Adoption Patterns of Generative Artificial Intelligence in Healthcare Occupations: Cross-Sectional Study of User Interactions with Claude

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Abstract

Background: Generative artificial intelligence (GenAI) systems developed by organizations such as Anthropic (Claude), OpenAI (ChatGPT), Google (Gemini), Microsoft (Copilot), and Meta (Llama) are being rapidly integrated across various sectors, including healthcare. However, the extent to which GenAI is utilized for healthcare-related tasks in real-world settings, and its subsequent implications for patients and providers, remain largely unexplored.

Objective: To quantify the frequency and scope of healthcare-related tasks performed using a state-of-the-art GenAI system (Anthropic's "Claude") and to evaluate the adoption patterns of this technology across different healthcare roles, considering usage by both healthcare professionals and the general public.

Methods: This cross-sectional study analyzed anonymized data from over four million user interactions with Claude between December 2024 and January 2025. Interactions were pre-anonymized and classified by Anthropic's proprietary system into standardized occupational tasks. These tasks were subsequently mapped to specific healthcare activities using the U.S. Department of Labor's O*NET database. Main outcomes measured were: (1) the proportion of GenAI interactions by healthcare occupation, (2) the overall percentage of healthcare-related GenAI interactions compared to other fields, and (3) a "digital adoption rate," representing the proportion of tasks within healthcare occupations performed using GenAI.

Results: Healthcare-related tasks accounted for 2.58% of total GenAI interactions. Among healthcare occupations analyzed, the highest interaction percentages were observed in Dietitians and Nutritionists (6.61%), Nurse Practitioners (5.63%), Music Therapists (4.54%), and Clinical Nurse Specialists (4.53%). Digital adoption rates across healthcare roles varied substantially, ranging from 13.33% to 65%, with an average adoption rate of 16.92%.

Conclusions: GenAI technology is experiencing selective yet growing integration into healthcare tasks, particularly in roles emphasizing patient interaction and education. This emerging pattern underscores critical considerations for the future impact of GenAI on clinical workflows, patient decision-making processes, and the reliability of healthcare information.

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Keywords: Generative AI, Healthcare, Digital Adoption, Claude, Artificial Intelligence, Patient Education, Clinical Practice, Technology Integration, O*NET, Occupational Tasks, Digital Health Literacy, Healthcare Information, Professional Tasks, AI Ethics, Medical Information

Introduction

Picture a patient discussing complex medical terminology with their healthcare provider, armed with information from a late-night conversation with a Generative Artificial Intelligence (GenAI) assistant - a scene that seemed far-fetched just a few years ago. Yet this is our new reality, where over a billion daily conversations[1] with GenAI are reshaping how people engage with healthcare. GenAI has emerged as a transformative force in healthcare, poised to enhance clinical decision-making, streamline administrative workflows, and empower patients through tailored health information.[2,3] While studies have demonstrated GenAI's capacity to match or exceed clinician performance on select tasks,[4-6] a clear gap persists between experimental benchmarks and real-world application. As GenAI reshapes how patients access and interpret health information, crucial questions emerge: Will these tools enhance health literacy and patient engagement, or create dangerous illusions of medical expertise? Will they strengthen or erode trust in healthcare professionals?

In this cross-sectional study, we leveraged a large-scale, anonymized data set of user interactions with Anthropic's GenAI ("Claude") to assess how frequently tasks associated with the U.S. Department of Labor's[7] O*NET healthcare classifications[8] are performed with GenAI. By mapping conversation content to standardized occupational tasks, we aimed to identify which clinical roles are seeing the largest exposure to GenAI use, what types of tasks are performed, and how usage for healthcare-relevant tasks compares with other major occupational groups. Recognizing that this data may represent conversations from both professionals and the general public, our findings provide an early snapshot of how GenAI is being leveraged in healthcare contexts.

