could be considered as the future of surgery in medicine, until AI could be so smart to perform in its own surgical procedure.

To continue with, AI could be useful for diagnose in functional gynecology: new AI tools could be useful for clinicians to clarify signs and symptoms of women. Moreover, AI tools could compare pictures of real patient cases to enormous databases in order to help clinicians in difficult diagnosis (i.e. Lipschütz ulcer disease diagnosis).

AI may also be able to calculate, according to the model, the potential risks of the treatment, making this field of gynecology safer. Patients' outcome may improve with more accurate, personalized and precise tools helping physicians in making the right therapeutic choice and avoiding complications.

Also, given the poor literature on cosmetic gynecology, the terminology and outcome measures utilized are heterogeneous. The need to standardize the whole subject may also be supported by the use of AI by all the physicians. Specifically, AI could collect evidence all over the world in order to rapidly generate appropriate and precise guidelines

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(with human authors validation) [4].

Concluding, the use of AI in cosmetic and functional gynecology may definitely be of great importance for this enormously growing field of medicine. This combination of field could be extremely important for the entire developing of a new emerging medicine field with the use of AI for the first time in medicine history. Finally, to prove the importance of AI abilities, an entire paragraph of this letter has been entirely written by chatGPT, demonstrating the readers what AI can achieve with an appropriate and correct usage [5].

Conflict of Interest statement

The authors declare no conflict of interest.

Ethical approval

This article does not contain any studies with human participants or animals performed by any of the authors.

Informed consent

For this type of study informed consent is not required.

CRediT authorship contribution statement

Katerina Gkouvi: Supervision. **Antonio D'Amato:** Data curation, Validation. **Andrea Giannini:** Supervision, Writing – review & editing. **Andrea Etrusco:** Writing – review & editing. **Stefano Salvatore:** Conceptualization, Supervision, Writing – review & editing. **Massimo Candiani:** Conceptualization, Supervision. **Navneet Magon:** Methodology, Supervision. **Nicolas Berreni:** Methodology, Supervision. **Giovanni Buzzaccarini:** Conceptualization, Supervision, Writing – original draft, Writing – review & editing. **Rebecca Susanna Degliuomini:** Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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