Pharmacy Preceptors' Use and Perception of AI Chatbots in Pharmacy Practice and Education

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BACKGROUND

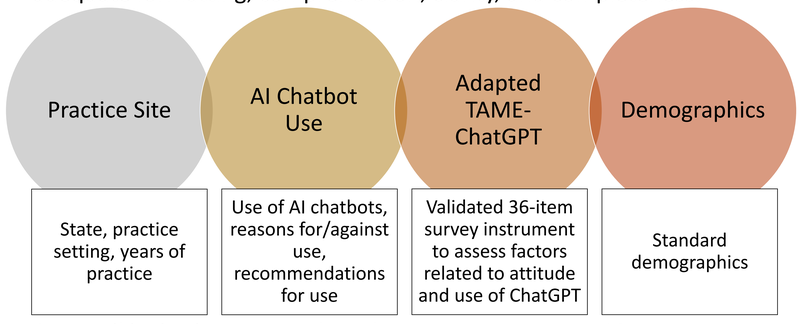
- Artificial intelligence (AI) based Language Learning Model (LLM) chatbots such as ChatGPT have quickly gained popularity and traction since their launch and have been explored for use in healthcare.[1,2]
- Potential uses for AI chatbots include documentation, creation of personalized care plans, and provision of patient education, but there are still several concerns with their use, including ethical, and legal concerns, concerns for inaccuracy, and limited reproducibility.[3]
- Early surveys of physicians and other healthcare professionals indicate that despite concerns, there is still an anticipated benefit and potential for the use of AI technology in healthcare.[4]

OBJECTIVE

To establish a baseline for the current perceptions and use of AI chatbots in pharmacy practice from the perspective of a pharmacist preceptor as well as determine the factors that influence the use of AI chatbots according to different variables within the TAME-ChatGPT.[5]

METHODS

- A 53-item survey instrument based on an adapted version of the Technology Acceptance Model (TAM) was created in Qualtrics[XM].
- The instrument was pilot tested by five faculty members to ensure adequate formatting, comprehension, clarity, and completeness.



- An email invitation to complete the survey was sent to 1877 preceptors affiliated with Butler University, Purdue University, University of Michigan, Wayne State University, and University of Illinois Chicago Colleges of Pharmacy on February 12, 2024, and was available until April 22, 2024.
- Continuous variables were assessed using Student's t-test, nominal variables with a chi-square test, and ordinal variables with the Mann-Whitney U Test. Regression analysis was used to assess potential relationships between use of AI chatbots, preceptor characteristics, and the components of the TAM.
- The study was reviewed and approved by the Institutional Review Boards at all participating institutions.

RESULTS

Figure 1. Response Flowchart

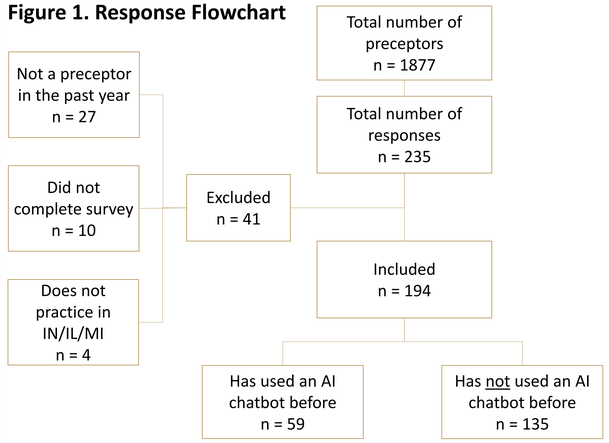


Figure 2. Use of AI Chatbots

Top uses for AI Chatbots	• Summarizing information (54.3%) • Letter of recommendation writing (35.6%) • Obtaining disease state information (23.7%) • Policy/Procedure creation (23.7%)
Top reasons for disuse	• Not sure how to use them effectively (63%) • Prefer to use other resources (e.g. Guidelines, UpTo Date, etc.) (59.3%) • Lack of credibility/trust (46.7%)
Recommendations for **pharmacist** use	• Administrative (e.g. scheduling, charting) (47.4%) • Summarizing information (46.4%) • Creating meeting agendas (38.1%) • Do not recommend use (15.5%)
Recommendations for **student** use	• Summarizing information (31.4%) • Creating meeting agendas (23.2%) • Obtaining disease state information (21.6%) • Do not recommend use (40.2%)

- Top used AI chatbots: ChatGPT (93%), Bing Chat (17%) and Google Bard (12%)