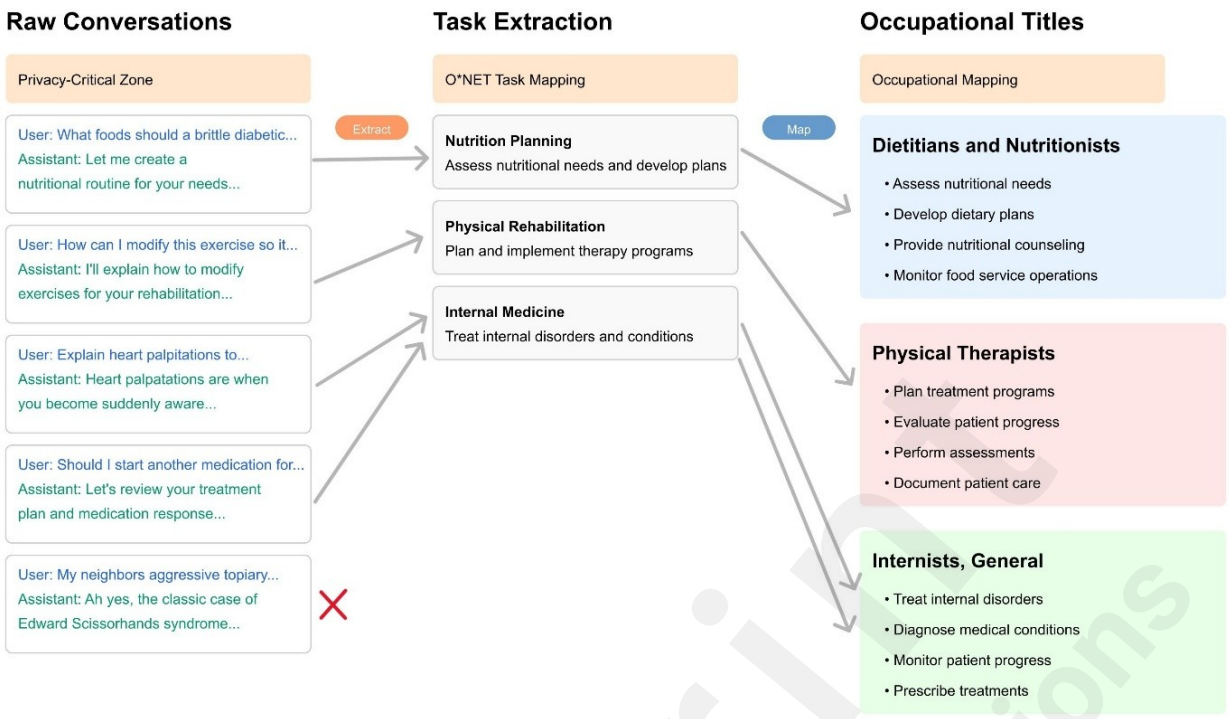
Methods

Data Source and Study Design

We leveraged a publicly available, privacy-preserving[9] aggregated dataset derived from over 4 million anonymized conversations with Claude from free and pro subscribers, released as part of Anthropic's "Economic Index" research.[10] This dataset reflects a broad spectrum of real-world user interactions, offering an ecologically valid basis for examining GenAI engagement with professional tasks.

Occupational Task Mapping

Our analysis adapted the methodological framework established by Anthropic[10] to map conversation content to standardized occupational tasks as defined by the U.S. Department of Labor's O*NET database. We focused specifically on tasks and occupations within the healthcare domain. The mapping process involved associating GenAI conversation content with O*NET task statements and linking these to corresponding occupational categories using the Standard Occupational Classification (SOC) structure (**Figure 1**).



Metrics and Outcomes

1. **Occupation-Specific GenAI Usage**: We computed the proportion of total GenAI conversations attributable to each O*NET Healthcare Practitioners and Technical Occupation.
2. **Global Occupational Categories**: We compared healthcare's share of GenAI usage against other occupational categories (e.g., computing, arts/media, education) to contextualize overall representation.
3. **Task Adoption Rate**: We calculated the ratio of distinct tasks performed with GenAI to total distinct potential tasks for each occupation. For instance, if an occupation had 20 potential tasks in the O*NET database and 5 of them appeared in GenAI conversations, the adoption rate was 25%. This analysis was conducted for the top 25 Healthcare Practitioners and Technical Occupations.

