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The Utilization of Sunscreen Prescriptions to Increase Patient Use: Examination of Healthcare Provider Perceptions

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Abstract

Background: Despite the known benefits, many patients deny receiving sunscreen counseling.

Over the past decade rates and treatment costs for skin cancer has risen.

Purpose: This study seeks to investigate provider perceptions of using sunscreen prescriptions as a method to increase patient use.

Methods: A descriptive online survey using a convenience sample of dermatology, internal medicine, and family medicine providers was used. Descriptive statistics summarized quantitative variables and thematic analysis examined opened ended questions.

Results: Provider (n=38 total) thoughts about sunscreen prescriptions were mixed with many viewing sunscreen prescriptions positively (n =15; 42.9%). Commonly listed barriers included patient lack of motivation/interest (3.53±0.89), lack of standard guidelines about sunscreen counseling and prescriptions (3.34±1.12), and lack of education about prescribing sunscreen (3.26±1.35). Facilitators included insurance coverage (n = 21; 61.8%) and having a standardized protocol (n=8; 23.5%).

Conclusion: The majority of providers felt prescribing sunscreen would increase patient use.

Study results imply providers would utilize sunscreen prescriptions if a clear, standardized protocol was present. Education may help alleviate concerns related to insurance coverage. In consideration of time constraints, it may be beneficial for sunscreen prescriptions to be added to routine after-visit summaries and educational materials.

Each year an estimated three million people in the United States (U.S.) are treated for melanoma and non-melanoma skin cancers (Ruiz et al., 2019). These numbers have increased in recent decades with non-melanoma skin cancers equating to over ninety percent of skin cancer cases (Ruiz et al., 2019). The cost of skin cancer treatment has also continued to increase (Petitt, Taylor, & Yu, 2021). In 2002, skin cancer treatment in the U.S. cost 3.6 billion dollars per year (Saes da Silva et al., 2018). Treatment costs currently average 8.1 billion dollars, representing over a one hundred percent increase (AAD, 2021, Guy et al., 2015; Ruiz et al., 2019; Skin Cancer Foundation, 2021).

A recent study reported 90% of U.S. dermatologists believe proper and consistent use of sunscreen lowers the risk of skin cancer and that they would recommend sunscreen use to their friends and family (Farberg, Rigel, & Rigel, 2016). Despite these results, a second study found 56% of patients reported never receiving sunscreen counseling by a dermatologist or a primary care provider (Vasicek et al., 2018). A study on the frequency of reported sunscreen education showed a bleaker outlook: of nearly thirteen million office visits, sunscreen use was only mentioned in 0.07% of visits (Akamine et al., 2013). Low rates of sunscreen counseling is alarming as patients who received education from providers demonstrated greater knowledge about sun protective behavior than peers who received teaching from other forms of media (Haluza & Cervinka, 2013).

Furthermore, according to the National Center for Health Statistics (2019), 78.9% of adults in the U.S. reported seeing a healthcare professional for a wellness visit in the previous year. A survey by the Pew Research Center (2019) found almost three quarters of patients believe physicians give important and error-free information. This data represents an opportunity for providers to speak to patients about sun protective behaviors. Secondly, the high rate of trust

in providers indicates a willingness of patients to adhere to sound medical advice (Hartnett & O'Keefe, 2016).

Adherence to prescriptions has shown a decrease in mortality and an improvement in chronic disease outcomes; furthermore, lowering cost, increasing patient education, and finding ways to engage patients are crucial in facilitating medication adherence (Neiman et al., 2018). Applying prescriptions to help improve adherence to health behavior changes has been studied for several years. In 2003, a randomized controlled trial found those given a prescription for exercise showed greater improvement in important measures such as weight loss and blood pressure compared to the control group over a one-year period (Patrella et al., 2003). Further benefits of exercise prescriptions have been reported in more recent studies in which modest increases in physical activity were demonstrated (Orrow et al., 2012; O'Brien et al., 2017). While little research was found regarding sunscreen prescriptions, prescribing sunscreen in practice may provide a means by which conversation and education surrounding sunscreen and sun protective behavior is more likely to take place during office visits.

