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

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**Significance and Problem Statement**

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). Treatment costs currently average 8.1 billion dollars, representing over a one hundred percent increase since 2002 (AAD, 2021, Guy et al., 2015; Ruiz et al., 2019; Saes da Silva et al., 2018; Skin Cancer Foundation, 2021). A recent study found 56% of patients reported never receiving sunscreen counseling by a dermatologist or a primary care provider (Farberg, Rigel, & Rigel, 2016; Vasicek et al., 2018). Despite consistent research demonstrating the effectiveness of sunscreen in preventing deoxyribonucleic acid (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).

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). Improved 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 all crucial in facilitating medication adherence (Neiman et al., 2018). 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. This study seeks to investigate provider perceptions of using sunscreen prescriptions as a method to increase patient use.

**Methodology**

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 (see Appendix E). The questionnaire contained forty-six questions assessing providers’ perceptions of the following topics related to sunscreen prescriptions: efficacy, education, documentation, prescription practices, promotion, barriers and facilitation.

The questionnaire was sent to providers in dermatology, internal medicine, and family medicine. The survey was distributed through the Dermatology Nurses’ Association (DNA) and Society of Dermatology of Nurse Practitioners (SDNP). A convenience sample combined with snowballing technique was also utilized. Data was collected between March 2021 and June 2021. 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**

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). 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) (see Table A1).

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) (see Table A2). Providers also agreed they should be *recommending* sunscreen to *all* patients (4.45±1.11). Providers of both specialties agreed “establishing information about sun protective behaviors, including sunscreen use, is important” (overall mean = 4.13). Provider thoughts about sunscreen prescriptions were mixed with most providers 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), lack of education about prescribing sunscreen (3.26±1.35), and lack of clinical policies or protocol (3.18±1.06). Facilitators included knowing insurance would cover the cost (n = 21; 61.8%) and having a standardized protocol (n=8; 23.5%).

Provider thoughts about sunscreen prescriptions were mixed. The majority of providers were positive about sunscreen prescriptions (n = 15; 42.9%) (see Table A3). Providers who responded affirmatively believed prescribing sunscreen would increase patient use or affordability. One respondent wrote, “it would increase patient compliance if sunscreen was a true prescription rather than OTC recommendation” and another stated, “for many patients it would be the only way they could afford it”. Many 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 stating, “I am not opposed to it, but if it takes extra time, I don’t have it” and “it depends on the cost to the patient and if insurance is to cover there should be no prior authorization to use”. Some providers stated they had not written sunscreen prescriptions in the past and felt unable to make a determination. 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 over-the-counter sunscreen was sufficient.

When asked about what materials are shared with patients about sunscreen, the majority of providers reported giving patients printed handouts (n = 24; 64.9%) (see Table A3). 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. Many responses were similar with one respondent giving a “written handout discussing sun protective clothing, avoiding peak sunlight hours, and chemical free sunscreens” and another, “a handout with info about clothing, sunglasses, and sunscreen 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 due to supply with statements such as “samples if I have any” and “samples of sunscreen when available”. Another third of providers (n = 12; 32.4%) offered verbal education to patients.

**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.

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 of physicians, nurse practitioners, and physician’s assistants would be beneficial. A second limitation of this study is 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.

**Implications**

**Policy**

 Preventive health policies are an important part of the current healthcare system and a necessity in helping reduce mortality, morbidity, and cost of treatment. Sunscreen prescriptions may be an effective tool in the future of preventative health; however, providers in this study raised concerns related to insurance coverage, sunscreen cost, and prior authorizations. These responses imply two points. First, prior to participants answering survey questions, the definition of a sunscreen prescription as it pertains to this study was listed in the questionnaire defining sunscreen prescriptions as *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.* This definition of prescription is similar to an exercise prescription in the literature. If sunscreen prescriptions are viewed and used in this way, prior authorizations and strict insurance coverage rules could largely be avoided. Based on answers provided in the survey, many providers were unaware sunscreen is covered for those using their HSA or FSA accounts to purchase sunscreen (Cigna, 2021; Cornell Law School, 2021). When creating policies surrounding sunscreen prescriptions, clear distinction between the traditional idea of a prescription versus that of a sunscreen prescription is necessary.

