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Assessing the Feasibility and Effectiveness of Screening for Indoor Tanning in the Primary Care Setting: A Report of Preliminary Findings

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Introduction: Indoor tanning is a major modifiable risk factor in the development of both melanoma and nonmelanoma skin cancers. Investigation of behavior-altering interventions is an area of active research. As with other preventive measures, screening of high-risk populations can be an important aspect of a multimodality public health intervention. This study sought to further the limited understanding of indoor tanning screening practices in the primary care setting.

Methods: Physicians practicing within the scope of primary care in the northeast were surveyed in 2022 on practice patterns around the frequency of indoor tanning screening, barriers encountered with implementing screening, and actions taken with a positive screen. Research methodology adhered to the Joanna Briggs Institute critical appraisal checklist.

Results: Of 26 primary care physicians, only 7.7% routinely screened for indoor tanning. Barriers identified included time limitations (76.9%) and prioritization of other health concerns (96.2%). All primary care physicians (100%) reacted to reports of indoor tanning with an intervention, most commonly counseling on the risks of indoor tanning (92.6%).

Conclusions: This data suggest that screening for indoor tanning use could be improved. The authors recommend the incorporation of a standardized screening question regarding indoor tanning in intake forms.

INTRODUCTION

Indoor tanning has recently been declining in popularity in the setting of new legislature limiting sunbed use.[1] These legislative actions have been motivated by research that has established a direct connection between melanomas and ultraviolet (UV) radiation exposure.[2] Although there is evidence of a decreased usage of indoor tanning, primarily in the setting of policies that restrict or ban indoor tanning, recent statistics still cite that 3.6% of adults in North America and 4.5% of adolescents engage in this behavior.[3] Furthermore, the use of indoor tanning prior to age 35 years increases the risk of melanoma formation sixfold.[4]

In 2020, 77,230 new cases of melanoma were recorded in the U.S. alone, and melanomas were found to be the

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primary cause of 8,214 deaths.[5] The annual direct medical cost of treating melanoma caused by tanning devices amounts to $45.2 million in the U.S. alone.[6] Notably, tanning beds also increase the risk of nonmelanoma skin cancers, which collectively represent the most common cancer worldwide. The burden of both the melanoma and nonmelanoma skin cancers is significant; consequently, greater efforts are required to minimize unnecessary healthcare spending by further minimizing indoor tanning.

Partnering with primary care physicians (PCPs), the first-line physicians best positioned for health screening, permits dermatologists to develop a better understanding of the barriers to screening and to develop new strategies to mitigate this healthcare risk, thereby ensuring optimal care and follow-up for high-risk patients. To this end, this study sought to better characterize current patterns in indoor tanning screening among PCPs as well as intervention practice patterns among these physicians.

METHODS

Physicians affiliated with an academic institution in Providence, Rhode Island, and specializing in internal medicine, family medicine, pediatrics, and obstetrics and gynecology practicing within the scope of primary care and therefore considered PCPs were contacted through listserv emails and asked to complete an anonymous 10-question survey. The PCP listserv was compiled from a comprehensive registry of all practicing PCPs within the academic institution, although the resultant sample would be self-selected on the basis of those who voluntarily decided to respond, thereby introducing a possibility of bias. The survey asked questions about the frequency with which indoor tanning was used. Tanning beds were defined as tanning beds, tanning booths, or any other device that emits UV light to produce a cosmetic tan. The survey also collected data on barriers encountered with implementing screening and actions taken when patients reported indoor tanning during their patient−physician interactions. Anonymized data were collated and analyzed to produce demographic and summary statistics to facilitate interpretation. The analysis included responses accompanied by physician information, such as years of practice and demographic variables, to ensure comprehensive coverage of the identified sample. Partial surveys were not collated because the survey had a forcing function prior to submission that required all questions to be answered. The study had an IRB exemption because it was not considered human subjects research. The influence of the researchers on the study and vice versa was considered minimal owing to its anonymized and observational nature.

