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Research Paper

Use and perception of ChatGPT for scientific writing among anesthesiology and critical care professionals: a cross-sectional study at CHU Ibn Rochd, Casablanca

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Abstract
Background: *ChatGPT and other large language models (LLMs) have rapidly entered academic medicine since their public release in November 2022. Their use for scientific writing among anesthesiology and critical care professionals in low- and middle-income countries remains poorly characterized. The aim of this study was to assess the use, version preference, perceived efficacy, and demographic correlates of ChatGPT use for scientific writing among anesthesiology and critical care professionals at CHU Ibn Rochd, Casablanca.*
Methods: *A descriptive, cross-sectional study was conducted using an anonymous self-administered online questionnaire distributed via Google Forms to anesthesiology and critical care residents, specialists, and nurse anesthetists. Data were analyzed using descriptive statistics and chi-square tests; a p-value < 0.05 was considered statistically significant.*
Results: *Two hundred professionals completed the survey (153 residents [76.5%], 35 specialists [17.5%], 12 nurse anesthetists [6.0%]). Overall, 117/200 (58.5%) reported using ChatGPT for scientific writing, of whom 70 (59.8%) used it occasionally, 35 (29.9%) very frequently, and 12 (10.3%) rarely. The free version was largely preferred (93/117; 79.5%). Median perceived efficacy was 4.0/5 [IQR 3.0–4.0]. No significant association was found between ChatGPT use and professional status (p=0.310), seniority (p=0.274), or version used (p=0.487).*
Conclusion: *ChatGPT adoption is high and uniform across professional categories at our centre. While users perceive it favourably, well-documented risks of hallucinations and fabricated references call for institutional guidelines and structured AI-literacy training within anesthesiology and critical care curricula.*
Keywords: *ChatGPT; large language models; artificial intelligence; scientific writing; anesthesiology; critical care.*

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I. Introduction

Since its public release in November 2022, ChatGPT (Generative Pre-trained Transformer, OpenAI) and other large language models (LLMs) have spread through medical academia at an unprecedented pace. Within months, hundreds of editorials, original studies, and surveys had documented their applications in medical education, clinical decision support, and scientific writing.[1,4,15]

In the field of scientific writing in particular, LLMs are now used to draft outlines, polish language, summarize literature, and even generate full sections of manuscripts. For non-native English-speaking clinicians and trainees — who form the bulk of authors submitting to international peer-reviewed journals — these tools are perceived as a major lever to overcome linguistic barriers and meet rising academic expectations.[3-5]

This enthusiasm is, however, tempered by serious concerns. Multiple studies have shown high rates of artificial hallucination, with fabricated or inaccurate references in up to 47–55% of citations generated by ChatGPT 3.5.[7-9] The risks of plagiarism, ethical breaches, and authorship disputes have led the International Committee of Medical Journal Editors (ICMJE) and the World Association of Medical Editors (WAME) to issue specific recommendations on AI use in scholarly publishing.[13,14]

Anesthesiology and critical care are particularly exposed to these tensions: practitioners face heavy clinical workloads, increasing pressure to publish, and a strong dependence on English-language academic dissemination.[11] Yet the actual use and perception of ChatGPT among anesthesiology and critical care professionals in low- and middle-income countries — and in North Africa in particular — remains poorly described.

The aim of this study was to describe the use, version preference, and perceived efficacy of ChatGPT for scientific writing among anesthesiology and critical care residents, specialists, and nurse anesthetists at CHU Ibn Rochd, Casablanca, and to examine whether usage patterns differ according to professional status, seniority, or version used.

II. Methods

Study design and setting

This was a descriptive, cross-sectional study conducted at the Department of Anesthesiology and Critical Care of CHU Ibn Rochd, a tertiary university hospital in Casablanca, Morocco. The study was carried out over a six-month period (study dates to be specified by the authors at submission).

Population and sampling

All anesthesiology and critical care residents, specialists, and nurse anesthetists working at the institution during the study period were eligible. Participation was voluntary and anonymous. Incomplete questionnaires were excluded from analysis. A non-probabilistic convenience sampling strategy was used.