 Secondly, acceptance by providers will be higher if sunscreen prescription policies can abate the concern of more work stemming from the need to complete prior authorizations. Policies for sunscreen prescriptions need to be clear and more education for providers may be needed before these policies are enacted in the practice setting. Many mixed or negative feelings surrounding sunscreen prescriptions stemmed from concern about practicality, lack of information, and insurance coverage. Future policies need to address these concerns and the gap in knowledge about sunscreen prescriptions versus traditional medication prescriptions.

**Economics**

Healthcare costs have continued to rise in recent decades and the treatment cost for skin cancers is no exception. The economic impact of sunscreen prescriptions is unknown but was considered a driving factor and benefit for respondents. Providers stated “for many patients it would be the only way they could afford it” and “great if insurance provides coverage, especially for lower income”. Multiple providers felt a sunscreen prescription would reduce cost increase adherence. As noted above, skin cancers and cost of treatment has dramatically increased in the U.S. (Ruiz et al., 2019). Though the purpose of this study was not to examine patient adherence to medication, it is notable the majority of providers feel sunscreen prescriptions would increase patient use. If true, sunscreen prescriptions could play a role in reducing overall cost of skin cancers and treatment by increasing patient adherence (Neiman et al., 2018). Further study in this area is necessary before any such declarative statement on the matter is made; however, implications of this study warrant further investigation into sunscreen prescriptions, sunscreen adherence, and the impact it may have on the economic burden of skin cancers.

A more direct economic implication is the role sunscreen prescriptions have with regard to patient cost. Here, results of the study are mixed. Some providers fear sunscreen prescriptions would indirectly increase out of pocket costs for patients due to insurance companies refusing to pay for certain brands or SPF levels. Other providers feel sunscreen prescriptions may be the primary way for some individuals to be able to afford sunscreen. This dissonance again reflects issues distinguishing between traditional medication prescriptions and sunscreen prescriptions. Economic implications of this study indicate the majority of providers feel sunscreen prescriptions would be economically beneficial but further study is necessary to see if this translates to a real financial benefit for patients.

**Systems**

 Providers frequently experience changes in today’s rapidly evolving healthcare system and are consistently required to adjust their workflow around these changes. In an effort to mitigate disruption to established workflow, it benefits both change agents and providers for systemic alterations to be seamlessly incorporated when possible. Multiple providers in this study reported having an electronic method for sunscreen prescriptions would increase their use and require little to no change in their daily workflow. Statements such as “having prompts or templates” and “having it canned and programmed into the EMR” were listed as important facilitators, while lack of standard guidelines about sunscreen counseling and prescriptions was one of the top five barriers reported in this study. Furthermore, the data pointed to a clear absence of a standardized protocol when it came to providing educational materials. The majority of providers reported sharing printed materials and/or verbally educating patients; however, educational materials included a wide variety of things such as samples, coupons, written handouts, screenshots, and lists. This diversity of material implies patients receive differing levels of information about sunscreen and other sun protective behaviors. When these factors are combined with quantitative and qualitative data from the study, a clear need for a standardized procedure emerges.

 While the lack of time was listed as a possible constraint under implications of practice, it is important to mention here also. The addition of sunscreen prescriptions into an electronic medical record (EMR) may work best being incorporated into after visit summaries or as part of standardized education related to sun protective behaviors given to all patients. Sunscreen prescriptions could be integrated as prebuilt text or images linked to a specific textual phrase within the EMR. When the provider inserts the predetermined phrase, the sunscreen prescription automatically populates into the note (i.e., dot phrases). This incorporation is important as results of the study indicate sunscreen prescriptions may be used more if incorporated into the EMR.