Despite consistent research demonstrating the effectiveness of sunscreen in reducing DNA damage from ultraviolet radiation when used properly, use of sunscreen remains low with less than 10% of men and 25% of women reporting regular application of sunscreen (Julian, 2019; Olsen et al., 2018; Zamoiski et al., 2015). To the authors' knowledge, this study would be the first to explore provider perceptions of utilizing sunscreen as a prescription in practice. The low rate of sunscreen education, underutilization of sunscreen use, and increasing rates of skin cancer warrant further investigation into providers' attitudes concerning this topic. Providers play an important role in educating the public about sun protective behavior; therefore, this study investigated provider perceptions of prescribing sunscreen, as the topic is absent from the

literature and study may provide valuable information about use of sunscreen prescriptions in practice.

Methods

Survey tool and measures

Due to lack of previous research studying providers' perceptions of sunscreen prescriptions, it was necessary to look outside the research topic for a validated survey tool. This project measured provider perceptions of sunscreen prescriptions through use of a questionnaire originally developed to analyze provider attitudes pertaining to exercise prescriptions which demonstrated a high level of internal consistency (Smock & Chatfield, 2020). The modified questionnaire was reviewed by three experienced dermatology and internal medicine providers who gave suggestions to increase the content validity of the modified survey. Item revisions included changes to question structure, order, and content (Survey tool available in supplementary material).

The modified questionnaire set forth the following as a definition of sunscreen prescriptions: *a written recommendation in a similar format as a medication prescription that a patient can use as a guide for sunscreen use and/or purchase. In some instances, a patient's health savings account (HSA) or flexible spending account (FSA) may cover the cost of sunscreen* (see Appendix B). The questionnaire in the current study contained forty-six questions assessing providers' perceptions of the following topics related to sunscreen prescriptions: efficacy, education, documentation, prescription practices, promotion, barriers, and facilitation. Provider insight was analyzed using different question formats including: Likert scale (25 items; 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) short answer (8 items), open-ended (7 items), zero to ten scales (3 items; 0 = Never, 5 = Maybe,

10 = Always), and multiple choice (3 items). Demographic information collected included: race, gender, years of practice, provider role, specialty, and practice structure; however, provider name, place of employment, and other identifying data were not queried. The modified survey allowed for providers to add additional information using seven open-ended questions. These questions asked providers to discuss motivation, barriers, facilitators, thoughts, patient behaviors, documentation, and education pertaining to sunscreen and sunscreen prescriptions.

Study design, sample, setting, and recruitment

The study, approved by a collegiate internal review board (IRB), utilized a descriptive design and surveyed providers about their perceptions of sunscreen prescriptions through the use of a modified forty-six item survey tool created by Smock & Chatfield (2020) to measure provider perceptions of exercise prescriptions. The participants completed the questionnaire once through Qualtrics, and consent was implied upon the provider answering and submitting the survey. Data collection occurred between March and June 2021. A convenience sample combined with a snowballing technique was employed. Within the recruitment email, participants were asked to forward the email survey to colleagues in dermatology, internal medicine, and family medicine. Participants were also recruited via social media postings. Data was collected over the course of ten weeks with participants in the original convenience sample receiving a reminder email after the initial recruitment email.

In tandem with the convenience sample, the questionnaire was also sent to members of the Dermatology Nurses' Association (DNA) and the Society of Dermatology of Nurse Practitioners (SDNP). Only providers working in internal medicine, family medicine, and dermatology were asked to complete the questionnaire. Providers working in other specialties were excluded due to standard practice reducing the likelihood of prescribing and/or educating

patients about sunscreen. Participants such as certified medical assistants, registered nurses (RNs), licensed practical nurses (LPNs), or other support staff were excluded due to lack of prescriptive authority. Only individuals able to prescribe such as physicians, physicians' assistants, and nurse practitioners were included in the survey. Providers working in solo or group practices either independently or in connection with a larger health system were included.

Data analysis

Collected quantitative data was evaluated using descriptive statistics via SPSS version 26. Descriptive statistics were employed to calculate the mean, standard deviation, minimum and maximum of Likert and one-to-ten scale questions. Further analysis using Independent-Samples T Test and One-Way ANOVA was used to assess for significant differences of means in participant responses when grouped by specialty and years of practice. Differences were considered significant if the p-value equated to 0.05 or less in order to maintain 95% confidence.