Statistical Analysis

Descriptive statistics summarized GenAI usage proportions and adoption rates. We used simple comparisons (e.g., ratio of usage in healthcare vs other categories) to maximize interpretability while highlighting relative differences. All analyses were performed in R.[11]

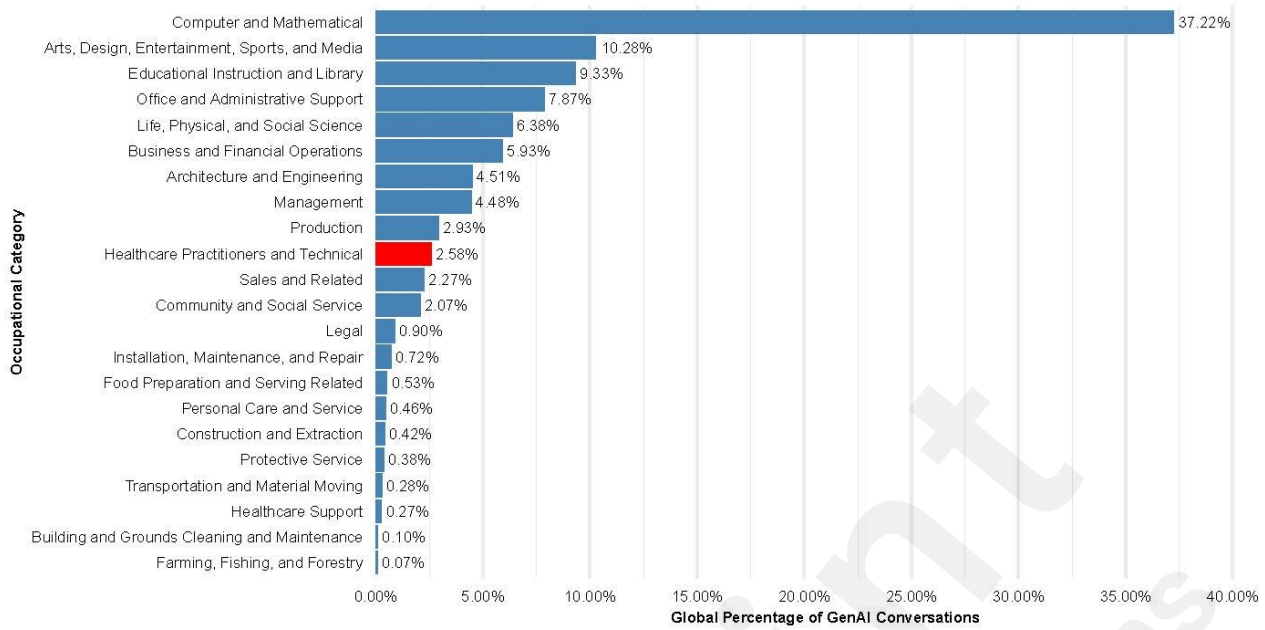
Ethical Considerations

This study does not meet the criteria for human subjects research as no identifiable personal data were included in the dataset; all conversations were pre-anonymized and aggregated.[9]

