Artificial intelligence chatbots in dermatology: a national online cross-sectional survey of dermatologists

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BACKGROUND/OBJECTIVES

Artificial intelligence chatbots (AIC) have sharply risen in popularity. Dermatology, heavily involving visual, clinical, and pathological pattern-recognition techniques, will be impacted by AIC. **Thus, this study aims to categorize the attitudes and beliefs of American dermatologists towards AIC and their potential uses, benefits, and risks.**

METHODS

An online cross-sectional survey was distributed to dermatologists across the United States to assess their opinions on AIC. Questions explored perceived likelihood of the incorporation of AIC into the practice of dermatology, including patient use, physician use, integration into medical records, clinical workflow, healthcare management by third parties and other potential applications. Participants were asked to select all potential benefits, risks, and important considerations they believed to be associated with the implementation of AIC. Demographic data and self-reported understanding of AIC was also collected.

RESULTS

- 214 total responses were received. 192 completed the entire survey. 53.6% respondents were female. 44.3% were between ages 30-39. 41.1% had 0-10 years of experience as attending physicians. 76.5% of participants believed it is somewhat or very likely that AIC will be formally incorporated into dermatology. ANOVA revealed higher self-reported understanding of AIC was associated with increased perceived likelihood of AIC implementation on a 5-point scale (p<0.001, **Table 1**).
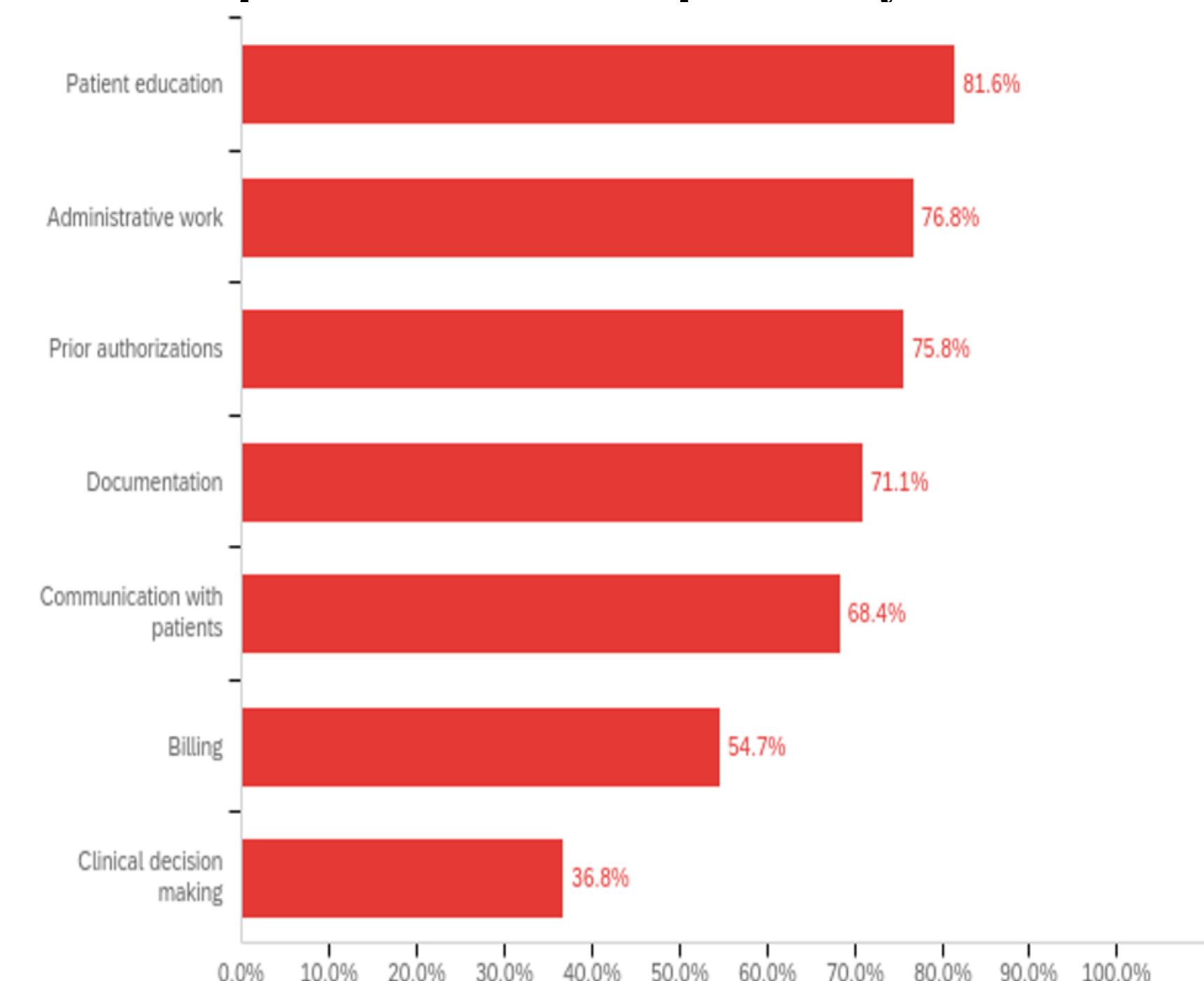- When asked which elements of dermatological practice would be impacted by AIC, 86% selected "patient education" while "administrative work (76.8%)," and "prior authorizations (75.8%)" were close behind (**Figure 1**).

