

Global Healthcare Professionals' Perceptions of Large Language Model Use In Practice

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Abstract

Background: Chat Generative Pre-Trained Transformer (ChatGPTTM) is a large language model (LLM)-based chatbot developed by OpenAITM. ChatGPT has many potential applications to healthcare, including enhanced diagnostic accuracy and efficiency, improved treatment planning, and better patient outcomes. Healthcare professionals' perceptions of ChatGPT and similar artificial intelligence tools are not well known, and understanding these attitudes is important to inform the best approaches to explore their use in medicine.

Objective: Our aim was to evaluate the healthcare professional's awareness and perception about potential applications of ChatGPT in the medical field, including potential benefits and challenges of adoption.

Methods: We designed a 33-question online survey that was distributed amongst healthcare professionals via targeted emails, professional Twitter and LinkedIn accounts. The survey included a range of questions to define respondent demographic characteristics, familiarity with ChatGPT, perceptions of this tool's usefulness and reliability, and opinions on its potential to improve patient care, research, and education efforts.

Results: One hundred and fifteen healthcare professionals from 21 countries responded to the survey, including physicians, nurses, researchers, and educators. 101 (87.8%) had heard about ChatGPT mainly from peers, social media, and news, and 77 (76.2%) had used ChatGPT at least once. Participants found ChatGPT to be helpful writing manuscripts (n=31, 45.6%), e-mails (n=25, 36.8%), and grants (n=12, 17.6%), accessing the latest research and evidence-based guidelines (n=21, 30.9%), providing suggestions on diagnosis or treatment (n=15, 22.1%), and improving patient communication (n=12, 17.6%). Respondents also felt that the ability of ChatGPT to access and summarize research articles (n=22, 46.8%), to provide quick answers to clinical questions (n=15, 31.9%), and to provide patient education materials (n=10, 21.3%) were also helpful. However, there are concerns regarding utilization of ChatGPT such as the accuracy of responses (n=14, 29.8%), limited applicability to its practice (n=18, 38.3%), legal and ethical considerations (n=6, 12.8%) mainly regarding plagiarism or copyright violations. Participants stated safety protocols such as data encryption (n=63, 62.4%), access control (n=52, 51.5%) may assist in ensuring patient privacy and data security.

Conclusions: Our results show that ChatGPT use was widespread among healthcare professionals in daily clinical, research, and educational activities. The majority of our participants have found ChatGPT to be useful however there are concerns about patient privacy, data security, and its legal and ethical issues as well as the accuracy of the information ChatGPT provides. Further studies are required to understand the impact of ChatGPT and other LLMs on clinical, educational, and research outcomes and concerns of its utilization have to be addressed systematically and through appropriate methods.

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Original Manuscript

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Authors: Ozkan, Ecem; Tekin, Aysun; Niven, Alexander; Ozkan, Mahmut; Cabrera, Daniel; Dong, Yue

Abstract

Background

Chat Generative Pre-Trained Transformer (ChatGPT™) is a large language model (LLM)-based chatbot developed by OpenAI™. ChatGPT has many potential applications to healthcare, including enhanced diagnostic accuracy and efficiency, improved treatment planning, and better patient outcomes. Healthcare professionals' perceptions of ChatGPT and similar artificial intelligence tools are not well known, and understanding these attitudes is important to inform the best approaches to explore their use in medicine.

Objective

Our aim was to evaluate the healthcare professional's awareness and perception about potential applications of ChatGPT in the medical field, including potential benefits and challenges of adoption.

Methods

We designed a 33-question online survey that was distributed amongst healthcare professionals via targeted emails, professional Twitter and LinkedIn accounts. The survey included a range of questions to define respondent demographic characteristics, familiarity with ChatGPT, perceptions of this tool's usefulness and reliability, and opinions on its potential to improve patient care, research, and education efforts.

Results

One hundred and fifteen healthcare professionals from 21 countries responded to the survey, including physicians, nurses, researchers, and educators. 101 (87.8%) had heard about ChatGPT mainly from peers, social media, and news, and 77 (76.2%) had used ChatGPT at least once. Participants found ChatGPT to be helpful writing manuscripts (n=31, 45.6%), e-mails (n=25, 36.8%), and grants (n=12, 17.6%), accessing the latest research and evidence-based guidelines (n=21, 30.9%), providing suggestions on diagnosis or treatment (n=15, 22.1%), and improving patient communication (n=12, 17.6%). Respondents also felt that the ability of ChatGPT to access and summarize research articles (n=22, 46.8%), to provide quick answers to clinical questions (n=15, 31.9%), and to provide patient education materials (n=10, 21.3%) were also helpful. However, there are concerns regarding utilization of ChatGPT such as the accuracy of responses (n=14, 29.8%), limited applicability to its practice (n=18, 38.3%), legal and ethical considerations (n=6, 12.8%) mainly regarding plagiarism or copyright violations. Participants stated safety protocols such as data encryption (n=63, 62.4%), access control (n=52, 51.5%) may assist in ensuring patient privacy and data security.

Conclusion

Our results show that ChatGPT use was widespread among healthcare professionals in daily clinical, research, and educational activities. The majority of our participants have found ChatGPT to be useful however there are concerns about patient privacy, data security, and its legal and ethical issues as well as the accuracy of the information ChatGPT provides. Further studies are required to understand the impact of ChatGPT and other LLMs on clinical, educational, and research outcomes and concerns of its utilization have to be addressed systematically and through appropriate methods.

Keywords: ChatGPT, LLM, global, healthcare professionals

Introduction

LLM stands for "Large Language Model", referring to advanced artificial intelligence models designed for natural language processing tasks. LLMs are trained on vast amounts of text data and use deep learning techniques to understand and generate human-like language. They helped transform various fields, including medicine¹. Some examples of the most popular LLMs are Llama from Meta, Orca and Phi-1 from Microsoft, Bloom, and PaLM2 from Google and Generative Pre-Trained Transformer (GPT) from OpenAI. Chat Generative Pre-Trained Transformer (ChatGPT) is chatbot powered GPT3/4 was released by OpenAI in November 2022, incorporating billions of parameters that enables it to comprehend and generate human-like text with capability of context creation. Its intuitive interface and capacity for prompt engineering have enabled diverse applications across domains².

In medicine, recent studies have demonstrated ChatGPT's potential to support clinical decision-making, summarize complex medical data, and streamline documentation processes. For instance, ChatGPT has been evaluated for its ability to generate discharge summaries, assist in developing differential diagnoses, and simplify patient communication³⁻⁵. Its role in medical education has also been explored, demonstrating its utility in preparing students for licensing exams like the USMLE and enhancing self-directed learning through case-based scenarios⁵⁻⁷. ChatGPT was also shown to be capable of defining and answering clinical vignettes and performed >60% of the threshold on the United States Medical Licensing Examination (USMLE), which is a passing score all of the 3 exams^{8,9}. Additionally, its ability to provide personalized health education and assist in chronic disease management has been highlighted as a promising avenue for improving patient outcomes^{4,10}.

The integration of ChatGPT into healthcare settings is accelerating, with a growing body of literature examining its applications. Despite these advancements, significant challenges remain. Concerns about data privacy, ethical implications, and the accuracy of AI-generated content persist as barriers to widespread adoption^{4,5,10}. Additionally, little is known regarding global healthcare professionals' perspectives and the extent and impact of ChatGPT's integration in healthcare settings^{11,12}. Most studies to date have been limited to localized settings or specific subgroups. Yet, the successful and ethical integration of ChatGPT into healthcare workflows depends heavily on end-user acceptance, awareness of limitations, and perceptions regarding safety, usability, and value⁵⁻⁷.

