Spring 5-2023

# Sun Safety Education: A Glance at Calloway County Schools

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HONORS THESIS

Certificate of Approval

Sun Safety Education: A Glance At Calloway County Schools

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May 2023

Approved to fulfill the
requirements of HON 437

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Dr. Elizabeth Gordon
Public and Community Health

Approved to fulfill the
Honors Thesis requirement
of the Murray State Honors
Diploma

_____
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Examination Approval Page

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Project Title: Sun Safety Education: A Glance At Calloway County Schools

Department: Public and Community Health

Date of Defense: May 1st, 2023

Approval by Examining Committee:

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## Abstract

The American Academy of Dermatology states that skin cancer is the most common form of cancer within the United States (*Skin Cancer,* 2022*),* and more than two people die of the disease each hour (*Skin Cancer Facts & Statistics,* 2023). From a public health perspective one avenue to explore in lowering skin cancer rates is a focus on sun safety education lessons aimed at school children. The proposed project aims to assess the current status of sun safety education in Calloway County elementary and middle schools via a survey of teachers within these schools. After data was collected, it was analyzed to determine the adequacy of sun safety education within the schools. Based on responses from 14 K-8 teachers , recommendations were made for content to include in sun safety lessons, for sun safety materials to be accessible to students in school, and to highlight the importance of having parents or guardians informed on the sun safety content being taught. Limitations to the study, including small sample size, are also addressed.

*Keywords:* sun safety education, ultraviolet rays, Calloway County Schools, skin cancer.

# Introduction

## What is Skin Cancer?

The Skin Cancer Foundation defines skin cancer as "out-of-control growth of abnormal cells in the epidermis, the outermost skin layer, caused by unrepaired DNA damage that triggers mutations" (*Skin Cancer Information*, 2023). There are four major types of skin cancer: basal cell carcinoma (BCC), squamous cell carcinoma (SCC), melanoma, and Merkel cell carcinoma (MCC). Per data from the Skin Cancer Foundation below is a chart that includes the highlights of each type of skin cancer.

| Skin Cancer Type | General Facts | Number of Cases |
|---|---|---|
| Basal Cell Carcinoma (*Basal Cell Carcinoma Overview*, 2022*).* | ● Basal cells are in the outermost layer of skin.<br>● While signs can vary, the most common signs are open sores, red patches, pink growths, shiny bumps, scars or growths with slightly elevated, rolled edges and/or a central indentation. | ● An estimated 3.6 million Americans are diagnosed with BCC each year. |
| Squamous Cell Carcinoma (*Squamous Cell Carcinoma Overview*, 2023). | ● Squamous cells are flat cells that are in the epidermis.<br>● The signs of SCC include scaly red patches, open sires, rough, thickened or wart-like skin, or raised growths with a central depression. | ● An estimated 1.8 million Americans are diagnosed with SCC each year, and the incidence rate has increased 200% in the past three decades. . |
| Melanoma (*Melanoma Overview*, 2022). | ● Another type of skin cell in the top upper layer of skin are melanocytes. Melanocytes produce melanin.<br>● There are four main types of melanoma: superficial spreading melanoma (the | ● About 186,680 cases of melanoma will be diagnosed in the United States in 2023, and around 7,990 people will die of melanoma |

| | | |
|---|---|---|
| | most common type of melanoma), lentigo maligna, arcal lentiginous melanoma, nodular melanoma).<br>● Melanoma can present in various ways on the body. There is an acronym to use as a guide for the various signs: the ABCDEs of melanoma to look for in moles and freckles.<br>● It is the most dangerous of the three most common forms of skin cancer. | in the U.S. in 2023. |
| Merkel Cell Carcinoma (*Merkel Cell Carcinoma Overview,* 2022). | ● Merkel cells are located deeper in the top layer of skin and are connected to nerves.<br>● MCC tumors are not always prominent and may appear as a shiny lump on the skin that can be skin-colored, red, purple, or a bluish red. | ● MCC is a rare but highly aggressive form of skin cancer as there are around 3,000 new cases in the United States each year. It is anywhere from three to five more deadly than melanoma |