**Practice**

Change in theory does not always translate smoothly to changes in practice, and daily routines among providers working in the same specialty may vary widely. However, a commonality which links healthcare providers together is the necessity for time management. A common refrain when applying sunscreen prescriptions to practice is a concern due to lack of time. One provider noted, “I am not opposed to it, but if it takes extra time, I don’t have it”. Multiple providers reported inquiring about sunscreen habits while asking about history, performing a physical assessment, or as a part of their routine preventative education. When considering implementation of sunscreen prescriptions in practice, it is necessary to adapt changes to providers’ busy schedules. It would be beneficial for sunscreen prescriptions to be included in standard education given to the patient when discussing sun protective behaviors.

Some providers felt they needed more information about sunscreen prescriptions before implementation in practice, and others felt sunscreen prescriptions were “impractical” or that over-the-counter options were preferable. In order to increase buy in from providers, sunscreen prescriptions need to demonstrate practical benefits and avoid common pitfalls of traditional medication prescriptions such as prior authorizations. A necessary step to help dispel some provider criticisms of sunscreen prescriptions should include further education through web-based training (WBTs) to help alleviate hesitation related to insurance coverage concerns. Towards this end, a provider toolkit including a sample sunscreen prescription and succinct web-based training module have been developed to address both the implications and goals of this research (see Appendix B and C). Major implications from this study as related to practice include providing further education for providers about the distinction between classic medication prescriptions verses a prescription for sunscreen. Clearing up this confusion may provide a more positive view of sunscreen prescriptions in practice.

**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. Future research and implementations of sunscreen prescriptions needs to account for providers’ constrained time, concerns about insurance coverage, and desire for sunscreen prescription protocols to be implemented into EMRs. Results of this study support the need for a standardized protocol moving forward which minimizes the impact on providers’ daily routines and facilitates their ability to continue providing excellent care to their patients.

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**Appendix A**

Tables

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| ***Table A1. Participant Characteristics (n=38)*** |
| **Characteristics** | **N** | **%** |
| **Sex** |  |  |
| Male | 5 | 13.2 |
| Female | 33 | 86.8 |
| **Race/Ethnicity** |  |  |
| Asian | 2 | 5.3 |
| Non-Hispanic white | 35 | 92.1 |
| Other race | 1 | 2.6 |
| **Years as a Licensed Provider** |  |  |
| 0-5 years | 12 | 31.6 |
| 6-15 years | 14 | 36.8 |
| 15+ years | 12 | 31.6 |
| **Provider Role** |  |  |
| Physician | 2 | 5.3 |
| Nurse Practitioner | 36 | 94.7 |
| **Provider Specialty** |  |  |
| Dermatology | 20 | 52.6 |
| Family/Internal Medicine | 18 | 47.4 |