Results

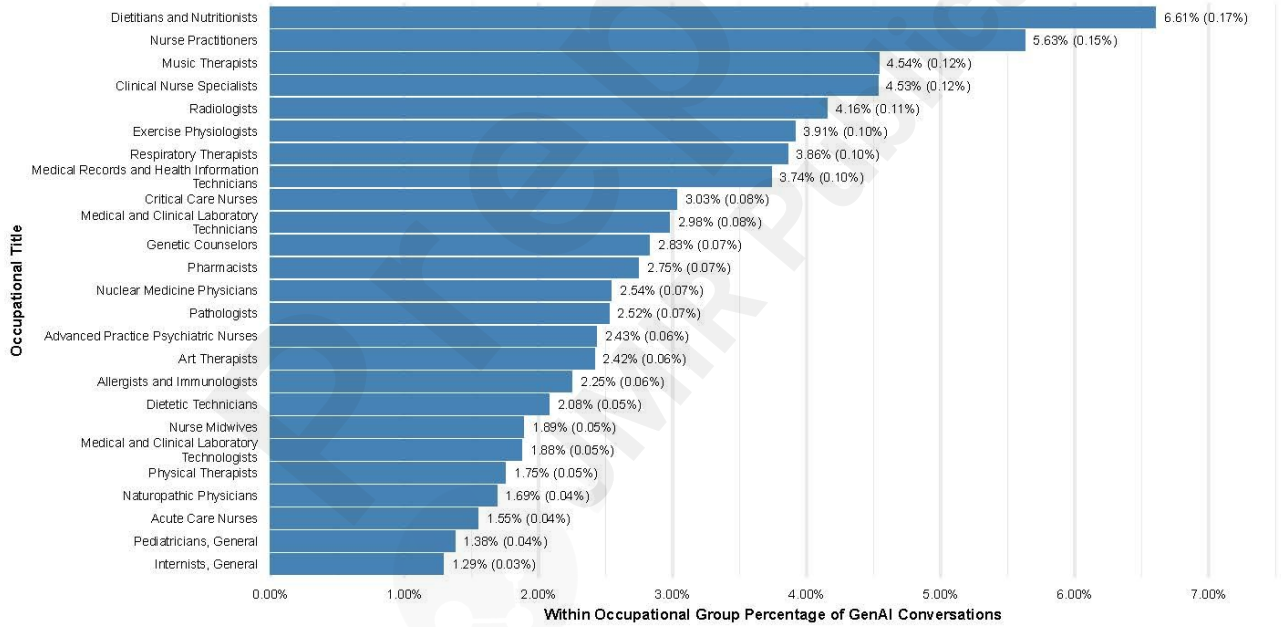
Overall Healthcare Usage

Tasks mapped to Healthcare Practitioners and Technical Occupations collectively represented 2.58% of all GenAI conversations (**Figure 2**). In contrast, computing-related fields accounted for 37.22%, followed by arts/media and education (10.28%).



