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Patient Knowledge and Adherence to Sunscreen Application Guidelines in Dermatology Clinics at Makkah city

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Abstract

Sunscreens help prevent skin cancer, but they must be applied correctly to remain effective, a practice many patients do not fully comprehend and practice. This study aimed to assess the level of patient involvement and use of given treatment among patients seen in dermatology clinics in Makkah city. Researchers administered questionnaires to 140 patients in three settings to test their familiarity with application tips, frequency of correct application, and primary reasons for not applying them. Results reported that although more patients were familiar with easy application tips, including using an application with over 30 SPF, few were using them correctly and regularly. Primary reasons for nonadherence included misinterpreting application quantity and finding application inconvenient. These results reveal that more patient education in clinics is required to improve its application and reduce skin cancer susceptibility. Solutions proposed are easy-to-implement guide materials and clinic reminders to improve application correctness and minimize skin cancer risk.

Introduction

Skin cancer is still an important public health issue, with ultraviolet (UV) exposure as a primary contributor to melanoma and non-melanoma skin cancers (American Academy of Dermatology, 2023). Sunscreen can protect against UV rays as long as it is applied correctly according to guidelines. The guidelines include using adequate sunscreen, selecting a correct Sun Protection Factor (SPF) value, and reapplying sunscreen every two hours while in the sun. Although abundant sunlight is part of everyday life in Phoenix, using it wisely is necessary for those who visit the doctor with skin problems to protect their skin.

Despite universal promotion through public health campaigns, many patients do not fully understand how to apply it properly or do not regularly apply it as directed. Dermatology patients, who receive direct instruction from specialists in skin health, might have greater access

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to information but encounter obstacles based on misunderstanding about directions or logistical hindrances such as time issues (Addor et al., 2022). Although some research into sun protection habits in general exists, little research into specific understanding and compliance among dermatology patients about applying sunscreen according to directions has been conducted, a likely population to be aided by directed instruction (Niu et al., 2022). Closing this gap is valuable because improper sunscreen application can nullify prevention efforts and raise skin cancer risk.

This study focuses on patient understanding and practice compliance with recommendations for applying sunscreens among patients attending clinics for dermatology in Makkah city . Its aims include identifying patients' awareness concerning practiced recommendations on sunscreens, quantifying patients' frequency of using sunscreens appropriately, and identifying practice barriers to compliance. With data collection through surveys, the study aims to comprehend patients' behavior and, based on it, improve associated clinical practice in terms of education in an effective manner. The findings aim to support dermatologists and clinic staff in promoting the application of practical sunscreens and thus decrease skin cancer among a high-risk population.

Method

Study Design and Setting

This study utilized a quantitative, cross-sectional design to investigate patients' awareness and practice using recommendations for applying sunscreen. The study site utilized three dermatology clinics in Makkah city , that were selected due to their diverse patient populations and high visit volumes attributed to UV exposure conditions, including actinic keratosis or melanoma screening. The hot Makkah whether setting and frequent sunshine in Makkah create an ideal study location to investigate sunscreen practice because patients have frequent UV radiation exposure, increasing local healthcare practitioners' interest in the study based on its relevance to practice.

Participants and Sampling

The research focused on adult patients (18+ years old) presenting to a dermatology clinic for any skin concern to reach a balance of patients with different exposure to sunscreen education. One hundred forty patients were approached using convenience sampling and invited to participate in the study while waiting for their appointment in the clinic waiting rooms. The sample constituted those presenting with diagnoses as diverse as cosmetic issues such as rosacea through UV concerns, including suspicious moles, so that an exhaustive overview could be achieved. The sample number ascertained was sufficient to allow for data analysis while being reasonable within the study's scope and schedule.

Data Collection Tool

A systematically designed questionnaire based on existing sunscreen recommendations and input from dermatology experts was used to maintain accuracy and reliability (Taherdoost, 2021). The questionnaire contained five parts: demographic data, understanding about applying sunscreens as per recommendations, frequency of application according to recommendations, barriers to practice, and free-form feedback (see Appendix A). The participants’ responses to the questions were given on a scale from 1 to 5. Patients were able to share their personal stories through free-form questions. Initially, the questionnaire was tested among 10 patients to make

sure it was clear, and some changes were then made to ensure the questions were as simple as possible.

