RESEARCH ARTICLE

Artificial intelligence for medical writing in doctors of Punjab: A cross-sectional study

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Abstract

Objective: To determine the frequency and perceptions regarding the use of artificial intelligence in medical writing among doctors.

Method: The analytical, cross-sectional study was conducted from July to September 2023 in Punjab, Pakistan, after approval from the ethics review board of Akhtar Saeed Medical and Dental College, Lahore and comprised serving doctors with at least two publications during the study period. Data was collected using a questionnaire that explored sociodemographic details, frequency of artificial intelligence usage, and the subjects' perceptions regarding its use in medical writing. Data was analysed using SPSS 23.

Results: Of the 445 respondents, 248(55.7%) were females and 197(44.3%) were males. The overall mean age was 38.7±10.91 years, and the number of mean publications was 6.82±10.2. Awareness level regarding use of artificial intelligence in medical writing was high 413(92.8%), with 110(24.7%) having already used it, and 368(82.7%) considering its use in the future. Concerns about confidentiality breaches was the most common barrier to using artificial intelligence 307(69%).

Conclusion: About a quarter of the sample studied had used artificial intelligence for medical writing.

Keywords: Artificial intelligence, Medical writing, AI in healthcare. (JPMA 76: 20; 2026)

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Introduction

Artificial intelligence (AI) pertains to the advancement of information technology (IT) systems capable of executing tasks that traditionally necessitate human intelligence. The field encompasses the development and implementation of algorithms and models that facilitate machines in terms of comprehending, rationalising, acquiring knowledge, and formulating judgments. The application of AI in the field of medicine has brought about a significant transformation in healthcare practices, presenting considerable opportunities for enhancing patient outcomes, diagnoses, treatment planning, and resource allocation.[1] The World Health Organisation (WHO) has recognised the considerable potential of AI to revolutionise healthcare and improve medical methodologies.[2,3]

AI can also be used in the domain of medical writing. Softwares using large language models employ deep learning methodologies to produce text and speech exhibiting characteristics similar to real conversation. The field of medicine and healthcare is progressively acknowledging the critical role of Natural Language Processing (NLP) in facilitating the examination of electronic health data and textual medical notes.[4] The utilisation of this tool can enhance the productivity and effectiveness of medical writers by facilitating the generation of superior material in a timelier manner.[5] In a cross-sectional study, a group of 30 medical writers who frequently utilised Chat- Generative Pre-trained Transformer (ChatGPT) for medical writing provided feedback, indicating that the tool holds significant value in improving both efficiency and accuracy in the field of medical writing.[6]

Globally, the use of AI in medical writing has shown significant growth, supported by the increasing availability of user-friendly tools, such as Grammarly, EndNote and ChatGPT. These tools enable doctors and researchers to focus more on content quality and scientific rigour, reducing the burden of technical writing tasks. Despite these advancements, the extent of AI adoption varies widely based on factors such as access to technology, awareness of AI capabilities, and perceived reliability. There exist uncertainties over the capacity of AI-driven content-generating systems to deliver precise and reliable information. Moreover, the existing tools now exhibit a deficiency in their ability to autonomously generate accurate citations and appropriately attribute sources.[7-9]

The current study was planned to determine the frequency and perceptions regarding the use of AI in medical writing among doctors.

Subject and Methods

The analytical, cross-sectional study was conducted from

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July to September 2023 in Punjab, Pakistan, after approval for the ethics review board of Akhtar Saeed Medical and Dental College, Lahore and comprised serving doctors with at least two publications during the study period. Informed written consent was obtained from all the subjects. Doctors not willing to participate or having known some psychiatric illness were excluded. The sample size was calculated to be 396 using OpenEpi based on 97% confidence level, 30% prevalence of AI use in medical research writing and 5% margin of error. The sample size was inflated to 445 account for a potential non-response rate of 12%.[10,11]

Data was collected using a predesigned self-reporting questionnaire developed after an in-depth literature search.[6,12-14] It consisted of sociodemographic details, frequency of AI use, perceptions, and perceived advantages and disadvantages of AI regarding medical writing. The questionnaire was developed in the English Language, and answers to all the questions were mandatory. Pilot-testing of the questionnaire was done on a separate group of 25 doctors. Changes required were incorporated in the final questionnaire. Data was collected using non-probability convenience sampling technique.