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| ***Table A2. Means, standard deviations, & P-values (Dermatology & Family/Internal Medicine providers)*** |
| ***Question*** | ***All Participants******(n=38)*** | ***Dermatology (n = 20)*** | ***Family & Internal Medicine*** ***(n = 18)*** | ***P-Value*** |
| ***Mean (±SD)*** | ***Mean (±SD)*** | ***Mean (±SD)*** |
| *Provider thoughts about sunscreen education and counseling1* |
| Sunscreen is beneficial in preventing skin cancers. | 4.73±0.93 | 4.53±1.26 | 4.94±0.24 | 0.17 |
| Establishing information about sun protective behaviors, including sunscreen use, is important.  | 4.13±1.21 | 4.10±1.45 | 4.17±0.92 | 0.87 |
| Providers should be proactively *recommending* sunscreen for *all* patients. | 4.45±1.11 | 4.25±1.45 | 4.67±0.49 | 0.24 |
| Providers should be proactively *recommending* sunscreen for *some* patients. | 3.53±1.43 | 3.10±1.5 | 4.00±1.19 | 0.05 |
| Sunscreen counseling is emphasized in your practice. | 4.08±1.22 | 4.45±1.23 | 3.67±1.09 | 0.05 |
| *Provider thoughts about sunscreen prescription1* |
| Providers should be proactive in *prescribing* sunscreen for *all* patients. | 3.55±1.08 | 3.25±1.29 | 3.89±0.68 | 0.06 |
| Providers should be proactive in *prescribing* sunscreen for *some* patients. | 3.63±1.17 | 3.55±1.43 | 3.72±0.83 | 0.65 |
| Patient counseling/education should be provided before prescribing sunscreen. | 4.19±1.13 | 4.15±1.42 | 4.24±0.66 | 0.81 |
| Providers should advocate for policies that support sunscreen prescriptions. | 3.78±1.18 | 3.65±1.42 | 3.94±0.83 | 0.45 |
| Sunscreen prescription is emphasized in your practice. | 3.13±1.38 | 3.55±1.47 | 2.67±1.14 | 0.04 |
| Providers should consider prescribing sunscreen. | 3.78±1.06 | 3.65±1.23 | 3.94±0.83 | 0.40 |
| I will prescribe sunscreen in the future. | 3.65±1.06 | 3.50±1.28 | 3.82±0.73 | 0.34 |
| *Perceived barriers to providing sunscreen1* |
| I do not have enough time | 3.13±1.26 | 2.95±1.19 | 3.33±1.33 | 0.36 |
| Patients do not have enough time | 2.61±1.00 | 2.60±1.05 | 2.61±0.99 | 0.97 |
| Patients lack motivation/interest to change | 3.53±0.89 | 3.80±0.83 | 3.22±0.88 | 0.05 |
| Lack of standard guidelines on sunscreen counseling and prescriptions | 3.34±1.12 | 3.45±1.15 | 3.22±1.11 | 0.54 |
| Patients prefer other sun protective interventions | 2.76±0.85 | 2.85±0.88 | 2.67±0.84 | 0.51 |
| Lack of clinical policies or protocol for me to follow | 3.18±1.06 | 2.90±1.29 | 3.50±0.62 | 0.08 |
| Lack of evidence for health benefits of sunscreen use | 1.87±0.91 | 1.75±0.79 | 2.00±1.03 | 0.41 |
| I do not receive enough reimbursement/financial incentive | 2.21±1.07 | 2.45±1.15 | 1.94±0.94 | 0.14 |
| Lack of education about prescribing sunscreen | 3.26±1.35 | 3.20±1.40 | 3.33±1.32 | 0.77 |
| Lack of continuing education about sunscreen use | 2.82±1.21 | 2.40±1.10 | 3.28±1.18 | 0.02 |
| I need more personal knowledge | 2.95±1.23 | 3.00±1.30 | 2.89±1.18 | 0.78 |
| Other lifestyle changes are more important to discuss or recommend | 2.89±1.09 | 2.50±1.19 | 3.33±0.77 | 0.01 |
| Lack of patient cultural acceptance of sun protective behavior/sunscreen prescriptions | 3.26±0.83 | 3.35±0.81 | 3.17±0.86 | 0.50 |
| *Provider promotion of sunscreen and likelihood/confidence writing sunscreen prescriptions2* |
| How likely are you to promote sunscreen use? | 8.97±1.78 | 9.80±0.41 | 8.06±2.24 | .004 |
| How likely are you to write a prescription for sunscreen? | 5.92±2.8 | 6.15±2.64 | 5.67±3.05 | 0.61 |
| How would you rate your confidence writing sunscreen prescriptions? | 6.61±2.49 | 6.75±2.29 | 6.44±2.75 | 0.71 |
| *Provider documentation of sunscreen use3* |
| Do you document the sunscreen use of your patients? | Yes = 26No = 12 | Yes = 18No = 2 | Yes = 8No = 10 | .003 |
| [[1]](#footnote-1)Likert Scale Questions (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 =Agree, 5 =Strongly Agree)2 One-to-Ten Scale (0 = Never, 5 = Maybe, 10 = Always) |