Table 1. ANOVA comparing belief in future AI chatbot incorporation for age, sex, career stage, and self-reported AI chatbot understanding

Variable	AI likelihood, mean (SE)	p-value
Age		0.19
18-39	3.88 (0.13)	
40-79	4.09 (0.10)	
Sex		0.78
Female	3.93 (0.11)	
Male	4.05 (0.12)	
Career stage		0.40
Residency to junior attending	3.93 (0.11)	
Mid-career to advanced-career attending	4.06 (0.11)	
Understanding of AI chatbots		p < 0.001 ***
Not well to slightly well	3.78 (0.10)	
Moderately to extremely well	4.35 (0.10)	

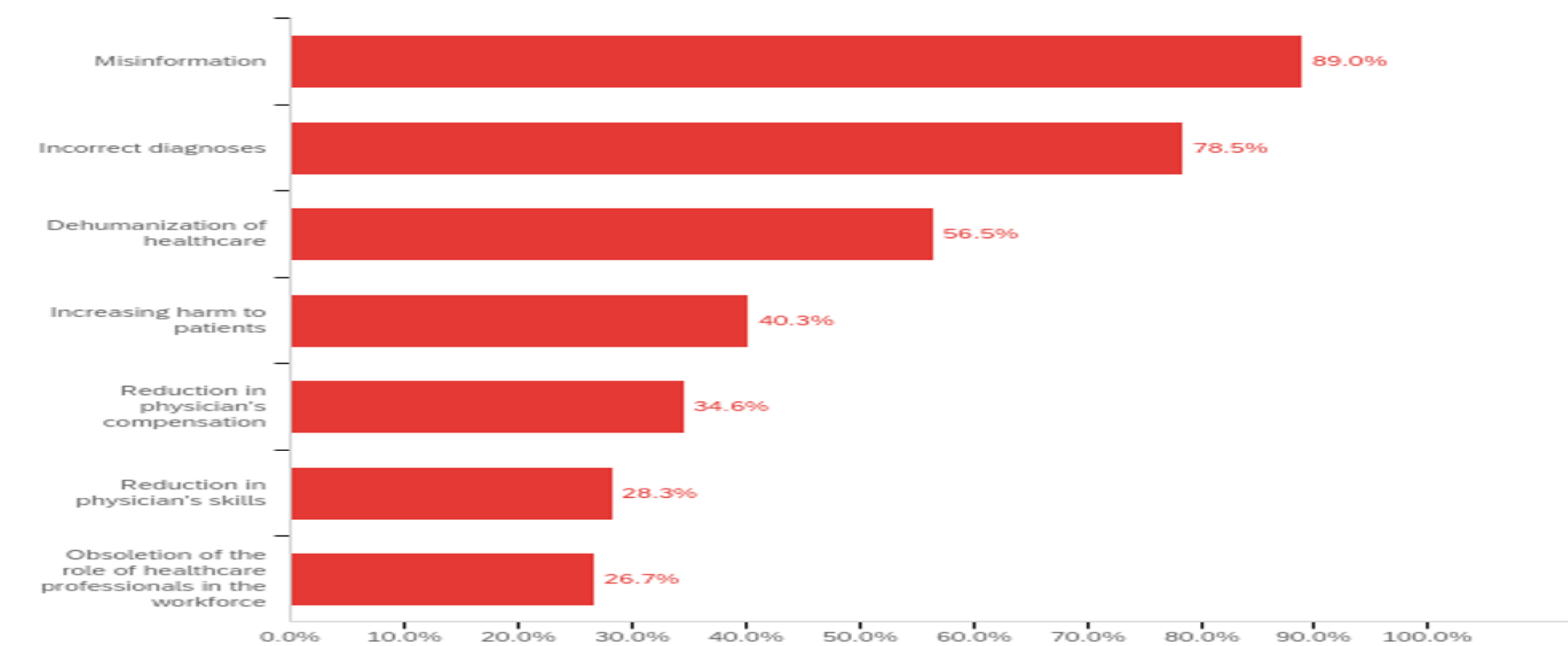**Figure 1. Which of the following elements of dermatologic practice will be impacted by AI chatbots?**