Data was analysed using SPSS 23. Quantitative data was expressed as mean±standard deviation, while qualitative variables were reported as frequencies and percentages. Chi-square test was used to compare values between those using AI and doctors not using AI. P<0.05 was taken as significant. Variables found significant in bivariate analysis were subjected to binary logistic regression.

Results

Of the 445 respondents, 248(55.7%) were females and 197(44.3%) were males. The overall mean age was 38.7±10.91 years, and the number of mean publications was 6.82±10.2. Of the total, 220(49.4%) doctors were from public institutions and 225(50.6%) were from private institutions. Regarding the educational status, 145(32.6%) doctors had done graduation, 275(61.8%) had done post-graduation and 25(5.6%) had done Doctor of Philosophy (PhD). Regarding the working status of the respondents, 73(16.4%) were working as medical officers, 46(10.3%) as

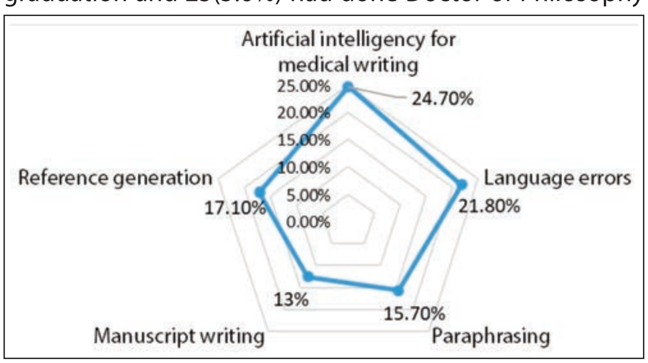

Figure-1: Radar chart showing artificial intelligence (AI) use for different purposes of medical writing.

Table-1: Sociodemographic factors, perceptions, advantages, and barriers of artificial intelligence (AI) use in medical writing.

Variables	**Using AI for Medical Writing** (n=110) n (%)	**Not using AI for medical writing** (n=335) n (%)	***p*-value**
Sociodemographic profile of participants			
Gender			
Male	59 (53.6)	138 (41.2)	0.023
Female	51 (46.4)	197 (58.8)	
Age (years)			
< 40 years	73 (66.4)	221 (66.0)	0.940
> 40 years	37 (33.6)	114 (34.0)	
Type of Institution			
Public	53 (48.2)	167 (49.9)	0.761
Private	57 (51.8)	168 (50.1)	
Working as			
Graduated Doctors	33 (30.0)	110 (32.8)	0.356
Postgraduate residents	53 (48.2)	136 (40.6)	
Professorial faculty	24 (21.8)	89 (26.6)	
Perceived advantages of AI use for medical writing			
AI can paraphrase articles well			
Yes	87 (79.1)	289 (86.3)	0.071
No	23 (20.9)	46 (13.7)	
AI can remove grammatical errors accurately			
Yes	88 (80.0)	302 (90.1)	0.005
No	22 (20.0)	33 (9.9)	
AI can discuss the results accurately			
Yes	62 (56.4)	203 (60.6)	0.432
No	48 (43.6)	132 (39.4)	
AI can generate correct references for articles			
Yes	84 (76)	255 (76)	0.958
No	26 (24)	80 (24)	
Perceptions regarding AI use for medical writing			
AI can replace medical human writers			
Yes	61 (55.5)	120 (35.8)	0.000
No	49 (44.5)	215 (64.2)	
Journals should have policies regarding AI use			
Yes	87 (79.1)	280 (83.6)	0.282
No	23 (20.9)	55 (16.4)	
Barriers in using AI for medical writing			
Lack of awareness regarding AI tools for medical writing			
Yes	49 (44.5)	217 (64.8)	0.000
No	61 (55.5)	118 (35.2)	
Lack of access to artificial intelligence tools for medical writing			
Yes	46 (41.8)	212 (63.3)	0.000
No	64 (58.2)	123 (36.7)	
Fear of Using AI for Medical Writing			
Yes	56 (50.9)	207 (61.8)	0.044
No	54 (49.1)	128 (38.2)	
Concerns regarding confidentiality breaches using AI in medical writing			
Yes	76 (69.1)	257(76/7)	0.110
No	34 (30.9)	78 (33.3)	
Concerns about reliability while using AI for medical writing			
Yes	45 (40.9)	209 (62.4)	0.000
No	65 (59.1)	126 (37.6)	