**Risk Factors for Developing Skin Cancer**

Exposure to ultraviolet (UV) radiation is the biggest risk factor for developing skin cancer (Reyes-Marcelino et al., 2021). UV radiation is naturally produced from the sun, however tanning beds also emit UV rays (*Skin Cancer Information,* 2023).While humans need a certain amount of sun exposure for vitamin D production, too much UV light damages the DNA in the cells of the skin and this damage causes the cells to malfunction (Cleveland, 2022). This damage to the skin can then begin the process of carcinogenesis (Schulman & Fisher, 2009). The two most prominent types of ultraviolet rays are UV-A and UV-B rays (Glanz et al., 2002). UV-A rays have a longer wavelength are primarily responsible for premature aging of the skin as they

have the ability to deeply penetrate the skin (Glanz et al., 2002). Additionally, UV-A rays account for 95% of the UV rays that reach the surface of the earth from the sun, can pass through glass, and are typically the type of radiation used in tanning beds (Alexander, 2019). UV-B rays are what cause sunburns and blistering of the skin (*UV Radiation & Your Skin, 2021*). UV-B rays are higher in energy and can also cause cataracts within the eye (Alexander, 2019). The intensity of UV radiation from the sun fluctuates, and the intensity of UV rays on a given location and day can be measured by the UV index. The UV index is a scale that ranges from 1 to 11+ with a lower number representing less intense rays and a higher number representing more intense ultraviolet rays (*UV Index Overview*, 2022). The higher the UV index is, the more risk there is for damage to the skin to occur from UV rays. The Environmental Protection Agency currently recommends that precautionary measures to protect oneself from the sun should be taken when the UV index is a three or higher (*UV Index Overview, 2022).*

Damage to the skin from UV rays occurs not only from the sun but artificial sources as well, with one of the most prominent sources being tanning beds. Recent research on skin cancer suggests a positive correlation between the use of indoor tanning and the development of basal cell carcinoma, squamous cell carcinoma, and melanoma (Schulman et al., 2009). One study conducted by Zhang et al. (2012) observed over 73,000 female nurses over a time period of 20 years and found a dose-response relationship between the use of tanning beds and the risk of skin cancer, especially when use began during the highschool or college age. The results of the study were that “The multivariable-adjusted hazard ratio (HR) of skin cancer for an incremental increase in use of tanning beds of four times per year during both periods of highschool/college and between the ages of 35 to 45 was 1.15 (95% CI, 1.11 to 1.19; $P < .001$) for BCC, 1.15 (95% CI, 1.01 to 1.31; $P = .03$) for SCC, and 1.11 (95% CI, 0.97 to 1.27; $P = .13$) for melanoma”

(Zhang et al., 2012). In fact, in some countries such as New Zealand tanning bed use is banned for minors (Diehl et al., 2022). It is estimated that around 90% of nonmelanoma skin cancers are associated with skin exposure to UV radiation from the sun (*Skin Cancer Facts & Statistics, 2023).* The literature continues to show that exposure to UV rays from artificial sources can be damaging to the skin and increase the risk of an individual developing skin cancer, especially when the exposure begins at a younger age.

Another major risk factor for skin cancer is skin type (Institute for Quality and Efficiency in Health Care (IQWiG), 2018). While no skin type is immune to the development of skin cancer, those with fairer skin types are at a higher risk for developing skin cancer (Institute for Quality and Efficiency in Health Care (IQWiG), 2018). Currently the incidence of skin cancer among non-Hispanic White individuals is almost 30 times higher than that of non-Hispanic Black or Asian/Pacific Islander individuals (*Cancer Facts & Figures, 2022* ). The higher risk with fairer skin types is due to having less melanin, a protective pigment in the skin, than those with darker skin (*Risks and Causes of Skin Cancer, 2023*). However the American Academy of Dermatology cites that those with darker skin tones are less likely to survive melanoma due to it not being detected until a later stage (*Skin Cancer, 2022).*

In addition to ultraviolet rays and skin type, genetics can play a role in the development of skin cancer. Per the National Cancer Institute, there are different genes and hereditary syndromes that are found to be associated with the risk of skin cancer (*Genetics of Skin Cancer (PDQ®)–Health Professional Version*, 2023). There are more than 100 variations of tumors that can be clinically apparent on the skin and these conditions can be familial or inherited in isolation or as a part of a syndrome with various features (*Genetics of Skin Cancer (PDQ®)–Health Professional Version*, 2023).