- Regarding potential downfalls of AIC, most respondents selected "misinformation" or "incorrect diagnoses" (89% and 78.5%, respectfully), while less than half believed that AIC would cause "increased harm to patients (40.3%)," "reduction in physician's compensation (34.6%)," or "reduction in physician's skills (28.3%; **Figure 2**)."
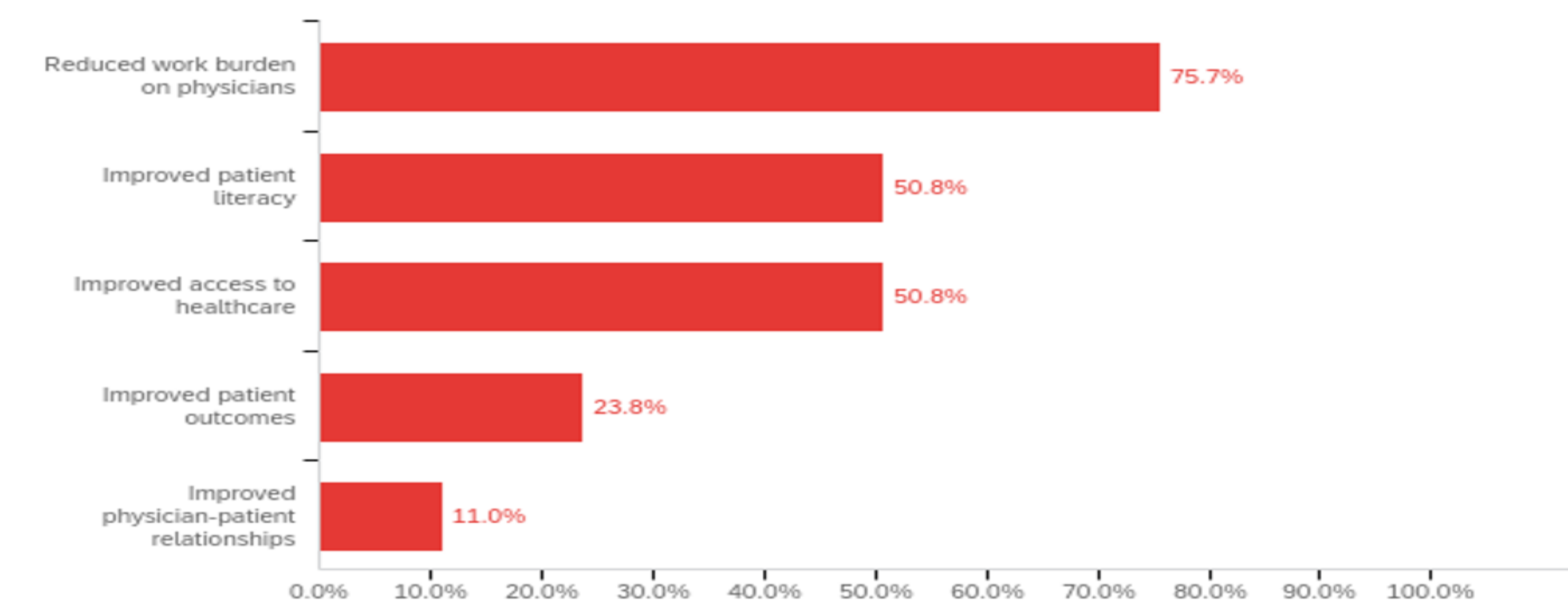
RESULTS (cont.)

Figure 2. Perceived downfalls of AI chatbots

- When asked about potential benefits, 75.7% of respondents identified "reduced work burden on physicians." Few respondents believed AIC would lead to "improved patient outcomes" or "improved physician-patient relationships" (23.8% and 11%, respectively, **Figure 3**).

Figure 3. Perceived benefits of AI chatbots

CONCLUSIONS

This study characterizes beliefs American dermatologists hold towards artificial intelligence chatbots. Most participants believed AIC will be incorporated into dermatology. Common concerns were related to the ability of AIC to understand the complexity of medicine well enough to produce high quality medical advice in addition to its ability to communicate effectively with patients. Overall, participants believed that AIC will primarily play a role in administrative tasks, but that its use in medical care has the potential to negatively impact patient education and care if used incorrectly. As AIC continue to evolve, more studies are needed to assess the safety and efficacy of these tools for use in dermatological practice.