Open ended questions were analyzed using thematic analysis, specifically content analysis (Vaismoradi et al., 2013). Participant responses were imported into Excel for data viewing. Data was analyzed by two researchers and answers were categorized by theme(s) such as "insurance coverage" and "type of appointment". When disagreement occurred about categorization, discussion occurred until a consensus was reached. The data was then evaluated to draw out important overlapping commonalities or differences between participant responses.

Results

Participant characteristics

Fifty-nine individuals opened the link to the Qualtrics survey prior to June 1, 2021. Of those fifty-nine individuals, thirty-eight providers completed the survey yielding a completion rate of 64%. Given the snowball technique and social media messaging, we are unable to

determine the number of potential participants reached. Respondents were primarily female (86.8%, n = 33) and White (92.1%, n = 35) (see Table 1). There was a fair amount of diversity between providers' years of practice (0-5 years, 31.6%, n = 12; 6-15 years, 36.8%, n = 14; 15+ years, 31.6%, n = 12). The majority of respondents were nurse practitioners (94.7%, n = 36). Provider response related to specialty was evenly distributed between dermatology (52.6%, n = 20) and family/internal medicine (47.4%, n = 18).

Provider perceptions on sunscreen education and counseling

Please see Table 2 for provider perceptions of sunscreen education and counseling. Participants demonstrated high agreement that sunscreen is an important part of sun protective behaviors (4.13 ± 1.21) and beneficial in preventing skin cancers (4.73 ± 0.93). Providers also agreed they should be *recommending* sunscreen to *all* patients (4.45 ± 1.11). A significant difference was noted between dermatology and family/internal medicine providers regarding emphasis of sunscreen counseling. Dermatology providers indicated a higher emphasis on sunscreen counseling (Dermatology, 4.45 ± 1.23 ; Family/Internal Medicine, 3.67 ± 1.09 ; $p = 0.05$). No significant difference was discovered between specialties when asked about whether providers should be recommending sunscreen to *some* or *all* patients. Providers of both specialties agreed that establishing information about sun protective behaviors, including sunscreen use, is important (overall mean = 4.13). Respondents across both categories also strongly agreed that sunscreen is beneficial in preventing skin cancers and should be actively recommended to all patients (no differences seen in responses based on years of practice, data not shown here).

Provider motivation for sunscreen counseling

In an open-ended question, providers were asked about what motivates them to ask patients about sunscreen habits (see Table 3). Providers cited patient history (42.9%) and performing a physical assessment (31.4%) as the primary motivators determining inquiry of patient sunscreen habits. Providers noted “work activities”, “family or personal history of skin cancer”, and “sun damage noticed on skin” as reasons for further investigation. The top cited reasons for inquiry were followed by prevention (25.7%), patient education/protocol (17.1%), age/aging (11.4%), type of visit (11.4%), and provider personal history (8.6%). The type of visit frequently overlapped with patient education and protocol. Multiple providers reported the importance of preventing skin cancers later in life as a reason they discuss sunscreen. Providers listed “prevention of skin cancer” and to “...minimize future treatment and morbidity” as important motivators, as well as their own personal history of skin cancer.

Use of shared materials for sunscreen counseling

Providers were asked about what materials they share with patients about sunscreen. Thirty-seven of thirty-eight participants responded, and the majority reported giving patients printed handouts (n = 24; 64.9%). These handouts included education in after visit summary forms, screenshots of recommended products, and cards about mole mapping. Printed materials generally covered multiple sun protective behaviors or information not strictly related to sunscreen. Educational material provided included recommendations for sun protective clothing, avoiding peak sunlight hours, chemical free sunscreens, overall sunscreen use, and sunglass use.

Almost one third of providers gave patients product samples or coupons for sunscreen (n = 12; 32.4%). Providers noted the ability to hand out samples and/or coupons was inconsistent.

Another third of providers (n = 12; 32.4%) offered verbal education to patients. While three providers (8.1%) denied giving any education related to sunscreen.

Provider thoughts about sunscreen prescriptions

With regards to *prescribing* sunscreen, overall opinion was modestly skewed towards agreement that providers should be proactive in *prescribing* sunscreen to *all* patients (3.55±1.08). When asked if prescribing sunscreen would increase patient use of sunscreen, nearly eighty-one percent of providers felt patient use would increase if prescribed (n = 36; 80.6%). Overall, participants scored the importance of patient counseling and education prior to prescribing sunscreen highly (4.19±1.13). A significant difference was seen in the emphasis of sunscreen prescribing by practice with dermatology providers rating higher (3.55±1.47) when compared to their family/internal medicine (2.67±1.14; $p = 0.04$) counterparts.