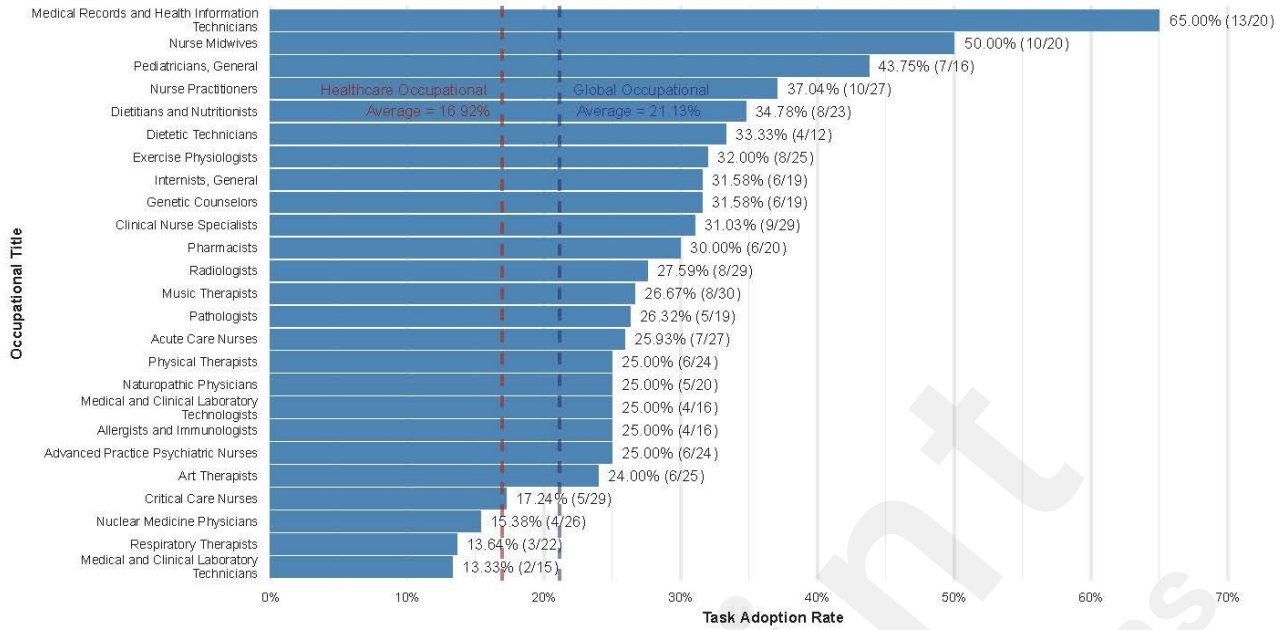
Within-Healthcare Breakdown

In the top 25 list of Healthcare Practitioners and Technical Occupations by GenAI conversation share, Dietitians and Nutritionists (6.61%), Nurse Practitioners (5.63%), Music Therapists (4.54%), and Clinical Nurse Specialists (4.53%) had the highest usage (**Figure 3**). Meanwhile, other occupations such as Pediatricians (1.38%) and Internists (1.29%) had more modest representation.



Adoption Rates

Task adoption rates for top healthcare occupations ranged from 13.33% to 65%, with an average of 16.92%, compared to a global task adoption rate of 21.13% (**Figure 4**). Medical Records and Health Information Technicians (65%), Nurse Midwives (50%), and Pediatricians (43.75%) had the highest task adoption rate.



Discussion

The Dual Nature of Healthcare AI Adoption

Our findings reveal an emerging paradox in healthcare AI adoption. The concentration of usage relevant to clinicians in patient-facing roles suggests that GenAI may be predominantly serving as a patient education and support tool rather than a clinical decision aid. Research prior to the widespread availability of GenAI has demonstrated that consulting “Dr. Google” is commonplace,[12] yet as many as half of consumers of digital healthcare information who have chronic conditions need assistance to find quality information.[13] This creates a unique dynamic where patients are increasingly equipped with AI-generated medical information before their clinical encounters, a trend that is likely to intensify as GenAI systems become more sophisticated and widely used. A growing asymmetry would raise important questions about the role of GenAI in healthcare delivery and its potential impact on patient-provider relationships, particularly in how medical information is accessed, interpreted, and discussed during clinical encounters. The potential for AI-informed patients to significantly outnumber those relying solely on direct consultations with healthcare professionals could fundamentally reshape information hierarchies in healthcare, especially since GenAI healthcare answers may one day rival those from clinicians,[6] requiring new approaches to patient communication and shared decision-making.

Patient Empowerment and Risk

The high adoption rates in roles focused on patient education and lifestyle guidance may suggest that it could be patients driving early GenAI usage for healthcare-relevant tasks. While if true, this could enhance health literacy and promote shared decision-making through accessible, tailored information, it also raises concerns about potential misinformation, delayed professional consultation, or misguided self-management. The inherent 'black box' nature of GenAI, coupled with the potential for generating factually incorrect information ('hallucinations'), necessitates robust safeguards, including transparency in AI-generated content, clinician oversight, and mechanisms for verifying accuracy.

Future Directions

Healthcare organizations and regulatory bodies should develop comprehensive frameworks for responsible AI integration. This includes creating evidence-based guidelines for clinical practice integration and establishing rigorous standards for AI-generated health information accuracy. Ethical considerations surrounding data privacy, algorithmic bias, and the potential for exacerbating health inequities must also be central to any framework for responsible GenAI integration. Future research should investigate whether using GenAI to accomplish healthcare-relevant tasks translates into

improved health outcomes and how shifts in digital literacy affect patient engagement and provider practices.

Limitations

First, we relied on anonymized, aggregated conversations and thus information on user credentials and demographics is not available. Second, the mapping from conversation text to occupational tasks may be imperfect, particularly when laypersons seek professional-grade information. Third, our cross-sectional design offers a single snapshot in time rather than longitudinal trends. Fourth, data from conversations were limited to Claude since Anthropic is the only company that has open-sourced data for analysis, which may or may not be representative across other GenAI tools. Finally, we do not know what users do with the information they receive from GenAI. Future analyses should account for ongoing changes in GenAI capabilities and usage patterns.