Data collection

Data were collected through an anonymous, self-administered online questionnaire developed using Google Forms (Google LLC, Mountain View, CA, USA). The questionnaire link was distributed via institutional messaging channels (WhatsApp groups, email lists). The instrument comprised four sections: (i) demographic and professional characteristics (status, seniority); (ii) prior use of ChatGPT or similar LLMs for scientific writing (yes/no, frequency); (iii) version used (free vs paid); and (iv) perceived efficacy of the tool for scientific writing tasks, rated on a 5-point Likert scale (1 = not at all useful; 5 = extremely useful).

Statistical analysis

Quantitative variables were summarized as median and interquartile range (IQR), and categorical variables as frequencies and percentages. Associations between categorical variables were tested using the Chi-square test. A p-value below 0.05 was considered statistically significant. Statistical analyses were performed using SPSS Statistics version 26 (IBM Corp., Armonk, NY, USA).

Ethical considerations

The study was conducted in accordance with the Declaration of Helsinki and was reviewed and approved by the local institutional ethics committee of CHU Ibn Rochd (reference to be specified at submission). Participation was strictly voluntary and anonymous. All respondents provided informed electronic consent before completing the questionnaire, after being informed of the study aims, the anonymity of the data, and their right to withdraw at any time. No personally identifying data were collected.

III. Results

A total of 200 anesthesiology and critical care professionals completed the questionnaire. Demographic and professional characteristics of the respondents are summarized in Table 1. Most respondents were residents (153/200; 76.5%), followed by specialists (35/200; 17.5%) and nurse anesthetists (12/200; 6.0%). The distribution of seniority was relatively balanced: 34 respondents (17.0%) reported less than one year of experience, 72 (36.0%) between one and three years, 70 (35.0%) between three and five years, and 24 (12.0%) more than five years. This distribution allowed adequate representation of each seniority stratum.

Table 1. Demographic and professional characteristics of respondents (n = 200).

Characteristic	n	%
Professional status		
Resident	153	76.5
Specialist	35	17.5
Nurse anesthetist	12	6.0
Seniority in anesthesiology / critical care		
< 1 year	34	17.0
1–3 years	72	36.0

Characteristic	n	%
3–5 years	70	35.0
> 5 years	24	12.0

n: number of respondents.

Regarding the use of ChatGPT or similar tools for scientific writing, 117 respondents (58.5%) reported having already used such an assistant, while 83 (41.5%) had never done so. Among users, 70 (59.8%) reported using it occasionally, 35 (29.9%) very frequently, and 12 (10.3%) rarely (Table 2). This heterogeneity reflects diverse working habits and writing demands, likely shaped by clinical workload, familiarity with the tool, and the type of academic task delegated to the assistant.

Table 2. Frequency of ChatGPT use among users (n = 117).

Frequency of ChatGPT use	n	%
Occasionally	70	59.8
Very frequently	35	29.9
Rarely	12	10.3

n: number of users.

The distribution between free and paid versions revealed a clear preference for the openly accessible offering: 93 users (79.5%) used the free version, while 24 (20.5%) had subscribed to a paid plan, primarily for shorter response times and priority access during peak periods (Table 3).

Table 3. Version of ChatGPT used among users (n = 117).

Version used	n	%
Free	93	79.5
Paid	24	20.5

n: number of users.

Perceived efficacy of ChatGPT for improving the quality of scientific work was high, with a median of 4.0/5 [IQR 3.0–4.0]. More than half of users (65/117; 55.6%) rated the tool 4 or 5, reflecting a globally favourable opinion of its ability to formulate clear sentences, suggest structured bibliographic references, and help with the logical organization of the text.