RESULTS

A total of 29 surveys were completed in full, with 26 completed by PCPs (MD, n=23; DO, n=3) and thus included in the final analysis. A response rate was not able to be calculated because surveys were disseminated through e-mail and did not employ a tracking function. Most PCPs were White (80.8%, n=21), female (76.9%, n=20), and had practiced <5 years (69.2%, n=18) (Figure 1). Only 7.7% (n=2) of PCPs routinely screened

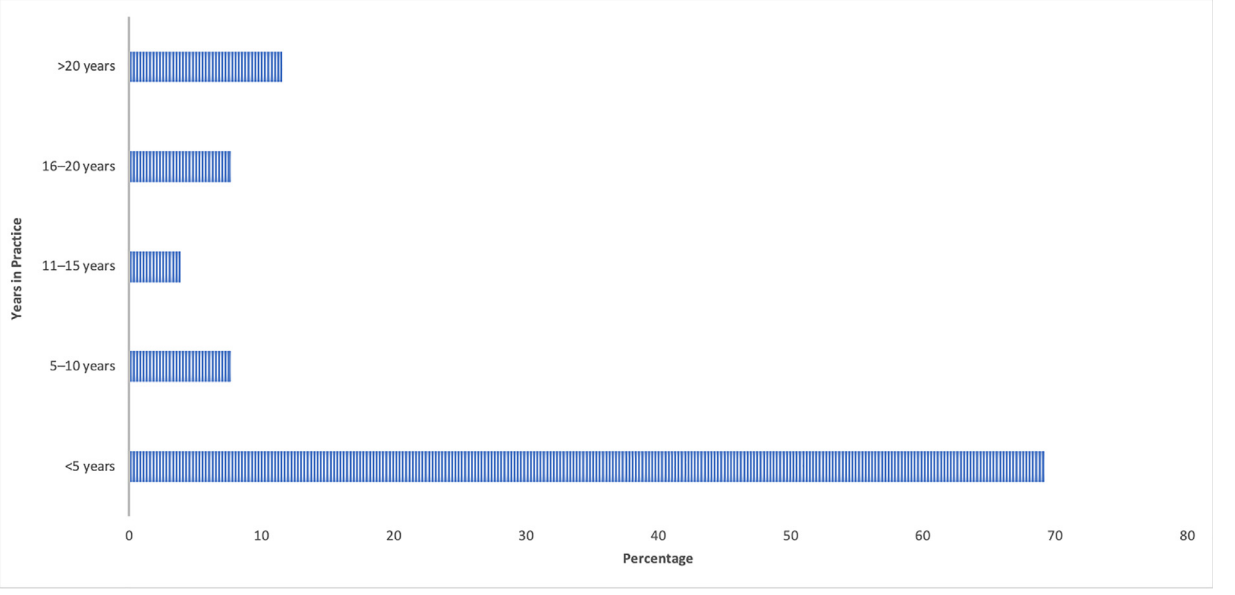

Figure 1. Number of years in practice.
The distribution of the number of years in practice for primary care physician respondents to a survey on indoor tanning screening is displayed.