**Skin Cancer Rates within the United States**

Skin cancer is the most common cancer within the United States, as it is estimated that one in five Americans will develop skin cancer in their lifetime (*Skin Cancer, 2022*). Each day, there are approximately 9,500 people in the United States diagnosed with skin cancer (*Skin Cancer, 2022*). The exact rates of basal cell carcinoma and squamous cell carcinoma are unknown as cases are not required to be reported to cancer registries (*Cancer Facts & Figures, 2022*). However, it is estimated that the diagnosis and treatment of nonmelanoma skin cancers in the U.S. increased by 77 percent between the years of 1994 and 2014 (*Skin Cancer Facts & Statistics, 2023)*. Within the United States in 2019, 88,059 new cases of Melanoma of the skin were reported and 8,092 people died of this skin cancer (*USCS Data Visualizations, 2022* ). Skin cancer rates differ from state to state, as factors such as skin types and exposure to strong ultraviolet rays vary. In Kentucky in 2019, among all races and ethnicities, the age-adjusted rate of melanomas of the skin was 27.8 per 100,000 people with 1,489 cases reported in total (*UCSC Data Visualizations, 2022).*

**Current Guidelines for Kentucky Schools Sun Safety Education**

The state of Kentucky has academic standards established for each subject area of a discipline. One of the areas includes the Kentucky academic standards for Health Education and Physical Education. A document linked within the Kentucky Department of Education within this specific area of academic standards details the current guidelines for health education in the state of Kentucky (*Kentucky Academic Standards for Health Education, n.d.*). Included in these guidelines is KRS 158.301 which is as follows:

> "Schools Encouraged to Educate Students on Risks of Exposure to Ultraviolet Rays. The General Assembly hereby encourages each public school to provide age appropriate

> education to all students on the risks associated with exposure to ultraviolet rays from natural sunlight and artificial sources. (a) The education should be included within the existing health curriculum as required by KRS 156.160(1)(a) and in accordance with the curriculum policy adopted by the schoolbase decision making council, or, if none exists, by the school principal. (b). The education should be consistent with guidelines published by world or national health organizations and should include, but not be limited to: 1) The facts and statistics about skin cancer; 2.)The cause and impact of skin cancer; and 3.) Strategies and behaviors to reduce individual risks for skin cancer" (*Kentucky Academic Standards for Health Education, n.d.*)

Additionally, there are some grade specific standards that refer to incorporating sun safety into educational lessons under standard one which is "Students will comprehend content related to health promotion and disease prevention to enhance health"(*Kentucky Academic Standards for Health Education, n.d.*). These standards are as follows with the first number/letter indicating which grade the standard is for:

- **1.1.6.** List ways to prevent harmful effects of the sun.
- **3.1.6** Describe ways to prevent harmful effects of the sun.
- **6.1.7.** Summarize actions to take to protect oneself against potential damage from exposure to the sun.
- **HS.1.17** Summarize personal strategies for minimizing potential harm from sun exposure.

There are currently no specific curricula or practices that are required in Kentucky public schools on health education topics, only the Kentucky Academic Standards. This means that the standards lay out the educational knowledge and goals students should be able to accomplish;

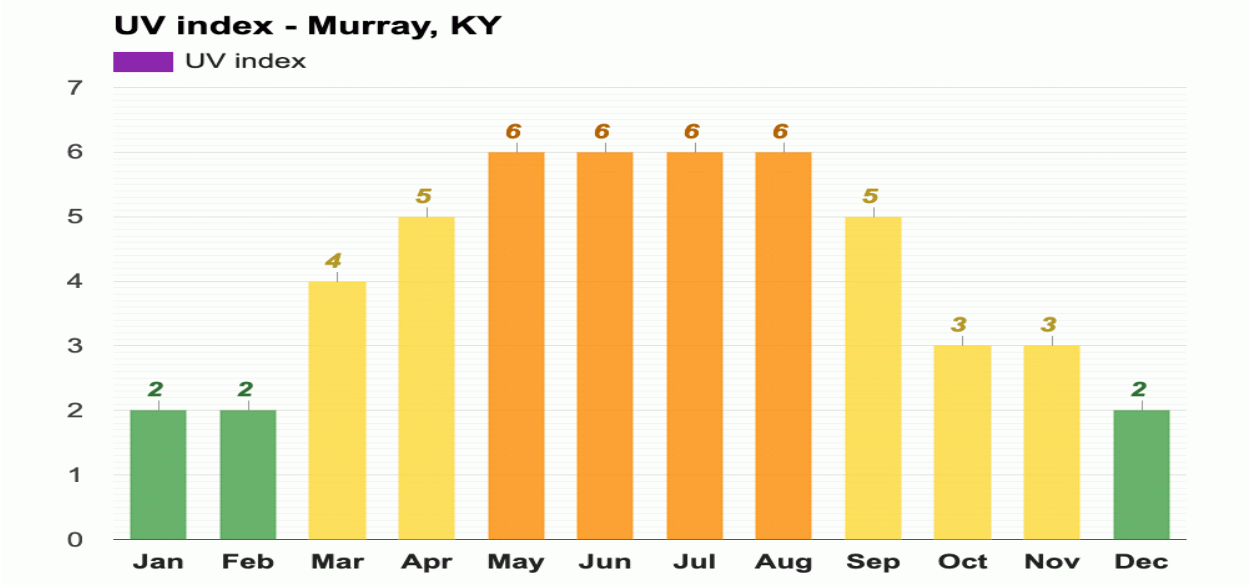
however, what content is taught and the manner in which content is taught is left up to the individual school districts.