On bivariate analysis, no statistically significant association was found between use of ChatGPT and professional status (p=0.310), seniority (p=0.274), or perceived efficacy according to the version used (p=0.487) (Table 4). Adoption of the tool therefore did not depend on level of experience, professional grade, or access to a more advanced version of the service. Overall, these results provide a comprehensive portrait of the habits and perceptions of anesthesiology and critical care professionals regarding ChatGPT: a high adoption rate, mostly intermittent to frequent use, a strong preference for the free version, and an overall satisfaction expressed at around 4/5 in terms of clarity and organization of scientific content.

Table 4. Statistical comparisons between professional characteristics, version used, and ChatGPT adoption.

Compared variables	Test	p-value
Professional status vs. ChatGPT use	Chi-square	0.310
Seniority vs. ChatGPT use	Chi-square	0.274
Version (free vs. paid) vs. perceived efficacy	Chi-square	0.487

Statistical significance was set at $p < 0.05$.

IV. Discussion

This cross-sectional study provides the first description, to our knowledge, of ChatGPT use for scientific writing among anesthesiology and critical care professionals at a Moroccan university hospital. Three findings stand out. First, more than half of respondents (58.5%) had already integrated ChatGPT into their academic workflow within roughly two years of its public release. Second, perception of the tool was largely favourable, with a median efficacy score of 4/5 and over half of users rating it 4 or 5 on a 5-point scale. Third,

neither professional status, nor seniority, nor the version used was significantly associated with adoption, suggesting a horizontal diffusion of the technology across our department.

These findings are consistent with the broader international literature describing rapid uptake of LLMs by clinicians and trainees. In a recent international cross-sectional survey conducted across Saudi Arabia, Nigeria, Tunisia and the United Kingdom, around 40% of medical researchers reported AI-chatbot use, with markedly higher rates among younger participants and trainees.[5] Surveys of medical students in the Middle East and North Africa region have likewise reported high adoption rates, frequently exceeding 70%,[4] while in Thailand a clear gradient was observed between students and senior physicians, with the latter expressing greater reservations about the tool.[3] Sallam's systematic review of healthcare applications similarly emphasized the explosive growth of LLM use in medical education, research and practice.[1] Our adoption rate (58.5%) sits within this international range and reflects the global penetration of generative AI in clinical academic practice.

The favourable perception expressed by our respondents likely reflects the practical benefits described in recent reviews. ChatGPT can rapidly generate first drafts, restructure paragraphs, summarize long articles, and improve readability for non-native English speakers, which is particularly relevant in a Francophone setting where most peer-reviewed publication is expected in English.[1,2] For anesthesiology and critical care professionals — and especially residents — the ability to outsource routine writing tasks (literature summaries, methods sections, language polishing) is appealing in the context of demanding clinical schedules and rising publication expectations.[11] The pedagogical advantages may extend to learning, with ChatGPT being used as an interactive tutor to clarify concepts and provide structured outlines.[3,4]

These benefits, however, must be balanced against now well-documented risks. The phenomenon of artificial hallucination — the generation of plausible but incorrect content — has been extensively reported in medical contexts. Bhattacharyya et al. found that of 115 references generated by ChatGPT for a medical topic, 47% were fabricated and 46% were authentic but inaccurate, leaving only 7% both real and accurate.[7] Athaluri et al. similarly reported a high prevalence of non-existent DOIs among AI-generated references in research proposals.[8] Walters and Wilder, comparing GPT-3.5 and GPT-4 across 84 short literature reviews, observed that 55% of GPT-3.5 citations were fabricated versus 18% for GPT-4, with substantive errors affecting 43% and 24% of the remaining real citations, respectively.[9] Chelli et al., in a systematic review setting, reported hallucination rates ranging from 28.6% to 91.3% depending on the model tested.[10] Goddard's cautionary report similarly recommended that physicians and biomedical researchers refrain from using ChatGPT to source citations without rigorous verification.[6]