Provider thoughts about sunscreen prescriptions were mixed (see Table 3). The majority of providers were positive about sunscreen prescriptions (n = 15; 42.9%). Providers who responded affirmatively believed prescribing sunscreen would increase patient use, compliance, or affordability.

Several providers responded neutrally or desired more information before making a determination (n = 13; 37.1%). Providers cited time constraints and concern over prior authorizations as reasons for wanting more information. Some providers stated they had not written prescriptions in the past and, therefore, they felt unable to make a determination. Conversely, multiple providers were not in favor of sunscreen prescriptions (n = 6; 17.1%). These providers were skeptical patient compliance would increase and felt access to OTC sunscreen was sufficient. One provider reported sunscreen prescriptions were “impractical” with a second stating “insurance should not be required to pay for sunscreen”. While most providers

viewed prescribing sunscreen positively, some providers were unsure or hesitant of prescribing sunscreen.

Provider perceptions of barriers to sunscreen prescriptions

Please see Tables 2 and 3 for provider perceptions and barriers related to sunscreen prescriptions. Overall, the five highest ranked barriers to prescribing sunscreen included patient lack of motivation/interest (3.53 ± 0.89), lack of standard guidelines about sunscreen counseling and prescriptions (3.34 ± 1.12), lack of patient cultural acceptance of sun protective behavior and sunscreen prescriptions (3.26 ± 0.83), lack of education about prescribing sunscreen (3.26 ± 1.35), and lack of clinical policies or protocol to follow (3.18 ± 1.06). While providers almost unanimously reported promoting sunscreen use (8.97 ± 1.78) (0 = Never, 5 = Maybe, 10 = Always), they were less likely to provide a sunscreen prescription (5.92 ± 2.8) and were not as confident about writing a prescription for sunscreen (6.61 ± 2.49). Though providers of both groups reported promoting sunscreen, those in dermatology were significantly more likely to promote sunscreen use (Dermatology 9.80 ± 0.41 ; Family/Internal Medicine = 8.06 ± 2.24 ; $p=0.004$).

Individuals working in family/internal medicine reported “lack of education about prescribing sunscreen” and “other lifestyle changes are more important to discuss or recommend” more highly than dermatology providers (see Table 2). Those working in dermatology were more likely to view patients lack motivation/interest to change as a barrier to sunscreen prescription than family/internal medicine providers. Providers were also asked to list additional barriers to sunscreen prescriptions. Cost and insurance coverage were listed by four of the seven participants who responded to this question. Other barriers included the need for prior authorizations, time constraints, and patient preference.

When asked about perceived barriers to prescribing sunscreen, providers with more experience were more apt to disagree with barriers such as personal knowledge and time constraints. A significant difference was found related to lack of education about prescribing sunscreen. Younger providers were more likely to agree with this statement (3.92 ± 1.00) than those who had practiced for 6 to 15 years (3.29 ± 1.38) or 15+ years (2.58 ± 1.38 ; $p=0.05$).

As an exploratory analysis, differences were investigated between males and females; however, the small number of male participants limited the ability to detect significant differences in responses. It does appear female providers (3.85 ± 1.00) felt they should be more proactive in prescribing prescriptions for some patients than male providers (2.20 ± 1.30 ; $p=0.05$), and that lack of standard sunscreen counseling and prescription guidelines was a barrier to prescribing sunscreen (Male provider, 2.20 ± 0.84 ; Female provider, 3.52 ± 1.06 ; $p=0.02$).

Facilitators of sunscreen prescriptions

When asked what would facilitate their use of sunscreen prescriptions ($n=34$), providers listed two primary factors. The first was insurance coverage/cost (including understanding copays and coverage) ($n = 21$; 61.8%) followed by having a protocol such as programming it into the EMR ($n = 8$; 23.5%). Providers also added more education ($n = 3$; 8.8%) and examples/materials ($n = 2$; 5.9%) as facilitators to prescribing sunscreen.