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| ***Table A3. Thematic analysis of open-ended questions*** |
|  | **N** | **%** | **Example Quotes** |
| **What motivates you to inquire about sunscreen habits? (n=35)** |  |  |  |
| Type of Visit/Seasonal | 4 | 11.4 | “Wellness Visits”“It is part of my annual skin exam”“Season of visit” |
| Prevention | 9 | 25.7 | “Prevention of skin cancer”“Skin cancer awareness and prevention”“Minimize future treatment and morbidity” |
| Provider’s personal history | 3 | 8.6 | “I have had melanoma twice so it is personal”“Personal history of melanoma”“The knowledge of how much sunscreen is effective in preventing skin damage and cancers later in life” |
| Age/Aging | 4 | 11.4 | “The age of the patient”“Hygiene of the skin needs to start young” |
| Patient history | 15 | 42.9 | “History taking and risk assessment”“Patient skin type, personal and family history of skin cancer”“Family or personal history of skin cancer”“….. severity of sun damage that has already occurred”“Exercise history and hobbies”“Work activities |
| Physical assessment | 12 | 31.4 | “Skin damage noticed on skin”“Moles, fair skin”“Skin lesions, fair skin and hair….”“…. very pale skin” |
| Patient education and protocol | 6 | 17.1 | “This is an important part of my patient education”“It is important to reinforce positive behaviors”“….. an opportunity to encourage healthy habits”“I want to teach them better behavior”“To gauge if the patient is appropriately applying sunscreen” |
| **What materials do you share or provide to patients about sunscreen and/or other sun protective behaviors? (n=37)** |  |  |  |
| Verbal Education | 12 | 32.4 | “Just discussion”“Usually verbal information”“Verbal instruction”“None, I talk about it instead” |
| Printed Materials | 24 | 64.9 | “Written handout discussing sun protective clothing, avoiding peak sunlight hours, and chemical free sunscreens”“An office handout that describes types of sunscreens, sun protective clothing, and a list of recommended sunscreen”“Handout with info about clothing, sunglasses, and sunscreen use”“ABCs of mole mapping….”“Internet screenshots of products I recommend for each patient” |
| Samples and/or coupons | 12 | 32.4 | “Samples if I have any”“Samples with coupons”“Samples ….”“Samples of sunscreen when available” |
| Nothing | 3 | 8.1 |  |
| **What percentage of patients do you believe would increase their sunscreen use if you were to prescribe sunscreen? (n=36)** |  |  |  |
| 0% or Unsure | 7 | 19.4 | “I’m not sure honestly”Possible minimal increase” |
| 1-25% | 10 | 27.8 |  |
| 26-50% | 14 | 38.9 |  |
| 51-75% | 3 | 8.3 |  |
| 76-100% | 2 | 5.6 |  |
| **What are your thoughts about sunscreen prescriptions (n=35)** |  |  |  |
| Positive | 15 | 42.9 | “Great if insurance provides coverage, especially for lower income”“I think it is a great idea”For many patients it would be the only way they could afford it”“Important, especially for those with precancerous lesion history”“Would increase patient compliance if sunscreen use was a true prescription rather than OTC recommendation” |
| Neutral/Need more information | 13 | 37.1 | “It depends on the cost to the patient and if insurance is to cover there should be no prior authorization to use”“Some patients prefer sun protective clothing so I emphasize total sun protective practices”“Never considered writing one before”“I am not opposed to it but if it takes extra time, I don’t have it” |
| Negative | 6 | 17.1 | “Can recommend OTC”“Doubtful it will increase use”“Impractical”“Insurance should not be required to pay for sunscreen” |
| **Please list other barriers that you find important …. (n=7)** |  |  |  |
| Cost/Insurance Coverage | 4 | 57.1 | “Cost prohibitive to some”“Insurance coverage” |
| Prior Authorizations | 1 | 14.3 | “Prior authorizations for sunscreen prescriptions” |
| Time Constraints | 1 | 14.3 | “Time involved documenting and counseling” |
| Patient preference | 1 | 14.3 | “Knowing which patients will like which products”“Some have to purchase several to find one they like” |
| **What factors would facilitate your use of sunscreen prescriptions? (n=34)** |  |  |  |
| Insurance coverage/Cost | 21 | 61.8 | “Knowing what insurance companies will cover”“Understanding of what could be prescribed”“Understanding of copays for sunscreen and what is actually covered by insurance”“No prior authorization required”“If I knew the insurance would pay for it, I would do it in a heartbeat to save my patients money”“Lower cost for patients” |
| Protocol | 8 | 23.5 | “Preprinted prescription”“Having it canned and programmed into the EMR”“Recommendations from the American Academy of Dermatology”“Having prompts or templates” |
| More education | 3 | 8.8 | “More education about the benefits of prescription versus encouraging OTC purchase”“Perhaps more education around the concept” |
| Examples | 2 | 5.9 | “……better materials”“Preprinted prescriptions” |