Conclusion

The dawn of AI-augmented healthcare brings both unprecedented opportunities and significant challenges. Our findings reveal a healthcare landscape in transition, where patients could be leading the adoption of GenAI tools while clinical adoption remains measured. This paradox demands immediate attention from researchers, clinicians, educators, and policymakers to ensure these powerful tools enhance rather than compromise healthcare delivery.

The path forward requires balancing innovation with safety, accessibility with equity, and technological capability with human judgment. The time for proactive guidance and evidence-based integration is now, before usage patterns become entrenched and potentially problematic practices take root. As GenAI continues to reshape healthcare interactions, our collective response will determine whether this technology truly advances the quality and accessibility of healthcare or exacerbates existing challenges in our healthcare system.

Acknowledgements

We used GenAI (OpenAI's ChatGPT o3-mini) to improve the conciseness and clarity of our manuscript to meet word count recommendations. We take full responsibility for the integrity of the content generated.

Conflicts of Interest

We, the authors, have no financial or personal disclosures to declare.

Abbreviations

GenAI: Generative Artificial Intelligence

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Figure Titles and Captions

Figure 1. Framework for Mapping GenAI Conversations to O*NET Tasks and Occupational Categories

Figure 2. Global Percentage of GenAI Conversations by Occupational Categories

Figure 3. Top 25 Healthcare Practitioners and Technical Occupational Titles by GenAI Conversation Share

Caption: Values in parentheses show each occupation's share of total global GenAI conversations, while the primary percentage represents the share within the healthcare practitioner group.

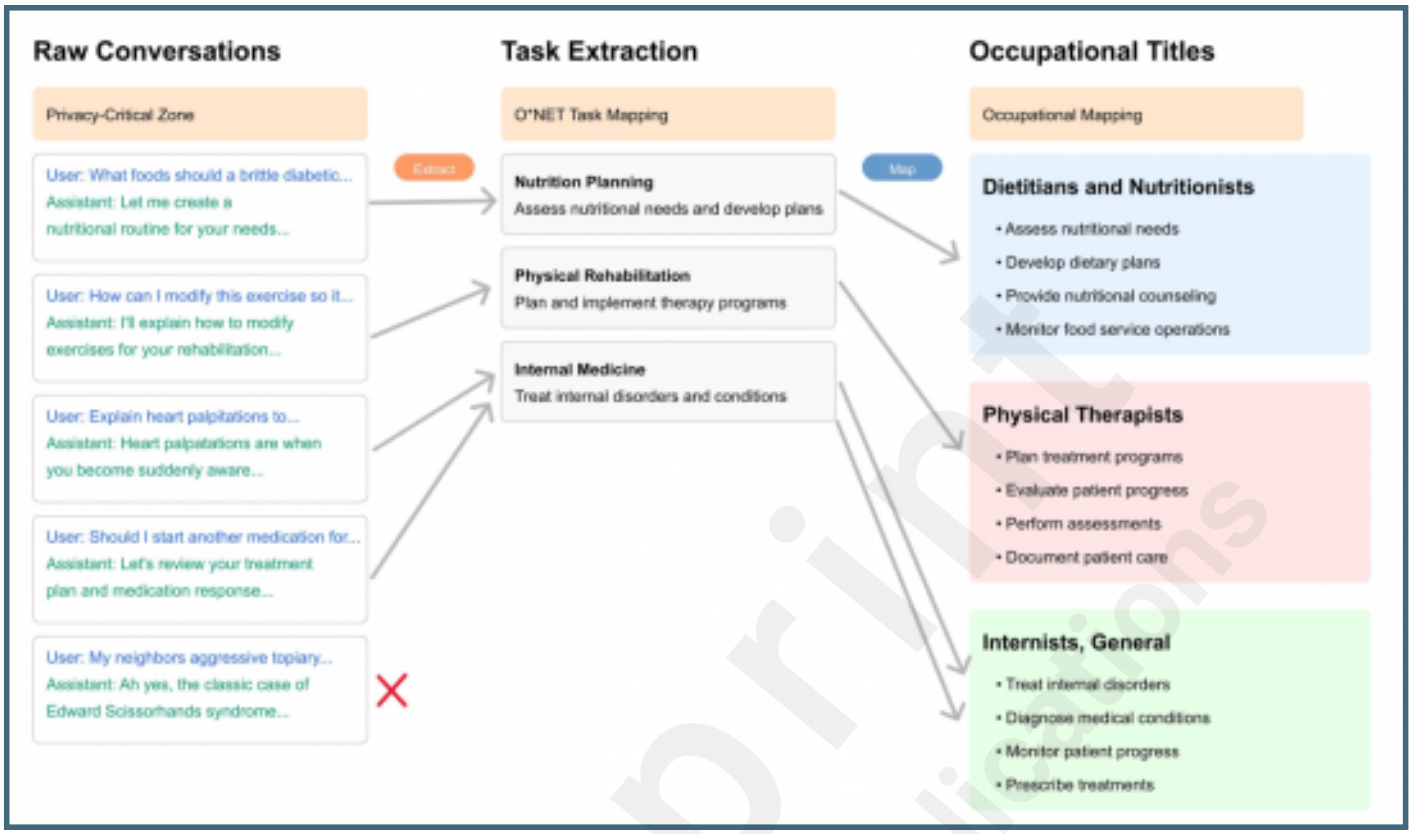
Figure 4. GenAI Task Adoption Rate for Top 25 Healthcare Practitioners & Technical Occupations