This study aims to evaluate healthcare professionals' awareness and perceptions of ChatGPT, with a focus on its applications, challenges, and utility across clinical, educational, and research settings. We surveyed a diverse group of healthcare professionals—including physicians, nurses, researchers, and educators—from multiple countries and practice settings. Using a cross-sectional survey design, we collected data on their familiarity with ChatGPT, how and why they used it, and their concerns about its integration. Our a priori hypothesis was that while many healthcare professionals would recognize ChatGPT's potential benefits—such as improving efficiency, communication, and access to knowledge—they would also express concerns regarding ethical, legal, and accuracy-related issues.

This study offers timely insights for healthcare leaders, educators, and policymakers considering the responsible adoption of generative AI tools. By reflecting global perspectives from frontline users, our findings might help shape discussions on how to balance innovation with safety and trust in clinical AI applications.

Methods

This study was conducted as a cross-sectional survey between April 20 and July 3, 2023 (Appendix 1). The study protocol was evaluated by the Mayo Clinic Institutional Review Board and it was determined that it did not require IRB review under 45 CFR 46.102 of the Code of Federal

Regulations (2/28/2023). No personal identifying information of the respondents was collected. Study participation was voluntary and survey completion was considered as consent.

Survey Instrument Development and Validation

The questionnaire used in this study was developed de novo by the research team. The design process was informed by the research team's multidisciplinary experience in medicine, education, and digital health, as well as the evolving discourse around artificial intelligence in healthcare. To assist with rapid prototyping, the research team utilized ChatGPT (OpenAI) to generate the first draft of the questionnaire. This initial draft provided a foundation for question phrasing and thematic organization. The final survey was iteratively refined by the study investigators to ensure clinical and contextual relevance.

To enhance clarity and assess feasibility, the questionnaire was piloted informally among five healthcare researchers affiliated with our institution. Their feedback informed improvements in question wording, branching logic, and estimated completion time (approximately five minutes). No formal psychometric validation was conducted.

The final survey included 33-questions, and distributed electronically using Research Electronic Data Capture (RedCap) tool version 13.1.30 (Vanderbilt University, Nashville, Tennessee, United States)¹³. The questionnaire was structured around six thematic domains: (1) respondent demographics and work environment, (2) awareness and familiarity with ChatGPT, (3) frequency and purpose of use, (4) perceived benefits and challenges of ChatGPT in daily practice, (5) views on ethical, legal, and data security concerns, and (6) future expectations and training needs. The questionnaire incorporated branching logic to adapt follow-up questions based on initial responses—for example, only respondents who reported using ChatGPT were asked about specific applications or frequency of use. A visual summary of the questionnaire flow and branching logic is provided in Appendix 2. The final instrument has been reported in Appendix 1.

Participants and Sampling Strategy

We employed a convenience sampling approach. The questionnaire was distributed amongst healthcare professionals via targeted emails, professional Twitter, LinkedIn, Instagram accounts using a snowball technique¹⁴. No predefined inclusion or exclusion criteria were applied beyond being a healthcare professional (e.g., physician, nurse, educator, researcher). There were no regional or institutional restrictions. Because the survey was open and anonymous, we did not estimate a denominator or calculate a response rate. For the purposes of this study, we defined the application of ChatGPT in the medical field broadly to include its use in clinical care, research, medical education, and healthcare-related administrative tasks. This inclusive definition reflects the multifaceted roles healthcare professionals play and acknowledges that tools like ChatGPT may support a wide range of activities beyond direct patient care, such as writing grants, academic correspondence, and synthesizing medical literature. Survey items were designed to capture this spectrum of use across domains relevant to daily professional practice.

Demographic information of participants was summarized. Among those familiar with ChatGPT, opinions on the tool and potential dissemination resources were assessed. For those who had not used it, barriers to usage were examined (Appendix 2). Participants with experience using the ChatGPT tool were asked about perceived challenges and approaches to enhance usability. Summary statistics were provided as numbers and frequencies. Comparative analyses were conducted using a chi-square test, with a two-sided p-value of 0.05 being considered significant. JMP Pro 14.1.0 software (SAS Institute Inc., Cary, NC,) was used for the analyses.

Results

A total of 115 healthcare professionals from 21 countries responded to the survey. Table 1 displays a summary of their demographic information (Figure 1-2).

Table 1. Baseline characteristics

Variables	Total (n=115)
Age	
20-29 years	30 (26.1%)
30-39 years	27 (23.5%)
40-49 years	26 (22.6%)
50-59 years	10 (8.7%)
>60 years	22 (19.1%)
Sex	
Female	45 (39.5%)
Male	68 (59.6%)
Profession	
Educator	16 (14.0%)
NP/PA	5 (4.4%)
Physician	62 (54.4%)
Researcher	25 (21.9%)
RN	5 (4.4%)
Area/ Unit	
Internal Medicine	20 (17.4%)
Surgery	15 (13%)
Emergency Medicine	10 (8.7%)
Psychiatry and Neurology	8 (7%)
Anesthesiology/ICU	10 (8.6%)
Obstetrics and Gynecology	7 (6.1%)
Radiology	6 (5.2%)
Others ^a	39 (33.9%)
Years from graduation	
<5 years	43 (37.4%)
5-10 years	27 (23.5%)
11-20 years	16 (13.9%)
>20 years	29 (25.2%)
Work length in hospital	
<5 years	66 (57.9%)
5-10 years	11 (9.6%)
11-20 years	19 (16.7%)
>20 years	18 (15.8%)
Country of work	
United States	53 (46.1%)
Turkey	24 (20.9%)
Tanzania	7 (6.1%)
China	6 (5.2%)
Croatia	3 (2.6%)
Russia	2 (1.7%)
France	2 (1.7%)
Canada	2 (1.7%)
Italy	2 (1.7%)
Saudi Arabia	2 (1.7%)
Others ^a	
Native language	
English	28 (24.3%)
Turkish	32 (27.8%)
Spanish	10 (8.7%)
Chinese (Mandarin)	9 (7.8%)
Arabic	5 (4.3%)

Others ^a	31 (26.8%)
The place of employment	
Academic hospitals and medical centers	72 (64.2%)
Community Hospitals	9 (8.0%)
Private Hospitals	13 (11.6%)
Public Hospitals	15 (13.4%)
Free Clinics	6 (5.4%)
Others ^a	6 (5.3%)
Frequency of ChatGPT usage	
Multiple times per day	14 (20.6%)
Once per day	3 (4.4%)
Three to five times per week	14 (20.6%)
Less than three times a week	13 (19.1%)
Only tried it few times	24 (35.3%)

^a For Others see Appendix 3.