**Appendix B**

Sunscreen Prescription Example



**Appendix C**

Web-Based Training Module Outline

1. Background
2. Cost of skin cancer in the U.S.
3. Sunscreen use in the U.S.
4. Patient thoughts about providers in the U.S.
5. Benefits of prescription adherence
6. Mortality
7. Chronic disease outcomes
8. Cost to healthcare
9. Patient education
10. Sunscreen and exercise prescriptions
11. Sunscreen prescriptions and insurance
	1. HSA and FSA coverage
	2. What is a sunscreen prescription?
	3. Prior authorizations
	4. Patient centered purchase
	5. Patients without FSA or HSA accounts
12. Sunscreen prescriptions and integration in practice
13. Prebuilt documentation
	1. Dot phrases
	2. After-visit summaries
	3. Cue to educate
14. Sunscreen Prescription Example
15. Guidelines for prescribing
	1. Patient history
	2. Physical assessment
	3. Risks and benefits
16. Post web-based training questions
	1. Understanding
	2. Usefulness in practice
	3. Prior authorizations and barriers
	4. Insurance coverage of sunscreen

**Appendix D**

Recruitment Email

**Participants for Research Survey Needed**

***Provider Perceptions of Sunscreen Prescriptions***

Dear Providers,

My name is James Roush and I am a Doctor of Nursing Practice student in the School of Nursing at Purdue University.

I am collaborating with the Purdue University School of Nursing to conduct a qualitative web-based research study. The study has been created to discover provider perceptions of sunscreen prescriptions and gauge interest, use, barriers, facilitators, and perceived patient response to prescribing sunscreen in practice.

Your participation in this study will aid us in more fully understanding whether sunscreen prescriptions are or could be a beneficial practice in increasing both the awareness and use of sunscreen by patients. The feedback you provide will be helpful in determining future research into methods to increase sunscreen use among patients and analyzing current utilization of sunscreen prescriptions among providers.

The survey will consist of 45 questions and take around 10-15 minutes to complete. Responses can be saved and you can return to the survey if you are unable to complete it in one sitting. Your responses are confidential and your name will not be attached to answers you provide.

***In addition to completing the survey, we kindly ask that you forward this email to other providers working in Family Medicine, Internal Medicine, or Dermatology who might be interested.***

**For More Information Contact:**

*Purdue University IRB Protocol Number:* IRB-2020-1763

*Principal Investigator:* Dr. Libby Richards

*PI Contact Information:* earichar@purdue.edu

We would appreciate your participation in this study!

Follow this link to take the survey <https://purdue.ca1.qualtrics.com/jfe/form/SV_eg2XKJC6TxV5qiF>

OR

Copy and paste the following URL into your web browser of choice

<https://purdue.ca1.qualtrics.com/jfe/form/SV_eg2XKJC6TxV5qiF>

**Appendix E**

Questionnaire

 ***Qualtrics Intro –* We are conducting a survey of primary care and dermatology providers to gain a better understanding of factors that influence sunscreen counseling and prescriptions. We are simply interested in your opinions. Please be assured all your responses will be treated as confidential. This survey will take approximately 10-15 minutes to complete.**

***Note: For the purposes of this study, think of a prescription as 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.***

***Likert Scale Questions – Sunscreen Education and Counseling***

***Qualtrics Note –* These questions ask about your general thoughts about sunscreen and recommending sunscreen to patients.**

***1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree***

1. Sunscreen is beneficial in preventing skin cancers.
2. Establishing information about sun protective behaviors, including sunscreen use, is an important part of history taking.
3. Providers should be proactive in recommending sunscreen for all patients.
4. Providers should be proactive in recommending sunscreen for some patients.
5. Sunscreen counseling is emphasized in your practice.