The strong preference for the free version observed in our cohort (79.5%) is therefore of particular concern. Free or older versions of generative AI consistently produce higher rates of fabricated content than premium counterparts.[9,10] Combined with the often authoritative tone of AI-generated text, this can lead users — particularly junior researchers — to incorporate fictitious references or misattributed claims into their manuscripts. This risk is further amplified by the fact that fabricated DOIs frequently redirect to genuine but unrelated papers, making errors difficult to detect without manual verification.[10] The recent description of generative AI as a possible vector of an AI-driven infodemic in public health communication underscores the broader societal dimension of this issue.[12]

From an editorial standpoint, an international consensus has emerged. The ICMJE and WAME both state that LLMs cannot meet authorship criteria, since they cannot be accountable for the integrity of the work, and that any use of AI must be transparently disclosed in the cover letter and in the appropriate section of the manuscript.[13,14] Liebrenz et al. additionally argue that beyond disclosure, structured frameworks are needed to address conflicts of interest, attribution, and reproducibility when AI tools are involved in manuscript preparation.[18] Hosseini et al. similarly advocate for clear, standardized disclosure practices specifying the tool used, version, prompt, and section of the manuscript concerned.[19] Our data, in which respondents largely use ChatGPT informally and without institutional guidance, suggest that a substantial gap exists between current editorial expectations and routine practice on the ground.

The absence of a statistically significant association between ChatGPT use and professional status ($p=0.310$), seniority ($p=0.274$) or version preference ($p=0.487$) is noteworthy. Some prior surveys have reported a gradient with age, in which younger respondents and trainees use AI tools more than senior staff.[3,5] The fact that we did not detect such a gradient may indicate either a true horizontal diffusion of the tool within our centre, or limited statistical power given the unequal distribution of professional categories. Either way, the finding suggests that recommendations and training should not be confined to junior trainees but extended to the entire department.

Taken together, our results argue strongly for the development of an institutional framework around generative AI use in scientific writing. Such a framework should ideally combine: (i) formal AI-literacy training integrated into anesthesiology and critical care residency programs, with emphasis on reference verification, prompt design and recognition of hallucinations; (ii) clear local guidelines aligned with ICMJE and WAME standards on disclosure; [13,14] (iii) institutional access to validated, scientifically-oriented tools (e.g. retrieval-

augmented platforms with verifiable references) rather than uncontrolled reliance on the free version of generic chatbots; and (iv) ongoing assessment of the evolving landscape, given the rapid release of new model versions and the demonstrated capacity of AI-generated abstracts to mislead expert reviewers.[16,17]

Our study has several limitations. It is monocentric, with all participants recruited from a single university hospital, which may limit external validity to other Moroccan or North African centres. The self-administered, online format introduces a self-selection bias, as professionals more familiar with digital tools may have been more inclined to respond. Reported usage and perceived efficacy are declarative and not corroborated by objective measures of writing quality or output. Finally, the rapid evolution of LLMs means that any cross-sectional snapshot has a limited shelf life: the introduction of newer, less hallucination-prone models is likely to alter both adoption patterns and perceived efficacy in the near future.[16]

V. Conclusion

ChatGPT adoption is high (58.5%) and uniformly distributed across professional categories and seniority levels among anesthesiology and critical care professionals at our centre, with a strong preference for the free version and a globally favourable perception of its usefulness. These findings must be interpreted in light of the now well-documented risks associated with LLM-generated content — particularly the high rate of fabricated references and inaccurate citations, which is more pronounced with the free, older models predominantly used in our cohort. There is therefore an urgent need for institutional guidelines, structured AI-literacy training integrated into anesthesiology and critical care curricula, and alignment with international editorial recommendations (ICMJE, WAME) on disclosure and accountability. Future multicentric and longitudinal studies should refine these observations, evaluate the actual quality of AI-assisted manuscripts, and assess the impact of dedicated training programs on responsible LLM use.

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Conflict of interest
The authors declare no conflict of interest.

Artificial Intelligence (AI) Use Declaration
The authors declare that no generative AI tool was used to design, conduct, analyze, or write the present study. The manuscript was drafted, revised, and finalized exclusively by the authors. ChatGPT was the object of investigation in this study but was not used at any stage of manuscript preparation.

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