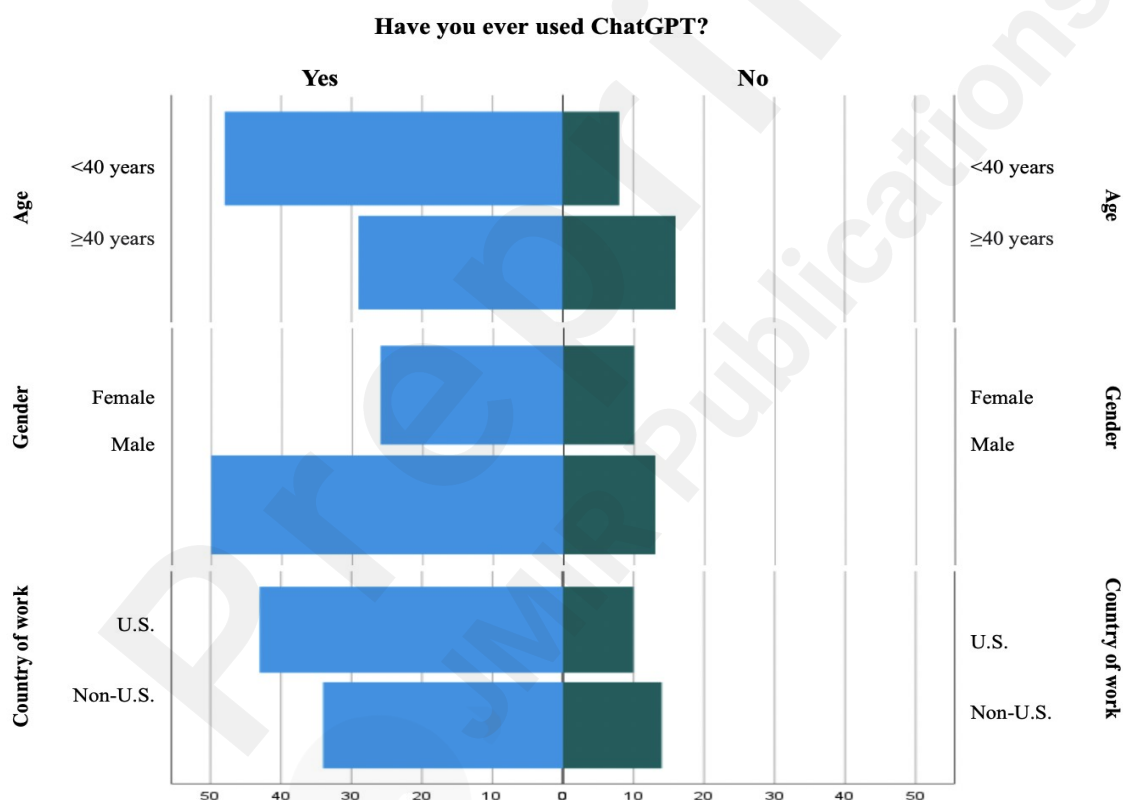


Figure 1. ChatGPT usage based on participants' age, gender, and country of work.

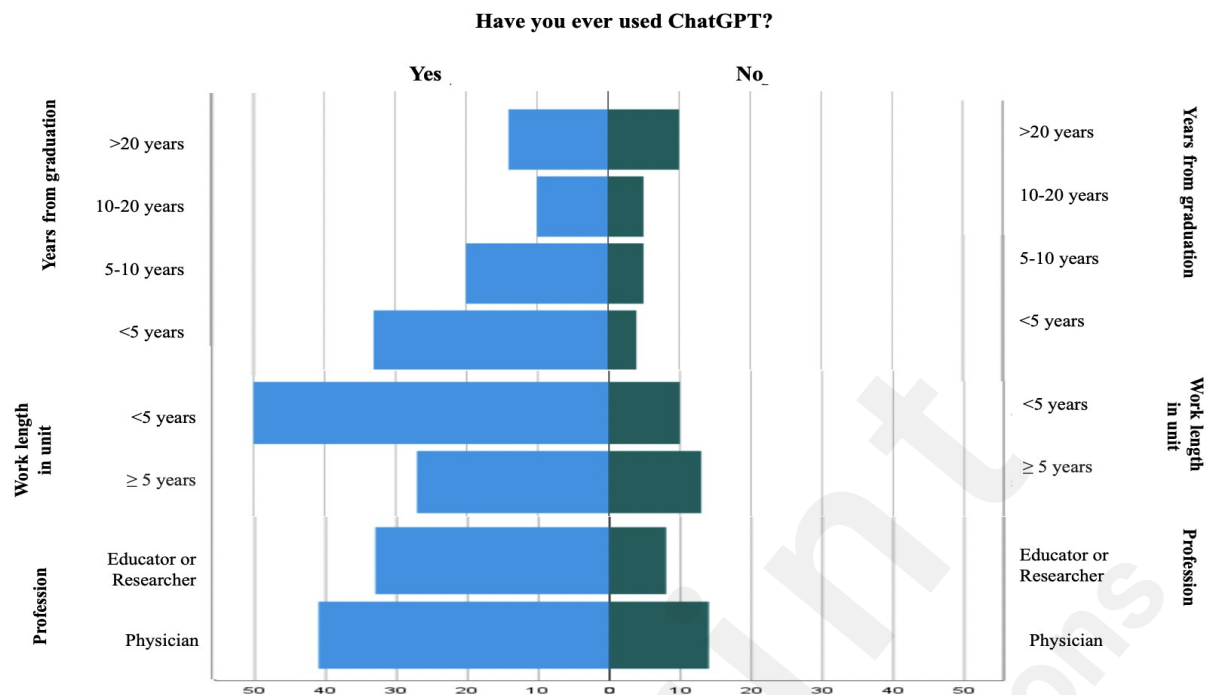


Figure 2. ChatGPT usage based on participants' years from graduation, work length in the unit and profession.

One hundred and one participants (87.8%) had heard of ChatGPT, mainly from social media ($n=33$, 32.7%) and peers/colleagues ($n=43$, 42.6%). Of those, 77 (76.2%) had used ChatGPT before, with 18 (23.4%) using ChatGPT multiple times per day, and 23 (29.9%) trying it only a few times. Moreover, 71 out of 77 (92.2%) used it in the English language. Among these, 50 were not native English speakers and only 16 (32%) out of 50 used it both in English and their own language (Figure 3). Furthermore, variations in ChatGPT usage in daily practice were observed between participants utilizing ChatGPT in English versus their native language (Figure 4).

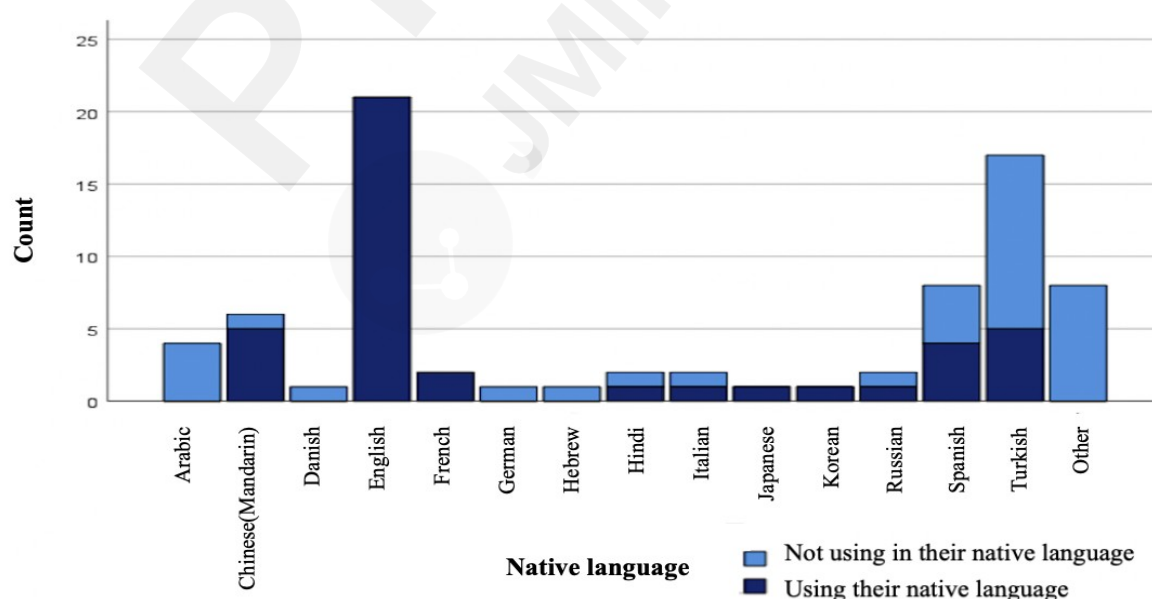


Figure 3. The ratio of native language versus English while utilizing ChatGPT among participants.