Caption: Values show each occupation's adoption rate as a percentage of possible tasks (total adopted tasks/total available tasks), with the raw task counts shown in parentheses.

Supplementary Files

Figures

Framework for Mapping GenAI Conversations to O*NET Tasks and Occupational Categories.



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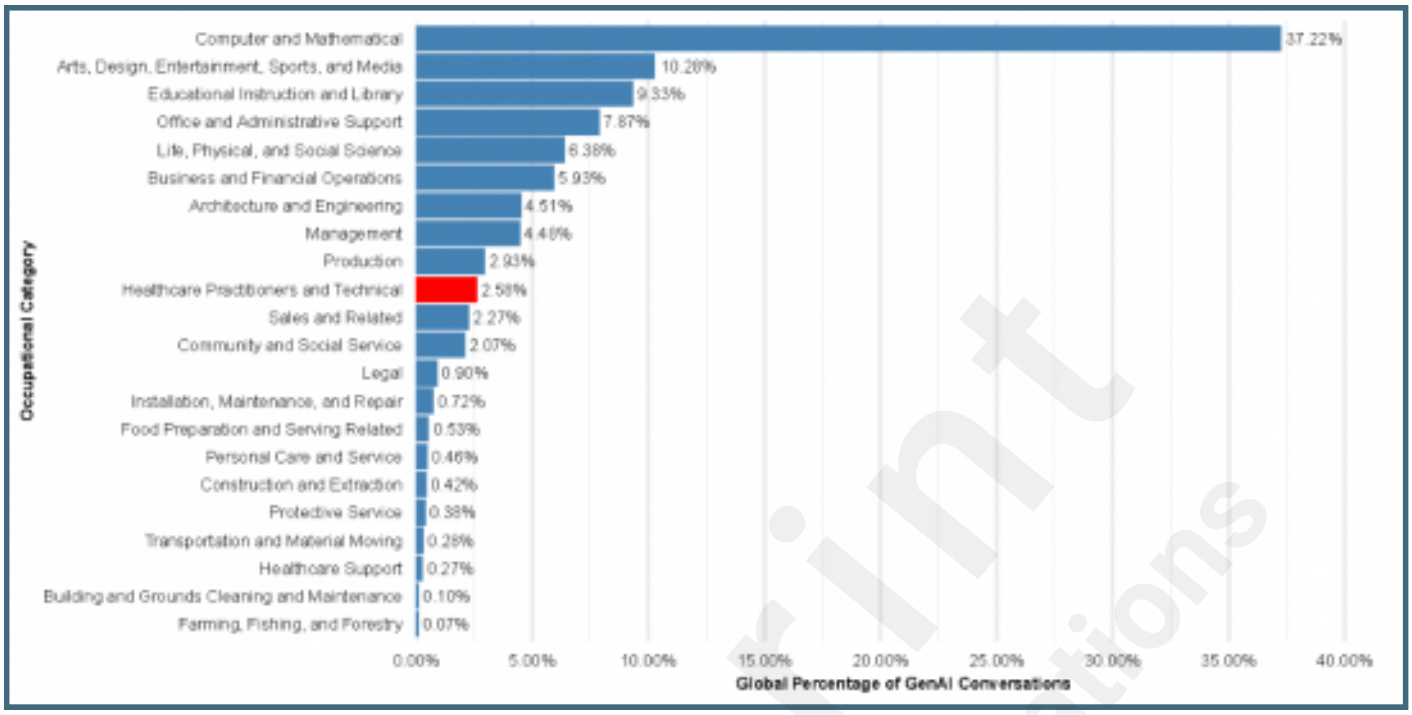