Table-2: Sociodemographic factors, perceptions, advantages, and barriers of artificial intelligence (AI) use in medical writing.

Variables	Coefficient B	Standard Error	Wald	*p*-value	Adjusted Odds Ratio	95% Confidence Interval
Gender						
Male	0.282	0.240	1.372	0.241	1.325	0.827 to 2.122
Female					Reference	
AI can replace human medical writing						
Yes	0.814	0.239	11.575	0.001	2.256	1.412 to 3.606
No					Reference	
AI can remove grammatical and language errors						
Yes	-0.998	0.324	9.454	0.002	0.369	0.195 to 0.696
No					Reference	
Lack of awareness about using AI for medical writing						
Yes	-0.621	0.258	5.797	0.016	0.537	0.324 to 0.891
No					Reference	
Lack of access to AI tools						
Yes	-0.594	0.256	5.369	0.020	0.552	0.334 to 0.912
No					Reference	
Concern about confidentiality breaches						
Yes	-0.067	0.276	0.060	0.807	0.935	0.545 to 1.605
No					Reference	
Fear of using AI tools for medical writing						
Yes	-0.308	0.256	1.449	0.229	0.735	0.445 to 1.214
No					Reference	

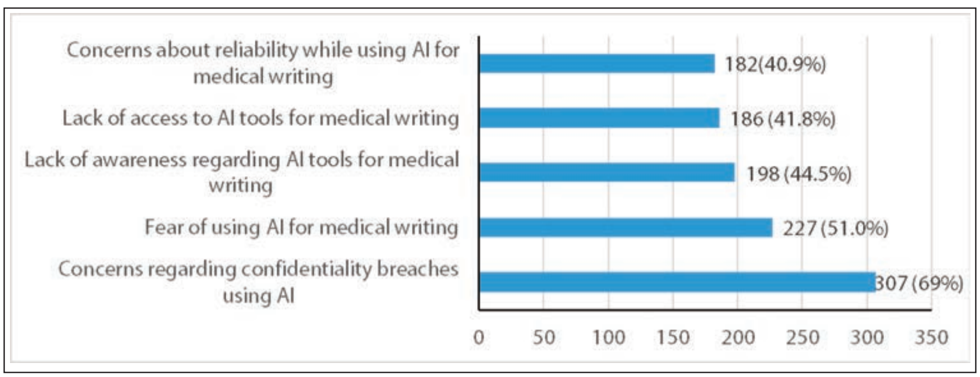

Figure-2: Perceived barriers of using artificial intelligence (AI) for medical writing.

demonstrators, 97(21.8%) as postgraduate residents, 24(5.4%) as senior demonstrators or senior registrars, 92(20.7%) were assistant professors, 56(12.6%) were associate professors and 57(12.8%) were professors. Of the total, 156(35.1%) doctors were working in the Basic Sciences department, 151(33.9%) were from the Medicine and allied departments, and 138(31.0%) were from the Surgery and allied departments.

Awareness level regarding use of AI in medical writing was high 413(92.8%), with 110(24.7%) having already used it, and 368(82.7%) considering its use in the future. The sources of information regarding AI's use in medical writing were friends and colleagues in 130(29.2%) cases, social media 239(53.7%), and conferences or seminars 76(17.1%). AI was being used by the doctors for a variety of purposes (Figure 1).