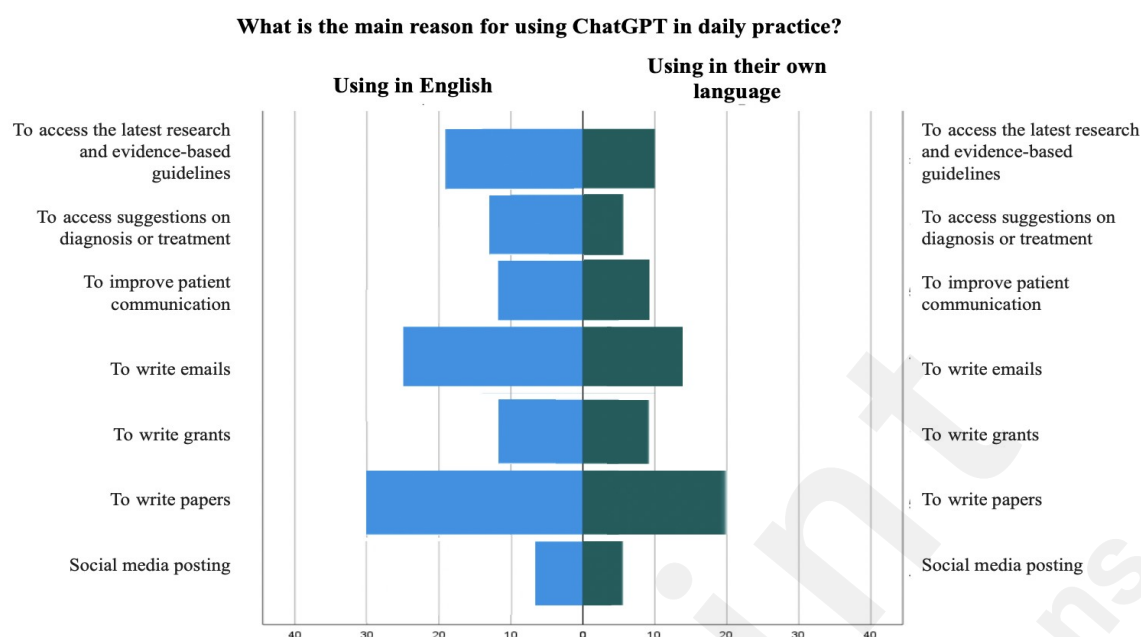


Figure 4. Main reasons for using ChatGPT in daily practice based on the language used by the participants.

The main reasons to utilize ChatGPT are to write papers ($n=29$, 44.6%), emails ($n=25$, 38.5%), and to access suggestions on diagnosis or treatment ($n=14$, 21.5%). Other main reasons for ChatGPT usage by healthcare professionals in daily practice are shared in Table 2.

Table 2. Percentage of participants' main reason to use ChatGPT in daily practice, in a multiple choice question

Main reason for using ChatGPT in daily practice	n=68
Writing papers	n= 31, 45.6%
Writing emails	n= 25, 36.8%
To access the latest research and evidence-based guidelines	n= 21, 30.9%
To access suggestions on diagnosis or treatment	n= 15, 22.1%
To improve patient communication	n= 12, 17.6%
To write grants	n=12, 17.6%

Incorporation of ChatGPT into Daily practice

Out of the 77 participants who have used ChatGPT, 36 (46.8%) used ChatGPT in their clinical practice, 58 (75.3%) used it in their research, and 56 out of 76 (73.7%) used it in their educational activities (Figure 5).

Forty-two (43.6%) out of 101 participants agreed that they would not worry about their clinician using ChatGPT while they were taking care of them if they were the patient, and 32 (32.7%) disagreed and preferred their clinician to not use ChatGPT during their care.

A majority, 79 (78.2%) agreed that ChatGPT could be useful for medical/healthcare professional education. In non-clinical settings, participants stated that ChatGPT could help to reduce workload ($n=57$, 73.1%), improve efficiency by automating certain tasks ($n=51$, 65.4%), offer greater access and efficiently summarize research articles ($n=52$, 66.7%), and provide patient educational materials

(n=49, 62.8%), quick answers to questions (n=48, 61.5%), and enhance the ability to write papers (n=37, 47.4%).

Table3. ChatGPT usefulness based on used features in daily practice

ChatGPT's usefulness in daily practice	n=68
Not important	n= 14, 20.6%
Slightly important	n= 21, 30.9%
Moderately important	n=13, 19.1%
Important	n=13, 19.1%
Very important	n= 7, 10.3%
ChatGPT's usefulness from 0 (most negative experience) to 10 (most positive experience)	n=68
≥7	n= 42, 61.8%
4-5-6	n= 19 27.9%
≤3	n= 7, 10.3%
Most useful features	n=68
To access and summarize research articles efficiently	n= 22, 46.8%
To provide quick answers to clinical questions	n= 15 31.9%
To provide patient education materials	n= 10, 21.3%
To write emails, grants, and papers	n= 25 53.2%

Challenges for Integrating ChatGPT into Daily Practice

The main reasons respondents did not use ChatGPT were concerns about the accuracy of ChatGPT responses (n=14, 29.8%), limited applicability to their practice (n=18, 38.3%), legal and ethical considerations (n=6, 12.8%), limited diagnostic capabilities (n=4, 8.5%), lack of time (n=3, 6.4%), and lack of interest (n=2, 4.3%).

As one of the significant barriers is legal and ethical considerations, participants were asked to define plagiarism or copyright violations. Participants defined it as copying text or ideas from ChatGPT and using it for another source without proper citation (n=64, 63.4%), paraphrasing or summarizing content from ChatGPT and using it for another source without proper citation (n=41, 40.6%), using images content from ChatGPT without permission (n=36, 35.6%), reusing or repurposing content from ChatGPT that was previously created for another purpose without permission (n=44, 43.6%).

In response to the legal and ethical challenges, following solutions were proposed for integrating ChatGPT into daily practice. Participants stated that data encryption (n=63, 62.4%), access control (n=52, 51.5%), user authentication such as two-factor authentication (n=48, 47.5%), compliance with regulations such as HIPAA or GDPR (n=62, 61.4%), transparency and informed consent with the patient (n=53, 52.5%), and regular training and awareness for healthcare professionals (n=58, 57.4%) are necessary to ensure patient privacy and data security.

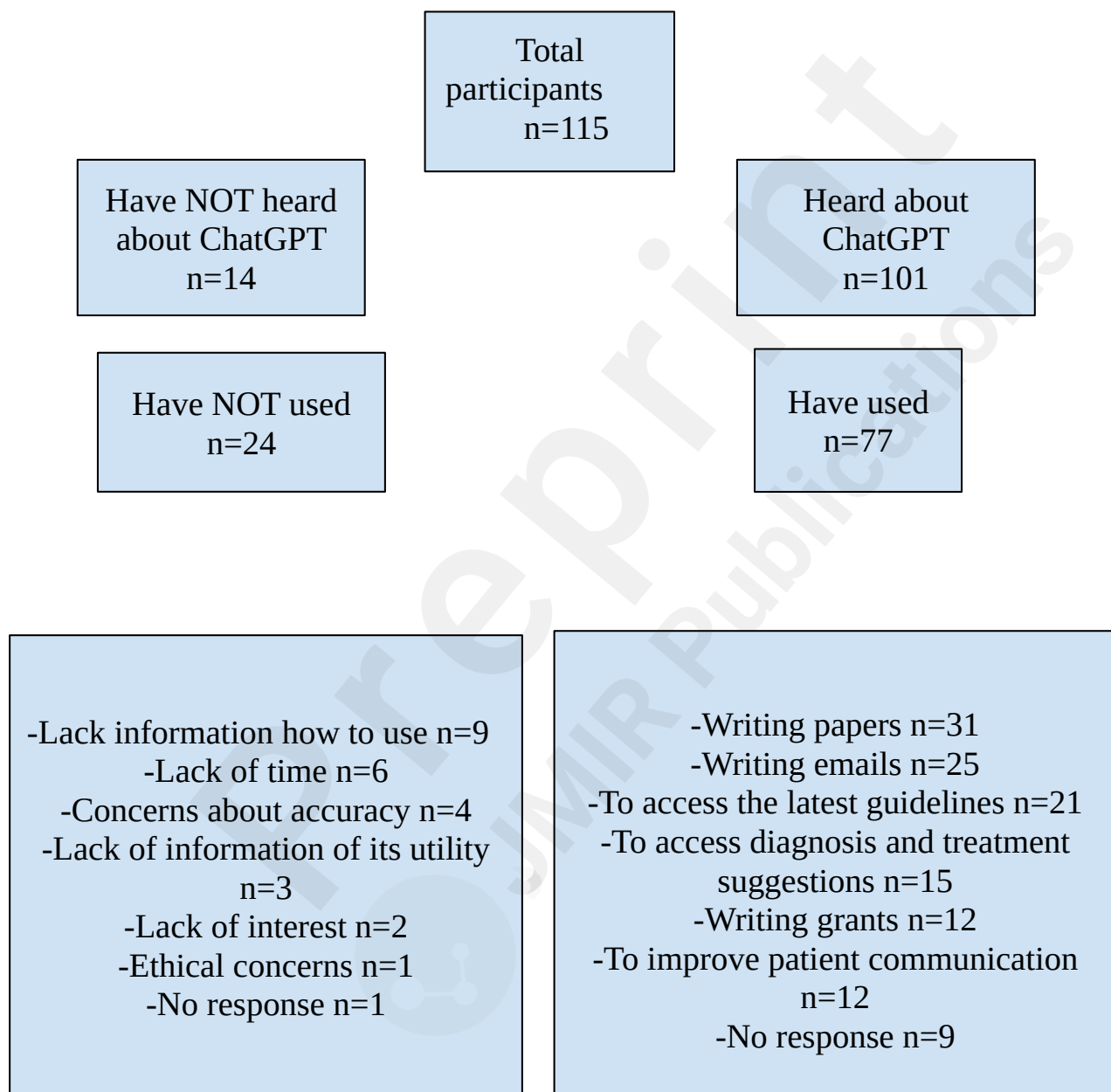
Views on ChatGPT's success and other possible utilizations