Table 2. Comparison of TAME-ChatGPT Constructs

Construct (possible range, neutral score)	Have used N = 59	Have not used N = 135
Anxiety[a] (3-15, 9)		
Mean ± SD	8.14 ± 3.16	6.70 ± 2.99
Median (IQR)	8 (6-11)	6 (4.5-9)
p value		< 0.01
Perceived Risk[a] (5-25, 15)		
Mean ± SD	11.95 ± 3.95	10.70 ± 3.84
Median (IQR)	11 (9-15)	10 (8-13)
p value		0.04
Tech/Social Influence[b] (5-25, 15)		
Mean ± SD	19.19 ± 3.63	15.07 ± 4.06
Median (IQR)	20 (17-22)	16 (12.5-18)
p value		< 0.01

a. higher values indicate lower anxiety and lower perceived risk
b. higher values indicate positive attitude towards technology

Table 1. Comparison of Select Demographics

Characteristic	Have used n = 59/194 (30%)	Have not used n = 135/194 (70%)	P-value
Age (mean, SD)	38.7 (9.1)	38.7 (9.5)	1.00
Female gender (n,%)	39 (66.1%)	103 (76.3%)	0.11
Years of practice (mean, SD)	12.3 (8.9)	12.5 (9.7)	0.91
Area of practice (n, %)			< 0.01
Hospital	38 (64.4%)	74 (54.8%)	0.21
Community	4 (6.8%)	25 (18.5%)	0.04
Academia	11 (18.6%)	5 (3.7%)	< 0.01
Coworker use (n, %)	25 (42.4%)	9 (6.7%)	<0.01
AI policy (n, %)	11 (8.1%)	8 (5.9%)	0.02

Figure 3. Variables Predicting Current AI Chatbot Use

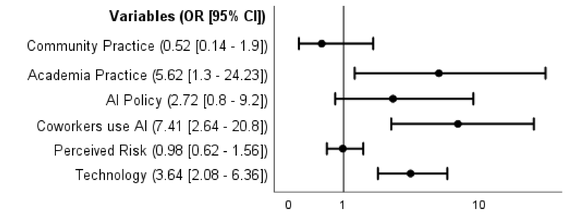


Figure 4. Variables Predicting Future AI Chatbot Use

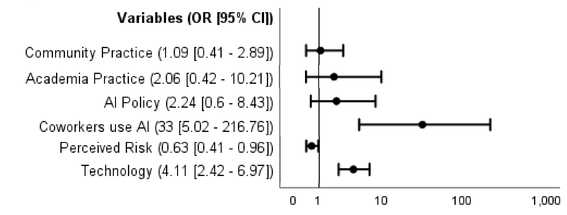
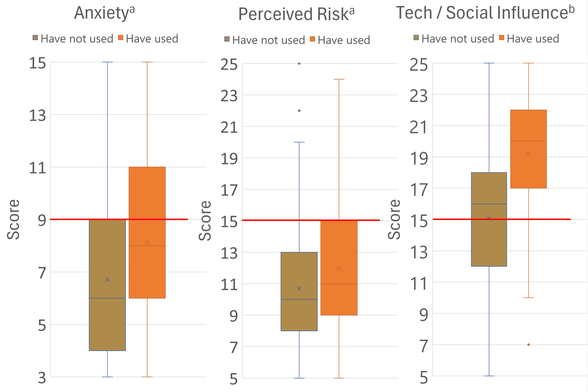


Figure 5. TAME-ChatGPT Constructs



a. higher values indicate lower anxiety and lower perceived risk; b. higher values indicate positive attitude towards technology. The red line indicates a neutral attitude.

CONCLUSIONS

- The majority of pharmacist preceptors in the Midwest have not used an AI chatbot.
- Pharmacists who worked in academia, who had coworkers that used AI chatbots or an institution AI policy were more likely to use AI chatbots.
- Pharmacists who reported use of chatbots had significantly lower perceived risk and anxiety score compared to nonusers.
- More pharmacists recommended against student use than against pharmacist use.
- Technology/social influence and coworker use predicted current and future use of AI chatbots while academia practice was predictive of only current use.
- Alleviation of anxiety/perceived risk and increasing positive attitude toward technology would increase chatbot use.
- Limitations include a low response rate and applicability only to preceptors in the Midwest. Additionally, this space is constantly evolving and perception may change rapidly.
- Future directions: expansion of survey population to all states.

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