Of the 110(24.7%) doctors having used AI, 59(53.6%) were males and 51(46.4%) were female (*p*=0.023). Perceptions, advantages and barriers of AI use in medical writing were noted in detail (Table 1) Concerns about confidentiality breaches was the most common barrier to using AI reported by 307(69%) of the subjects (Figure 2). Among the other barriers, lack of awareness (*p*=0.001), lack of access (*p*=0.001), concerns about reliability (*p*=0.001), and fear of using AI (*p*=0.044) were significantly higher in doctors who had not used AI for medical writing.

Logistic regression analysis showed that the model as a whole was significant (p=0.009). Male gender had higher odds of using AI for medical writing (adjusted odds ratio [AOR]: 1.325; 95% confidence interval [CI]: 0.827-2.122). Respondents using AI had significantly higher odds of perceiving that AI can replace medical writers (AOR: 2.256; 95%CI: 1.412-3.606). Respondents using AI were less likely to perceive that grammatical errors were accurately removed with AI (AOR: 0.369; 95%CI: 0.195-0.696). Lack of awareness and access were significantly less in doctors using AI for medical writing (AOR: 0.537; 95%CI: 0.324-0.891, and AOR: 0.552; 95%CI: 0.334-0.912, respectively). The respondents using AI had less concern about the confidentiality breaches and less fear of using AI for medical writing (AOR: 0.935; 95%CI: 0.545-1.605, and AOR: 0.735; 95%CI: 0.445-1.214, respectively) (Table 2).

Discussion

AI is an emerging technology that simulates human intelligence, with language-generation models poised to transform medical writing and related natural language processing tasks. In the current study, 92.8% of the doctors were familiar with AI for medical writing. This percentage was higher than the 60% in a previous survey.[15] Despite such high familiarity in the current study, only 24.7% of the doctors had actually used AI for medical writing. This finding is a little less than the 30% reported in India.[16]

The majority of the current participants (82.7%) anticipated increased future use of AI in medical writing, which was consistent with earlier findings (84.1%).[17] The most common motivation for using AI was its ability to correct grammatical errors, as seen with tools like Grammarly.[18] Interestingly, males were 1.325 times more likely to use AI for medical writing, echoing prior research showing lower AI usage and confidence among women.[19]

While AI can enhance the efficiency of medical writing, it lacks accountability and authorship, meaning it can assist, but not fully replace human writers.[18] Some studies have raised concerns that increased AI adoption could threaten job security for medical writers.[20]

Regarding barriers, doctors using AI reported lower lack of awareness and better access to AI tools, which likely contributed to their use of these technologies. They also expressed less fear and concern about AI reliability (AOR: 0.935). However, broader concerns exist about AI misuse, with studies having documented risks, such as plagiarism and dependence on AI tools, which may undermine researchers' and students' independence.[21,22] For example, a study in Jordan reported that 55% of the respondents had ethical concerns about AI, including bias (30%), plagiarism (23.3%), inaccurate information (33.3%), and reference errors (16.7%).[23]

Consistent with this, 82.5% of respondents in the current study agreed that AI-generated writings should be rigorously checked by journals before publication. Previous research at the University of Cambridge highlighted instances where AI use violated ethical standards and legal norms, reinforcing the need for clear regulations and ethical guidelines.[24]

The current study has some limitations, including the use of convenience sampling technique and self-reported data, which may have introduced recall and social desirability biases. Nevertheless, it provides valuable insight into the evolving role of AI in medical writing, underscoring the balance between technological advancement and ethical considerations. AI offers significant benefits for medical writing particularly in improving efficiency and reducing errors its ethical implications and potential impact on employment must be carefully managed. Ongoing education, transparent policies, and regulatory oversight will be crucial to maximising AI's positive contributions while minimising the risks.

Conclusion

About a quarter of the participating doctors had used AI for medical writing, while 82.7% anticipated more frequent use of AI tools in the future. The primary barriers to adoption included a lack of awareness, limited access to AI tools, concerns about confidentiality breaches, and perceived fears associated with using AI technologies.

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Author Contribution:

IM: Supervision, review and drafting.
MN: Data analysis, concept and supervision.
GR: Data collection and discussion of results.
AUQ: Data collection and introduction writing.
ZR: Data collection, analysis and questionnaire designing.
ZI: Data collection, entry and introduction writing.