When asked whether the participants knew ChatGPT performed with ≥60% accuracy in USMLE, 52 (51.5%) had heard it before. Seventy-six (68.5%) of the participants have not used any other AI platform.

Participants stated that ChatGPT can improve patient outcomes in healthcare through personalized health education by providing tailored information and support (n=76, 75.2%), medication

management with reminders to take and refill prescriptions, and provide information on side effects and interactions (n=55, 54.5%), telemedicine support for healthcare professionals to conduct virtual consultations, collect patient data, and provide decision support (n=48, 50%), symptom triage for patients (n=49, 48.5%), and mental health support by providing guidance on self-management techniques, coping strategies (n=49, 48.5%).

The distribution of answers to respondents with different levels of post-graduate experience were reported in Appendix 4. The distribution was largely balanced between the groups of less than ten years of experience vs. ten years or more experience.



Fig

ure 5. Factors contributing to utilization and non-utilization of ChatGPT.

Discussion

This study offers a global perspective on how healthcare professional perceive and use ChatGPT in clinical, research, and educational context. Click or tap here to enter text. Our findings demonstrate that awareness and adoption of ChatGPT are already widespread, with 76.2% of respondents having

used the tool at least once. Participants primarily reported using ChatGPT for manuscripts and email writing, grant application preparation, accessing research articles, clinical guideline support, diagnostic suggestions, and improving patient communication. Notably, over three-quarters of participants agreed that ChatGPT holds potential utility in medical education, highlighting its ability to enhance learning experiences and facilitating task automation. Moreover, our study indicates that healthcare professionals endorse its utilization among colleagues. However, concerns about data privacy, ethical risks such as plagiarism, and the accuracy of AI-generated content remained significant barriers to broader adoption. Proposed solutions included implementing safety protocols such as data encryption, access control, and regulatory compliance. In the exploratory analyses comparing ChatGPT use we did not identify significant differences in how ChatGPT was used across professional experience levels, which might be due to the limited sample size. Due to the wide range and uneven distribution of medical subspecialties represented, we were not able to conduct a formal comparison across specialties.

Implications of Findings

Our findings highlight the broad and flexible potential of ChatGPT in healthcare workflows. In clinical practice, ChatGPT is perceived as a tool that can enhance efficiency by automating routine documentation tasks like generating draft discharge summaries and patient letters. It also supports decision-making by offering fast access to evidence summaries, and aiding in communication through the creation of patient-friendly materials^{5,15}. In medical education, participants identified ChatGPT as a valuable educational supplement—one that could be incorporated into curricula to simulate real-world clinical scenarios, and preparing students for standardized exams like the USMLE^{5,16}. It can also support personalized learning experiences tailored to individual needs and self-directed learning pathways. In research, ChatGPT was valued for its ability in grant writing, literature synthesis and ideation, especially in the early stages of manuscript development or protocol design⁵.

These findings underscore the need for structured training programs and ethical guidelines to support responsible integration of AI tools. Implementing human-in-the-loop systems, where clinicians oversee and validate AI outputs, may enhance safety and build user confidence while also mitigating risks associated with biases or inaccuracies in AI-generated content¹⁷.

Comparison to the Literature

Our findings align with prior studies that underscore ChatGPT's potential in healthcare. Cascella et al. described ChatGPT's potential to reduce administrative burden and assist clinical reasoning, which mirrors participants' reported use of ChatGPT for documentation and clinical queries². In medical education, Gilson et al. showed that ChatGPT achieved passing scores on all three components of the USMLE, highlighting its utility in medical education⁸. Similarly, Kung et al. emphasized its role in creating standardized templates for patient education materials⁹. These findings also align with our participants' views on its usefulness for learners and patients alike. Sallam et al.'s review highlighted ChatGPT's capacity to process and summarize complex medical data efficiently¹⁸, which our participants also leveraged for research and evidence access.

However, our study adds unique insights by capturing global perspectives from diverse practice settings. Unlike prior reports focused on specific institutions or national populations, our results reflect a cross-disciplinary, international sample—offering a broader view of how generative AI is being perceived across diverse practice settings.

The main reasons behind the lack of use of ChatGPT in daily practice were stated to be mainly due to the non-applicability to their practice, lack of information of its utilization, and concerns about the accuracy of ChatGPT's responses, and legal and ethical considerations. The reason behind not utilizing ChatGPT due to lack of information of its utilization can be partially explained due to insufficient training for healthcare professionals to use Generative AI. Previous studies have also indicated similar concerns regarding its implementation¹⁹. For instance, the concern for the spread of wrong information is a major obstacle on its pathway and different languages may have different

results^{20,21}. Many studies have shown that up to 96.7% are worried of its ethical and legal obstacles^{3,18}, for its usage such as plagiarism²¹⁻²³, copyright issues^{3,18}. In a study that was done by Sweden University, 62% of students considered using chatbots to complete assignments and exams as cheating²⁴. Our study showed that 86 out of 101 participants defined copying from ChatGPT as plagiarism. These concerns show that the implementation of ChatGPT into clinical settings will require a transition period that requires extensive safety measures. Healthcare professional leaders need to work with technology experts to develop the learning objective, curriculum, assessment and evaluation, safety protocols for this emerging technology.

Regarding the accuracy of ChatGPT's responses, our study has shown that healthcare professionals identified this as of paramount importance. Similar studies have shown that ChatGPT should be used with caution due to potential biases that AI may have, which could lead to the generation of inaccurate information. Especially when it is used in the healthcare system, it could potentially lead to harmful consequences²⁵Click or tap here to enter text..

Educational Implications

The educational relevance of our findings is especially important. Our study suggests several opportunities:

- Curriculum Design: Educators can incorporate ChatGPT into simulation-based and case-based learning modules to foster clinical reasoning and application of evidence-based medicine.
- Needs Assessment: Educators may use baseline familiarity and usage patterns to tailor AI training initiatives and address gaps in knowledge or ethical understanding.
- Institutional Strategies: ChatGPT can serve as a tool for flipped classrooms, interactive tutorials, and self-directed study, offering real-time feedback and access to guideline-driven responses.
- Learner Outcomes: By providing immediate feedback and access to evidence-based guidelines, ChatGPT has the potential to improve learner performance on standardized assessments¹⁶.