***Short Answer - Sunscreen Education & Counseling Practices***

***Qualtrics Note –*** **These questions ask about your current patient education and counseling practices regarding sunscreen.**

1. Do you inquire about the sunscreen behaviors of your patients? (Yes/No)
2. If no, why?
3. If yes, which percent of patients do you inquire? \_\_\_\_\_\_\_\_%
4. If yes, what motivates you to inquire about sunscreen habits? \_\_\_\_\_\_\_\_\_
5. Do you document the sunscreen use of your patients? (Yes/No)
6. If no, why?
7. If yes, what percentage of patients have you documented information on sunscreen? \_\_\_\_\_\_%
8. What materials do you share or provide to patients about sunscreen and/or other sun protective behaviors?
9. What percentage of patients do you believe would increase their sunscreen use if you were to prescribe sunscreen? \_\_\_\_\_\_\_\_\_%

***Likert Scale Questions – Prescribing***

***Qualtrics Note* - Some insurances will cover the cost of sunscreen. These questions will ask about your opinion about prescribing sunscreen to patients.**

***1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree***

1. Providers should be proactive in prescribing sunscreen for all patients.
2. Providers should be proactive in prescribing sunscreen for some patients.
3. Patient counseling and education should be provided before prescribing sunscreen.
4. Providers should advocate for policies that support sunscreen prescriptions.
5. Sunscreen prescription is emphasized in your practice.
6. Providers should consider prescribing sunscreen.
7. I will prescribe sunscreen in the future.

***Likert Scale Questions – Barriers to sunscreen prescriptions***

***Qualtrics Note –* These questions will ask about your perceived barriers to prescribing sunscreen.**

***1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree***

1. I do not have enough patient visit time
2. Patients’ lack of time
3. Patients’ lack of motivation/interest to change
4. Lack of standard guidelines on sunscreen counselling and prescriptions
5. Patients prefer other sun protective interventions
6. Lack of clinical policies or protocol in place for me to follow
7. Lack of evidence for health benefits of sunscreen use
8. I do not receive enough reimbursement/financial incentive
9. Lack of education about prescribing sunscreen
10. Lack of continuing education about sunscreen use
11. I need more personal knowledge
12. Other lifestyle changes are more important to discuss or recommend
13. Lack of patient cultural acceptance of sun protective behavior/sunscreen prescriptions
14. Please list other barriers that you find important: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***One – to – Ten Scale***

***0 = Never, 5 = Maybe, 10 = Always***

1. On a scale of 0-10 (0 being never and 10 being always), how likely are you to promote sunscreen use?
2. On a scale of 0-10 (0 being never and 10 being always), how likely are you to write a prescription for sunscreen?
3. On a scale of 0-10 (0 being not confident and 10 being extremely confident) how would you rate your confidence in regards to writing sunscreen prescriptions?

***Open ended questions***

1. What are your thoughts about sunscreen prescriptions?
2. What factors would facilitate your use of sunscreen prescriptions?

***Demographic Information***

1. With which gender do you identify? (CHECK ONE)
2. What is your ethnic/racial background? (CHECK ALL THAT APPLY)
3. How many years have you been a licensed provider? \_\_\_\_\_\_\_\_\_
4. What is your specialty/role? (CIRCLE ONE)
5. How many years have you been practicing in your current role? \_\_\_\_\_\_\_\_\_\_
6. What is the structure of your practice? (Solo practice, group practice, other\_\_\_\_)
1. [↑](#footnote-ref-1)