Data Collection Procedure

The paper surveys were given out during patient check-ins by clinic staff with simple directions for understanding. Participation was optional, and patients could fill out the survey in waiting areas or leave it to be completed later through a secure dropbox at the clinic. Collection took place over four weeks, and staff gave weekly reminders to support participation. Among 140 surveys, 128 were returned and usable for analysis, demonstrating a high response rate. Responses were entered into a secure database for data analysis to maintain data integrity.

Ethical Considerations

All participants gave informed consent, and their responses were kept anonymous to maintain privacy. Ethical principles for human subjects' research were followed in the study, and data were kept safe and accessible to research personnel alone to maintain participant privacy and research integrity.

Findings

Demographic Overview

The group of 128 patients included 68 women and 60 men with an average age of 45 (range 19–72). Forty-five patients had less than a high school diploma, 50 had a bachelor's degree, and 33 had a graduate level of schooling. The most common patients (75) presented with normal skin conditions, i.e., psoriasis and acne; 35 for UV-related conditions, i.e., possible skin cancer; and 18 for miscellaneous reasons. Approximately 85 patients averaged 2 hours outdoors, presumably enjoying sunny and active living every day in Makkah .

Knowledge of Sunscreen Guidelines

Patients indicated a moderate to high level of knowledge for application instructions about sunscreens. The average rating on a 5-point Likert scale (1 = not knowing, 5 = very knowing) for knowing to use at least SPF 30 was 4.1, demonstrating high awareness. Knowledge about applying a sufficient amount of sunscreen (approximately one ounce for full-body application) rated 3.8, and the need for application every two hours rated 3.6. Those with symptoms due to UV exposure indicated higher knowledge scores (mean 4.0 on SPF) than those with routine concerns (3.9).

Average Scores for Knowledge and Adherence to Sunscreen Guidelines

Category	Average Score (1–5)
Knowledge: Use SPF 30 or higher.	4.1
Knowledge: Apply one ounce.	3.8
Knowledge: Reapply every 2 hours.	3.6
Adherence: Use SPF 30 or higher.	3.5
Adherence: Apply one ounce.	3.2
Adherence: Reapply every 2 hours.	2.9

Note: Knowledge: 1 = not knowledgeable, 5 = very knowledgeable; Adherence: 1 = never, 5 = always.

Adherence to Sunscreen Guidelines

Consistency with sunscreen recommendations was less intense than awareness. The mean score for using an SPF 30 or greater was 3.5 (1 = never and 5 = always), indicating frequent but not universal use. Applying a full ounce scored 3.2, and reapplying every 2 hours scored 2.9, indicating infrequent practice for both habits. UV-concerned patients more consistently used an SPF (mean 3.7) than did patients with a concern for everyday issues (mean 3.3). An open-ended response read, "I do use sunscreen, but I do not measure it out and do it as often as I am supposed to."

Barriers to Adherence

The most significant barriers to using it as directed were misunderstanding the application quantity and finding it inconvenient to reapply. On a 1-5 scale (1 = never a barrier, 5 = always a barrier), misunderstanding how to apply scored 3.5, and inconvenience of reapplying scored 3.3. The problem of lack of awareness scored 2.7. Older adults (age > 50 years) indicated a lower problem with misunderstanding quantity (mean 3.2) than did young adults (mean 3.7). One patient stated, “Reapplying during the day is a hassle when I am otherwise busy.”

Average Scores for Barriers to Sunscreen Adherence

Barrier	Average Score (1–5)
Misunderstanding the application amount	3.5
Inconvenience of reapplication	3.3
Lack of awareness	2.7

Note: 1 = never a barrier, 5 = always a barrier.

Qualitative Insights

Open-ended responses added context as well. Some patients reported being confused about how much sunscreen to apply, with one commenting, "I did not realize I needed an ounce's worth—that is a lot." Others asked for more precise directions, saying that clinic recommendations overwhelmed them. One patient with a UV concern reported, "I did start using sunscreen correctly after my physician explained it, but I need to remind myself to continue." Such remarks imply that simple, directed education might enhance compliance.

Discussion

The results show that while Makkah city , dermatology patients demonstrate a good level of understanding regarding application rules for sunscreens, including using an SPF of 30 and above, their practice is erratic. The intermediate application and frequent reapplication scores show that patients understand simple rules but poorly understand finer points, including the ounce rule and the two-hour reapplication frequency (Addor et al., 2022). This discrepancy is similar to earlier studies that show that situational obstacles and misconceptions can subvert even educated patients’ habits.