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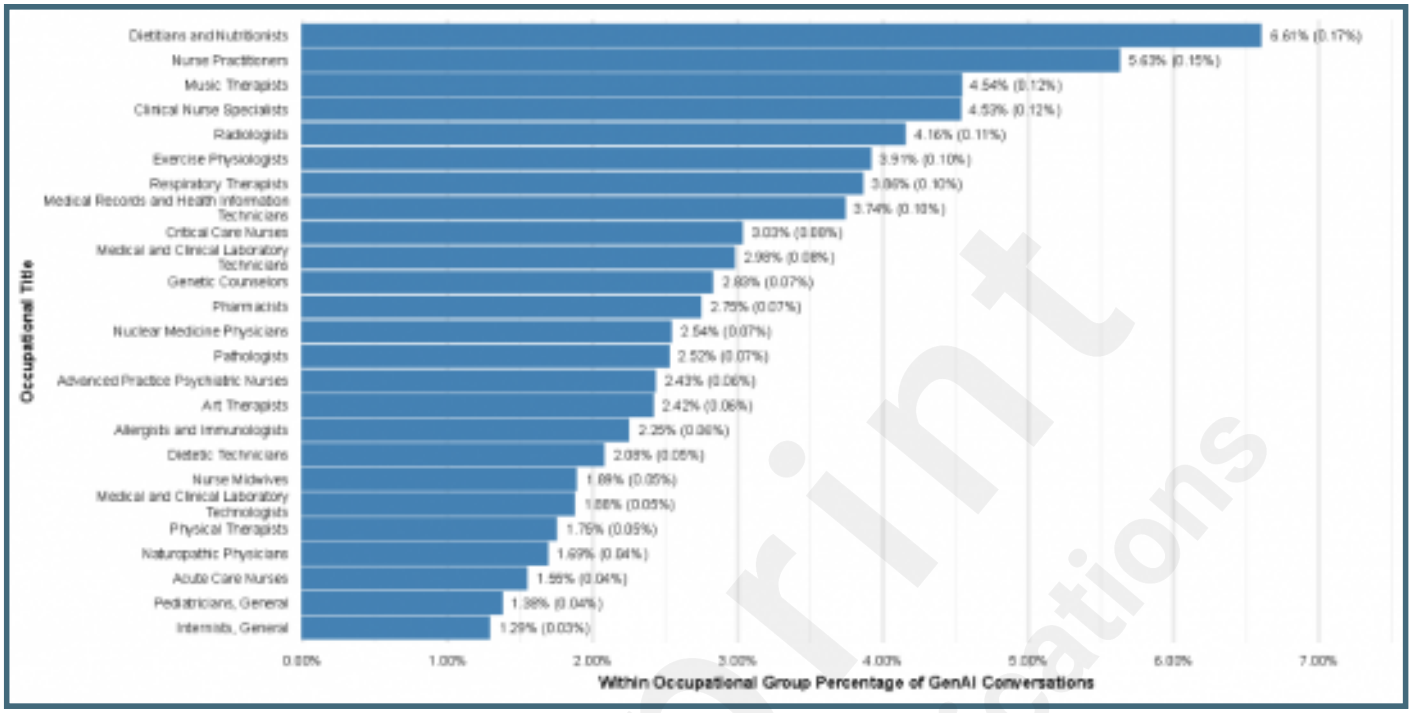

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