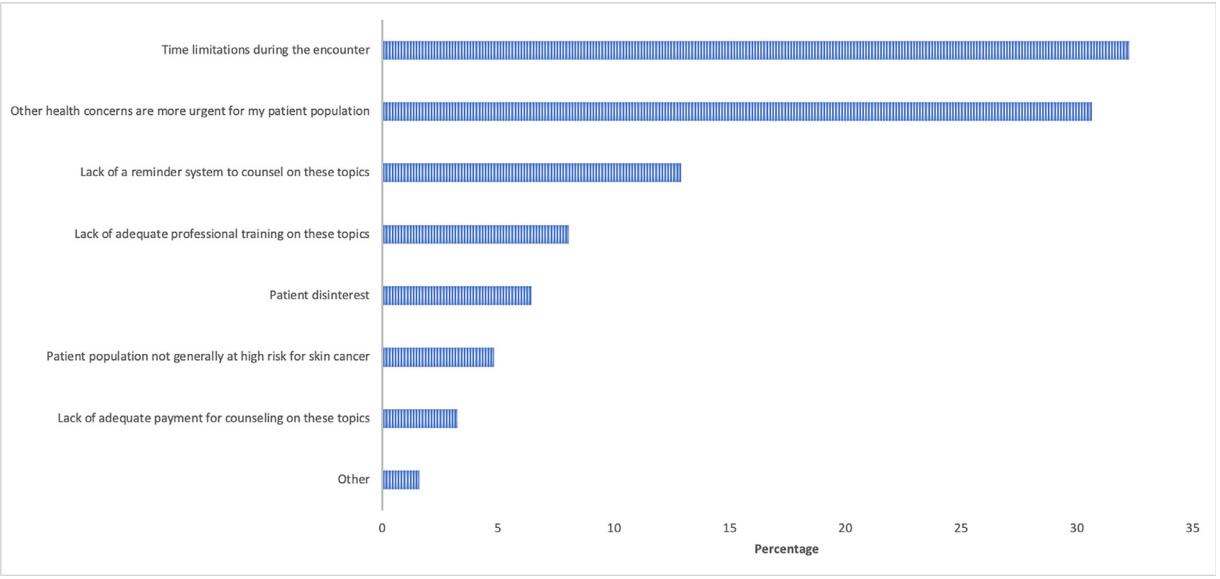

Figure 2. Reasons for not screening for indoor tanning.
The breakdown of the reasons provided for not screening for indoor tanning among primary care physicians is displayed. As respondents could select multiple reasons as barriers to screening, percentages are calculated based on the total number of reasons given.

patients for indoor tanning. The main barriers to screening identified were time limitations during the encounter (76.9%, *n*=20) and prioritizing other health concerns (96.2%, *n*=25) (Figure 2). Despite limited screening efforts, all PCPs (100%, *n*=26) reacted to reports of indoor tanning use by at least 1 of the following: counseling on the risks of indoor tanning (92.6%, *n*=25), recommending cessation of indoor tanning (80.8%, *n*=21), performing a full skin examination (38.5%, *n*=10), and/or recommending a dermatology referral or follow-up with an existing dermatologist (26.9%, *n*=7).

DISCUSSION

There is evidence that screening and subsequent counseling may be helpful in impacting behavior. Indeed, the U.S. Preventative Services Task Force has determined that behavioral counseling interventions result in a small increase in sun-protective behaviors.[7] This survey provides critical insights into the state of indoor tanning screening and practice trends among PCPs. Despite a modest sample size, the findings of this study can serve as an important preliminary investigation that may inform further research in an area of health care that has significant implications for the burden disease at both the patient and systemic levels. These findings are especially relevant given the recent U.S. Preventative Task Force guideline update that states that current evidence is insufficient to recommend skin cancer screening for asymptomatic adults. Certainly, risk factors are at the cornerstone of any comprehensive screening guideline; with the potential for less accessibility to skin cancer screening itself, well-established causal exposures become even more essential to accurately collate, document, and utilize for appropriate triaging of resources.

Recent work published in *AJPM Focus* by de Vere Hunt et al.[8] showcased the power of social media in disseminating public health messages aimed at reducing indoor tanning. The study's multifaceted approach exemplifies the necessity of innovation in today's public health campaigns. Despite significant reach and engagement, the results underscored that these factors did not translate into measurable behavioral changes. The gap between information and action highlights the need for a more multifaceted approach to tackle the complexities of indoor tanning behavior.

The present study's data suggest that screening for indoor tanning could be improved because only a small fraction of PCPs (7.7%) reported routinely screening patients for indoor tanning behavior. The lack of widespread screening is disconcerting given that PCPs are often the first line of defense in mitigating healthcare risks; their role is pivotal in the context of skin cancers given that early detection is associated with better outcomes, whereas delayed diagnosis is associated with poorer outcomes.

PCPs recognize the harms of indoor tanning and the importance of skin cancer detection but are tasked with the responsibility of managing competing comorbidities and conducting other preventative screenings with limited time. These barriers are consistent with reported

limitations in the literature to date. To improve current screening methods without disrupting the primary care workflow, the authors propose considering the addition of 1 question—*Have you ever used an indoor tanning device?*—on patient intake forms. The electronic medical health record can be utilized in this setting as well by prompting such screening questions. Affirmative answers may then be followed by an additional question assessing the indoor tanning frequency across a lifetime. This quality improvement measure to enhance screening of indoor tanning use may allow PCPs to identify high-risk behavior, counsel on cessation, and risk stratify for referral to a board-certified dermatologist to conduct skin cancer screening where indicated.