Additionally, ChatGPT's ability to generate accessible explanations for patients could enhance health literacy and improve communication between physicians and patients.

Strengths and Limitations

This study has several strengths. We have examined ChatGPT adoption from a global perspective. By including participants from 21 countries and a variety of clinical and academic backgrounds, the study provides a valuable overview of current usage patterns and attitudes toward generative AI tools in healthcare. The survey instrument was comprehensive, capturing a wide range of use cases and concerns across clinical, research, and educational domains.

However, several limitations must be acknowledged. Although participants were from diverse countries, they are unlikely to represent the full range of healthcare professionals within their regions. The sample likely skewed toward individuals with greater access to technology and academic networks, especially in countries where access to ChatGPT or certain social media platforms may be restricted or limited. As such, findings should be interpreted with caution and not generalized to all healthcare professionals in low-resource or digitally restricted settings. The use of convenience and snowball sampling likely introduced self-selection bias, attracting participants with preexisting interest in technology or artificial intelligence. Also, because of this sampling method, we could not calculate a response rate. Most respondents were from academic hospital settings in the United States, which may limit applicability to other regions or practice environments. Conducting the survey in English may have limited the global inclusivity. Given the swift pace of technological advancements, particularly in generative AI applications like ChatGPT, and the continuous process of learning and integration by healthcare professionals, the present survey may not accurately capture the current perceptions and attitudes of doctors and nurses towards these technologies²⁶, limiting the temporal relevance of our findings. Lastly, although our survey included open-ended questions,

multiple-choice questions may have led participants to an available answer.

Future Directions

Further research is needed to address unanswered questions:

1. Long-Term Impact: Studies should evaluate how ChatGPT influences clinical outcomes, patient satisfaction, and educational performance over time.
2. Ethical Frameworks: There is a pressing need for the development of institutional and regulatory guidelines governing AI use in healthcare¹⁷.
3. Cross-Language Applications: Investigating how ChatGPT performs across different languages could help improve accessibility for non-English-speaking populations.
4. Training Programs: Evidence-based strategies are needed to guide healthcare professionals in the ethical and effective use of generative AI technologies.

Conclusion

ChatGPT usage is expanding within healthcare settings due to its variety of qualities and a majority of healthcare professionals are likely aware of its availability. It can improve the caliber of writing papers, grants and emails, help healthcare professionals access the latest guidelines, diagnosis and treatment suggestions, and also possibly improve patient communication. There are many concerns related to the implementation of LLMs in clinical practice; including legal, ethical and operational. Further research is necessary to clarify the role of ChatGPT and LLMs based generative AI tools in general in healthcare education, research and clinical practice.

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Conflicts of Interest

None relevant for any of the authors.

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Appendices

Appendix 1. Survey instrument.

Appendix 2. Diagram explaining survey flow

Appendix 3. Area/Unit for who responded others
Dermatology (n=2), Family Medicine (n=3), Medical Genetics and Genomics (n=3), Ophthalmology (n=2), Pathology (n=2), Pediatrics (n=3), Physical Medicine and Rehabilitation (n=1), Urology (n=2), Microbiology (n=1), Simulation (n=1), Medical Surgical (n=2), Geriatrics (n=1), Health Information System (n=1), Public Health (n=1), Critical Care Medicine (n=1), Pain management (n=1), Research (n=4), Rheumatology (n=1), Cardiology (n=1), General Hospital Medicine (n=1), Physiology (n=2), Medical Education Central Administration (n=1), Medical Esthetic (n=1), Medical Laboratory (n=1), Unknown (n=1)

Country of work for who responded others
Argentina (n=1), Austria (n=1), Belgium (n=1), Brazil (n=1), Germany (n=1), Japan (n=1), Serbia (n=1), Vietnam(n=1)

Native language for who responded others
Swahili (n=3), Croatia (n=3), Russian (n=2), Hindi (n=2), Italian (n=2), French (n=2), Danish (n=2), Urdu (n=2), German (n=1), Hebrew (n=1), Japanese (n=1), Portuguese (n=1), Vietnamese(n=1), BCS (n=1), Farsi (n=1), African (n=1), Telugu (n=1), Maltese (n=1), Albanian (n=1), Serbian (n=1)

Type of employment for who responded others
Community Medical Center (n=1), Pharma Company (n=1), College of Nursing (n=1), Medical Laboratory (n=1), Retired (n=1)

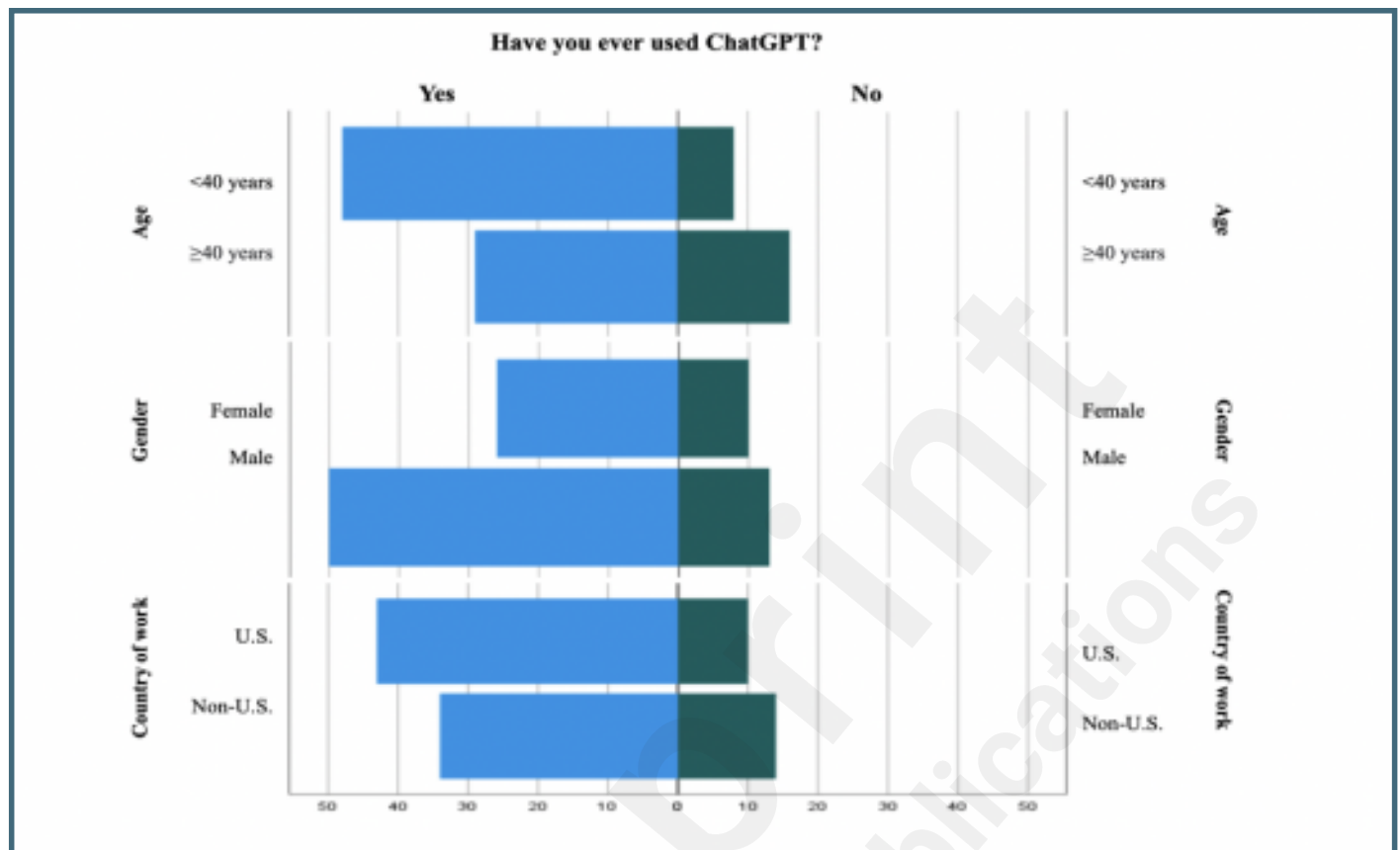
Appendix 4: The distribution of answers to respondents with different levels of post-graduate experience.