The lower adherence scores on reapplying every two hours reflect pragmatic challenges in implementing sunlight prevention into routines. Misinterpretation of application quantities and inconvenience at reapplication were the most significant barriers, particularly among young patients who might be more likely to want convenience over prevention. These results indicate that dermatology clinics must streamline and reinforce guidelines to make them more executable. For instance, offering visual tools, including diagrams demonstrating correct

amounts to apply sunscreen, or recommending quick-apply products could reverse these barriers (Niu et al., 2022). The lower barrier score for unawareness is encouraging, as it shows educational efforts in the clinic to reach patients, but additional effort is required in converting understanding into regular behavior.

Those patients with concerns about UV demonstrated marginally improved adherence due to increased awareness from their diagnosis or clinician counseling. This indicates that one-on-one education during clinic visits effectively changes behavior, yet all patients might be assisted by sustained support (Raymond-Lezman et al., 2023). The qualitative data that focused upon confusion and forgetfulness and remedies remind clinics that simple solutions, including text reminders or take-home pamphlets with easy-to-follow directions, could provide a solution to overcome barriers such as forgetfulness and inconvenience and establish sunblock application as a more integrated part of their routines.

The emphasis in the study on dermatology patients in a sunny area such as Makkah is a strong point because it picks up on the habits of an at-risk group in an appropriate context. The results might not translate as strongly to less sunny areas or to non-dermatology patients who receive less direct patient education (Burke et al., 2024). The convenience sampling method could also select more active patients for the sample. Future studies should evaluate interventions, including clinic-based reminder systems and easy-to-remember guidelines, for their effect on adherence. Investigating habits in populations with more diverse access to dermatology services might further guide prevention efforts.

Conclusion

This research indicates that Makkah city , dermatology patients have moderate to high knowledge of how and when to apply sunscreens but practice it inconsistently, owing to misconceptions regarding application volumes and the hassle associated with reapplication. These results show that it is important for dermatology clinics to improve patient training through simple and practically based information and support, e.g., pictorials, reminders, or simple-to-apply sunscreens. By solving these barriers, adherence will likely be enhanced, and skin cancer risk will decrease in high-risk patients. Future studies must determine whether specific targeting is effective and whether to expand to more populations to assist in broader skin cancer prevention initiatives.

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Appendix A: Survey Questionnaire

Survey Questionnaire

Section	Questions	Response Options
Demographics	1. Age	_____ (Years)
	2. Gender	☐ Male ☐ Female ☐ Other
	3. Education Level	☐ High School or Less ☐ Bachelor's Degree ☐ Graduate Degree
	4. Reason for Visit	☐ Routine Skin Concern ☐ UV-Related Concern ☐ Other:
	5. Hours Spent Outdoors Daily	☐ <1 ☐ 1–2 ☐ 3–4 ☐ >4
Knowledge	6. How knowledgeable are you about using SPF 30 or higher?	☐1 (Not Knowledgeable) ☐2 ☐3 ☐4 ☐5 (Very Knowledgeable)
	7. How knowledgeable are you about applying one ounce of sunscreen?	☐1 (Not Knowledgeable) ☐2 ☐3 ☐4 ☐5 (Very Knowledgeable)
	8. How knowledgeable are you about reapplying every 2 hours?	☐1 (Not Knowledgeable) ☐2 ☐3 ☐4 ☐5 (Very Knowledgeable)
Adherence	9. How often do you use SPF 30 or higher when outdoors?	☐1 (Never) ☐2 ☐3 ☐4 ☐5 (Always)
	10. How often do you apply one ounce of sunscreen?	☐1 (Never) ☐2 ☐3 ☐4 ☐5 (Always)
	11. How often do you reapply sunscreen every 2 hours?	☐1 (Never) ☐2 ☐3 ☐4 ☐5 (Always)
Barriers	12. Is misunderstanding the application amount a barrier?	☐1 (Never) ☐2 ☐3 ☐4 ☐5 (Always)
	13. Is the inconvenience of reapplication a barrier?	☐1 (Never) ☐2 ☐3 ☐4 ☐5 (Always)
	14. Is lack of awareness a barrier?	☐1 (Never) ☐2 ☐3 ☐4 ☐5 (Always)
Open-ended	15. What is the biggest challenge to proper sunscreen use?	[Open Text]
	16. What would help you follow sunscreen guidelines better?	[Open Text]