Because it can be prohibitive to implement universal screening, physicians may also consider screening of high-risk individuals. These patients may be characterized by a history of frequent indoor tanning or blistering sunburns, the presence of multiple or atypical nevi, a personal or family history of skin cancer, a younger age at first exposure to indoor tanning, or the presence of a tan during the visit. In addition, those with a history of outdoor tanning behaviors, which include intentional sunbathing and the use of tanning oils that promote UV exposure, could also be considered high risk owing to the cumulative effect of UV radiation. Clinicians should be vigilant when evaluating patients who exhibit these risk factors because they may be more likely to benefit from targeted screening interventions. Notably, it is possible that physicians may already be using visual assessments, which can act as proxies for formal screening, and it may be a worthwhile area of further research to evaluate the efficacy of implicit versus formalized screening methods; a substantial benefit of implicit screening may be to improve screening rates without adding undue burden.

Particularly reassuring in this study was the result that 100% of PCPs who participated in the study pursued an intervention in response to a positive screen of indoor tanning use. This reinforces the study hypothesis that PCPs are willing and able to engage in risk mitigation, including behavioral counseling and follow-up. The choice to refer to a specialist, such as dermatologist, also highlights the importance of a collaborative approach in improving healthcare outcomes.

Limitations

Limitations of this study include a limited sample size within a focused geographic area that may hinder generalizability. Furthermore, because there is no access to e-mail view and response rates, it is difficult to effectively comment on the presence or absence of responder bias, which may ultimately impact practice recommendations. In addition, the inclusion of subspecialists (e.g., obstetrics and gynecologists) who, although serving in the primary care capacity, may have other priorities given time limitations during a visit remains a limitation. Notably, information was not captured regarding the demographics of the patient population served by respondents, which may facilitate enhanced interpretation of the results. However, this study serves as a foundation upon which future work may be conducted, and these key limitations would be important to address to expand beyond preliminary results.

CONCLUSIONS

This study demonstrates the need for enhanced screening protocols for indoor tanning behaviors. The authors propose that such interventions may help address the immense burden of disease of both melanoma and nonmelanoma skin cancers. Future studies on a larger cohort may provide data with more pronounced external validity and inform future quality improvement initiatives and clinical guidelines.

The findings from this study propose a complementary avenue to the social media–based approach outlined in the study of de Vere Hunt and colleagues.[8] Although awareness-raising efforts are undeniably important, they must be paired with actionable strategies. Because PCPs often serve as the first point of contact within the healthcare system, their role in screening and early intervention can be pivotal. The authors believe that a comprehensive approach that synergizes both online and offline strategies will be instrumental in tackling the public health challenge that indoor tanning presents.

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CREDIT AUTHOR STATEMENT

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REFERENCES

1. Mirza FN, Mirza HN, Yumeen S, Zogg CK, Leffell DJ. Considering sun safety policies in the Unites States. *Yale J Biol Med.* 2023;96(2):251–255. https://doi.org/10.59249/FMWG8617.

2. Sample A, He YY. Mechanisms and prevention of UV-induced melanoma. *Photodermatol Photoimmunol Photomed.* 2018;34(1):13–24. https://doi.org/10.1111/phpp.12329.
3. Indoor and outdoor tanning. Cancer trends progress report. National Cancer Institute. https://progressreport.cancer.gov/prevention/tanning. Updated 2024. Accessed May 18, 2022.
4. Lazovich D, Isaksson Vogel R, Weinstock MA, Nelson HH, Ahmed RL, Berwick M. Association between indoor tanning and melanoma in younger men and women. *JAMA Dermatol.* 2016;152(3):268–275. https://doi.org/10.1001/jamadermatol.2015.2938.
5. U.S. Cancer Statistics Working Group. *Cancer statistics data visualizations tool, based on 2022 submission data (1999-2020).* November 2023 https://www.cdc.gov/cancer/dataviz. Accessed May 18, 2022.
6. Waters HR, Adamson A. The health and economic implications of the use of tanning devices. *J Cancer Policy.* 2018;17:45–50. https://doi.org/10.1016/j.jcpo.2016.12.003.
7. U.S. Preventive Services Task Force, Grossman DC, Curry SJ, et al. Behavioral counseling to prevent skin cancer: U.S. Preventive Services Task Force recommendation statement. *JAMA.* 2018;319(11):1134–1142. https://doi.org/10.1001/jama.2018.1623.
8. de Vere Hunt I, Cai ZR, Nava V, et al. A social media-based public health campaign to reduce indoor tanning in high-risk populations. *AJPM Focus.* 2023;2(3). https://doi.org/10.1016/j.focus.2023.100123.