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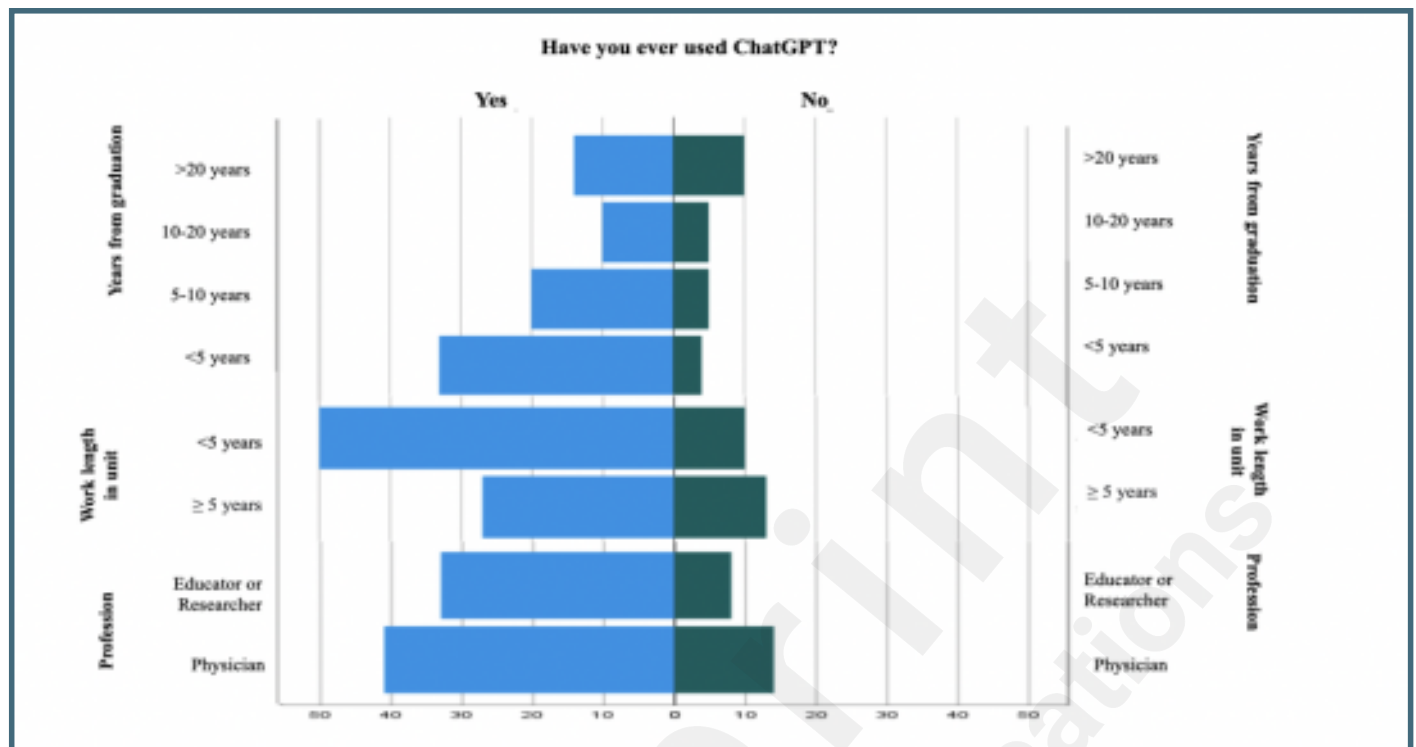
Supplementary Files

Figures

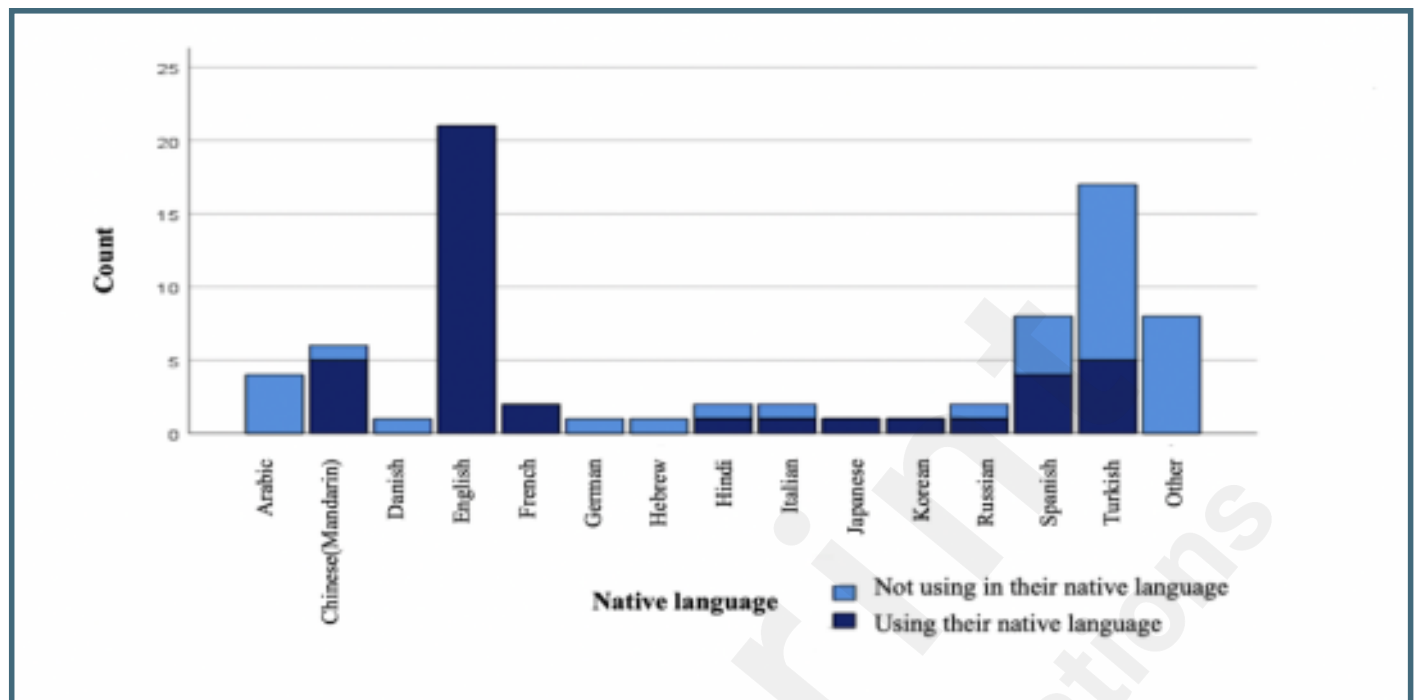
ChatGPT usage based on participants' age, gender, and country of work.