Discussion

Providers in dermatology, family medicine, and internal medicine are well placed to educate patients about the risks of skin cancers and benefits of skin protective behaviors. Providers almost unanimously agreed sunscreen is beneficial in preventing skin cancers, and that providers should be recommending sunscreen for all patients. While provider responses were mixed when answering whether or not sunscreen should be prescribed to all patients, the data

indicates this is due in part to lack of a standardized protocol, concern over insurance coverage, and the desire for more information surrounding the use of sunscreen prescriptions. Despite this, the majority of providers had a positive view about the potential of sunscreen prescriptions.

Clinical implications for practice

Results of the study imply providers would be willing to utilize sunscreen prescriptions if there was a clear, standardized, and routine protocol within the EMR. Secondly, addressing provider concerns of insurance coverage and prior authorizations through an educational format such as web-based training (WBT) may help alleviate this hesitation. Future education of providers about sunscreen prescriptions should highlight the difference in format between the traditional understanding of what a prescription is versus a prescription for sunscreen.

A primary implication from the study is the need for a standardized protocol for sunscreen prescriptions moving forward. Time constraints and lack of consistent clinical policies listed by providers indicate a sunscreen prescription tool built into an EMR may benefit providers and increase their interest and use of sunscreen prescriptions. Developing a straightforward way for providers to utilize sunscreen prescriptions in the future would be highly beneficial as more research on this topic is completed.

Future study and interventions in this area need to be conscientious of provider time constraints and the need to discuss other lifestyle changes. In consideration of time constraints, it may be beneficial for prescriptions to be added to routine after-visit or educational materials given to the patient at the end of each patient visit. Having easy access to a premade sunscreen prescription may allow the provider to present sunscreen education in a more thorough and organized fashion.

Future clinical and research implications

This study provided multiple implications for future research regarding the use of sunscreen prescriptions. First, providers seem to lack a clear understanding of what a sunscreen prescription is (see Figure 1). Furthermore, based on the concern of providers surrounding prior authorizations and questions about what insurance covers, they appear unaware health savings accounts (HSA) and flexible spending accounts (FSA) cover the purchase of sunscreen (Cigna, 2021; Cornell Law School, 2021). Further education of sunscreen prescriptions among providers is necessary to facilitate a more robust discussion concerning the utilization and importance of sunscreen prescriptions.

With a greater understanding of sunscreen prescriptions, providers may be more likely to discuss the importance of sunscreen with their patients. As previously noted, most providers in this study believe sunscreen helps prevent skin cancers and being proactive in recommending sunscreen for patients is important. While some providers were skeptical of the benefit of sunscreen prescriptions, many reported prescriptions could be highly effective in helping low-income patients have greater access to sunscreen. Going forward, it is recommended further research focuses around creating a standardized sunscreen prescription tool or form. In addition, understanding patient perceptions of sunscreen use and prescriptions would be beneficial, particularly whether patients believe a prescription would increase use and access of sunscreen. Furthermore, while beyond the scope of the current study, it is important to consider patient understanding of the many different sunscreen options and overall sunscreen use when considering sunscreen prescriptions.

Limitations

A primary limitation of this study was the small convenience sample. The majority of providers were female nurse practitioners. In order for study results to be more generalizable, a

larger and more diverse sample would be beneficial. A second limitation of this study is that the scope is contained to healthcare providers. No data was collected looking at patients' perceptions of sunscreen prescriptions. While providers may find sunscreen prescriptions beneficial to their practice, it is unknown if a prescription for sunscreen would increase patient use or provide real benefit to the patient. For this reason, future research into patient perceptions is necessary.

Conclusion

Providers within family medicine, internal medicine, and dermatology play an important role in educating patients about sun protective behavior, including the use of sunscreen. The perceived benefits of sunscreen in preventing skin cancers by providers is reflected in the data. As skin cancer incidence in the United States continues to rise, it is imperative for healthcare professionals to continue finding ways to help patients reduce their risk for these cancers. While provider perceptions of prescribing sunscreen are mixed, the research findings suggest providers believe sunscreen prescriptions may increase use of sunscreen, lower costs of care, and provide a unique opportunity to educate patients about sun protective behaviors. Though more research is needed, the authors believe this is a start to conducting further study on an important intervention in reducing the morbidity, mortality, and cost of skin cancers.

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