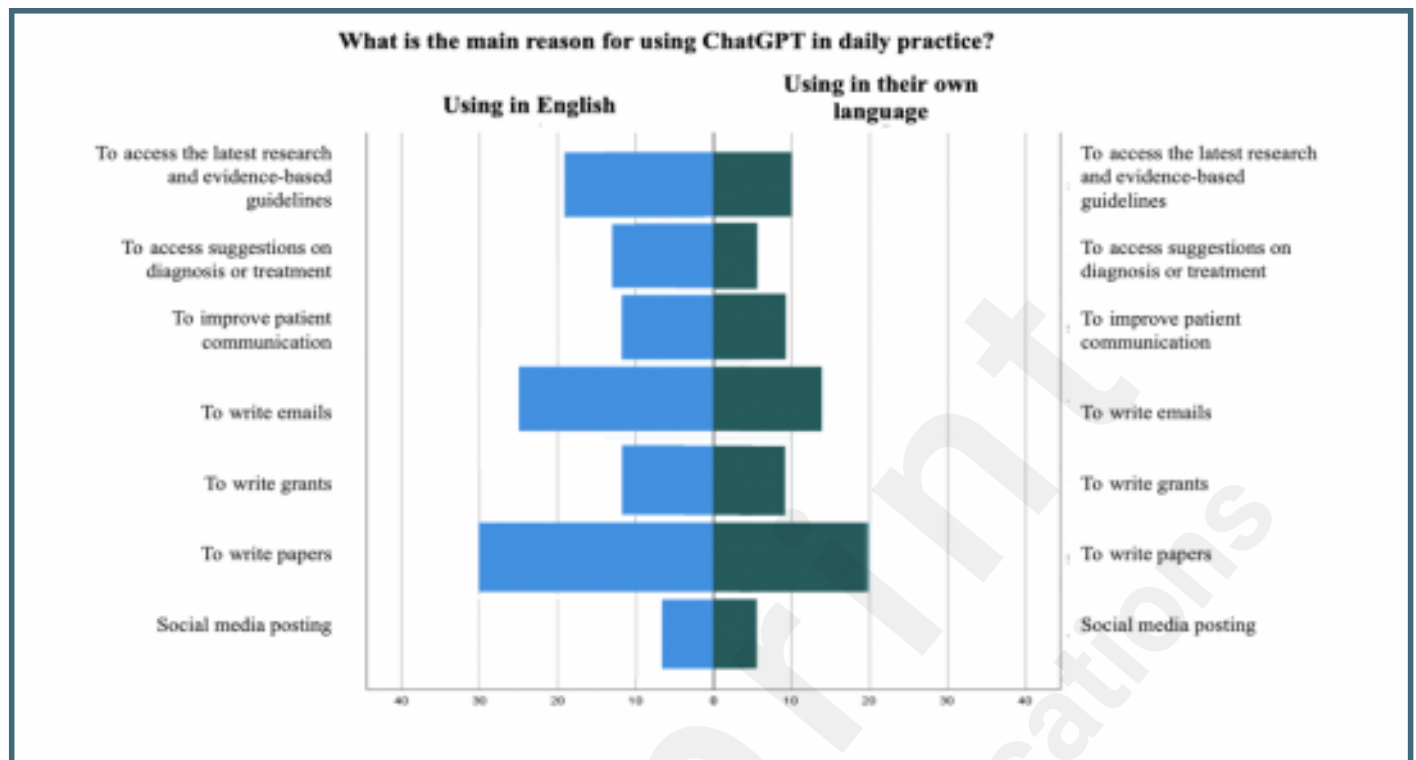
ChatGPT usage based on participants' years from graduation, work length in the unit and profession.



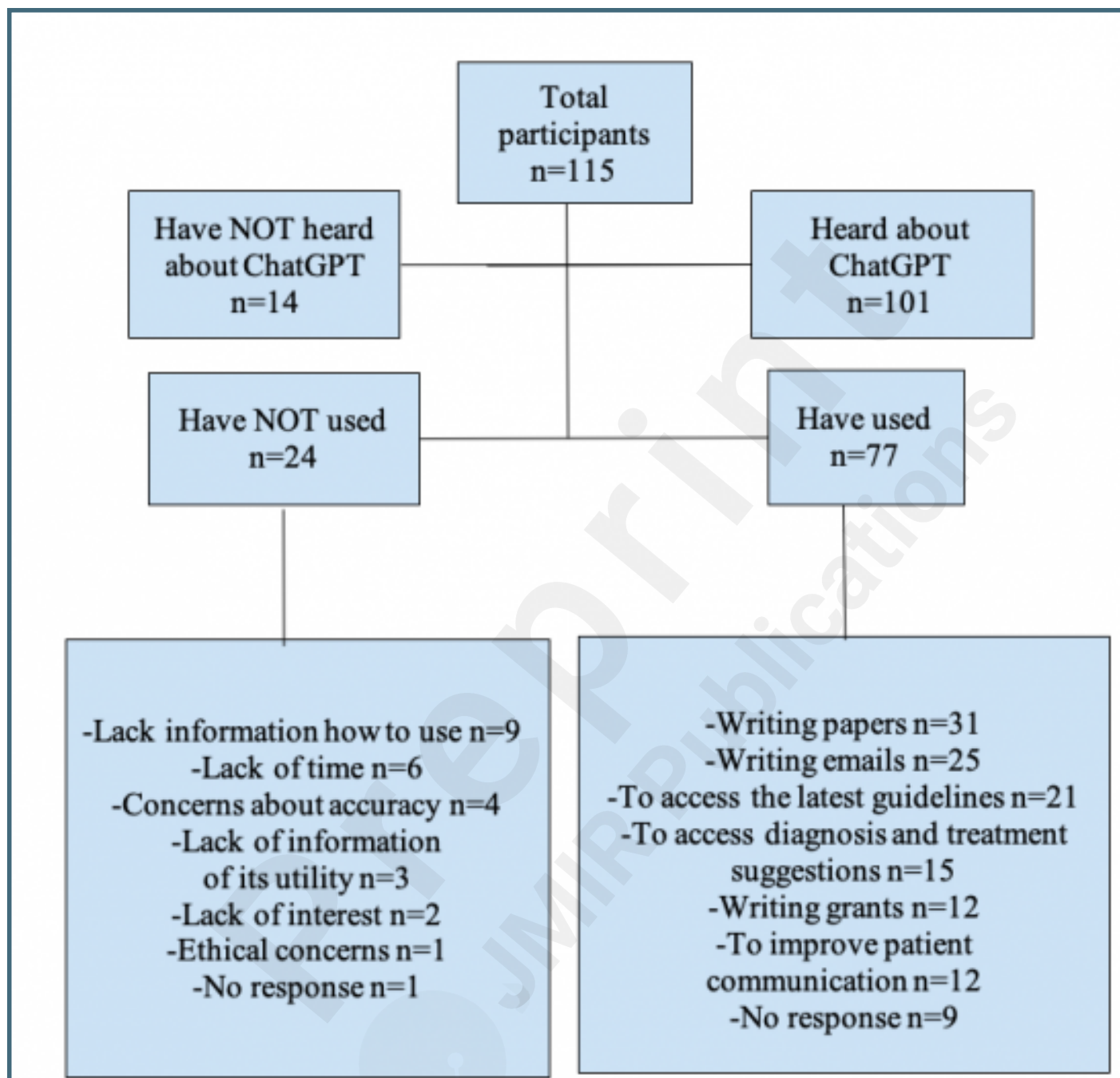
The ratio of native language versus English while utilizing ChatGPT among participants.



Main reasons for using ChatGPT in daily practice based on the language used by the participants.



Factors contributing to utilization and non-utilization of ChatGPT.



Multimedia Appendixes

ChatGPT Survey.

URL: <http://asset.jmir.pub/assets/cf19cd84c7e24fec8e5d895a493f4555.pdf>

Diagram explaining survey flow.

URL: <http://asset.jmir.pub/assets/1c98e8c5e1e32ea2eabbc2b22966201d.png>

Others within the demographic information table.

URL: <http://asset.jmir.pub/assets/c5cecacd12f9b424787ba67585dab192.docx>

The distribution of answers to respondents with different levels of post-graduate experience.

URL: <http://asset.jmir.pub/assets/823ea5ee2bc6433bc94b92c9ae86722a.docx>