**Purpose for the Project**

The purpose of this project is to evaluate the current sun safety education status within the Calloway County School System. As previously referenced, UV radiation exposure is the biggest risk factor developing skin cancer. A large amount of sun exposure and skin damage from UV rays happens before the age of 20; therefore exposure to ultraviolet rays during childhood can become a major factor in the development of skin cancer (Glanz et al., 2002). The American Academy of Dermatology Association (2022) cites that experiencing five or more blistering sunburns between the ages of 15 and 20 increases the risk for melanoma by 80% and nonmelanoma skin cancer risk by 68%. Additionally, studies continue to show that exposure to tanning beds at a young age produces a stronger association between indoor tanning and the risk of developing skin cancer (Zhang et. al 2012).

Calloway County has specific characteristics that are worth noting when it comes to the importance of sun safety education. Calloway County has a population that is 91.6% white (United States Census Bureau QuickFacts, n.d.). This means that the majority of the population has a skin type that is at a higher risk to the development of skin cancer. There is also concern about the amount of UV ray exposure that the area of Calloway County receives. **Figure 1: UV Index Averages in Murray, Kentucky** shows the average monthly UV index for the city of Murray, KY (*Murray, KY - Climate & Monthly weather forecast*. (n.d.) which is the city that the Calloway County schools are located in.

**Figure 1**




As previously referenced, the Environmental Protection Agency recommends that a UV index of three or higher means that protection against the sun, such as wearing sunscreen, hats, and sunglasses, is needed. Therefore there are nine months out of the calendar year that sun protection may be needed nearly every day, with students being in school for at least part of seven of these months. If students are taught proper methods to protect themselves from the sun during school-related outdoor activity, they may then also be able to apply these skills during the summer months when school is not in session. In addition to exposure to UV rays from the sun itself, there is also concern that residents in Calloway County may be also exposed to artificial sources due to there being four tanning bed salons within Calloway County.

Currently literature finds evidence that introducing sun protection to children plays a key role in preventing skin cancer (Reinau et al., 2014). While completely preventing skin cancer is the most ideal outcome, the reality is that there will still be individuals that develop skin cancer in their lifetime. In sun safety education it is important to teach not only how to prevent skin cancer but how to detect the early signs of skin cancer as well. While skin cancer is the most common cancer in the United States, skin cancer is extremely treatable if detected early. The five

year survival rate for melanoma when detected in the early stages is over 99% compared to 32% when the disease has spread to other organs (*Skin Cancer Facts & Statistics,* 2023 ). The long term goal for this project is that Calloway County Schools have adequate sun safety education lessons and practices in order to take preventative measures against the development of skin cancer as well as be able to detect the early signs of skin cancer at any point in its students lives.

## Methods

### Participants

In this study, the sun safety education status of Calloway County schools is being examined. Participants in this study are educators from the following schools: East Calloway Elementary, North Calloway Elementary, Southwest Calloway Elementary, and Calloway County Middle School. The participants are educators of the grade range of kindergarten through eighth grade.

### Materials

The survey was administered in a digital format through the platform Google Forms. There were no materials other than the link to the survey provided to the participants. In order to fill out the survey, participants needed access to an electronic device with internet access such as a smartphone, computer, or tablet.

### Procedure

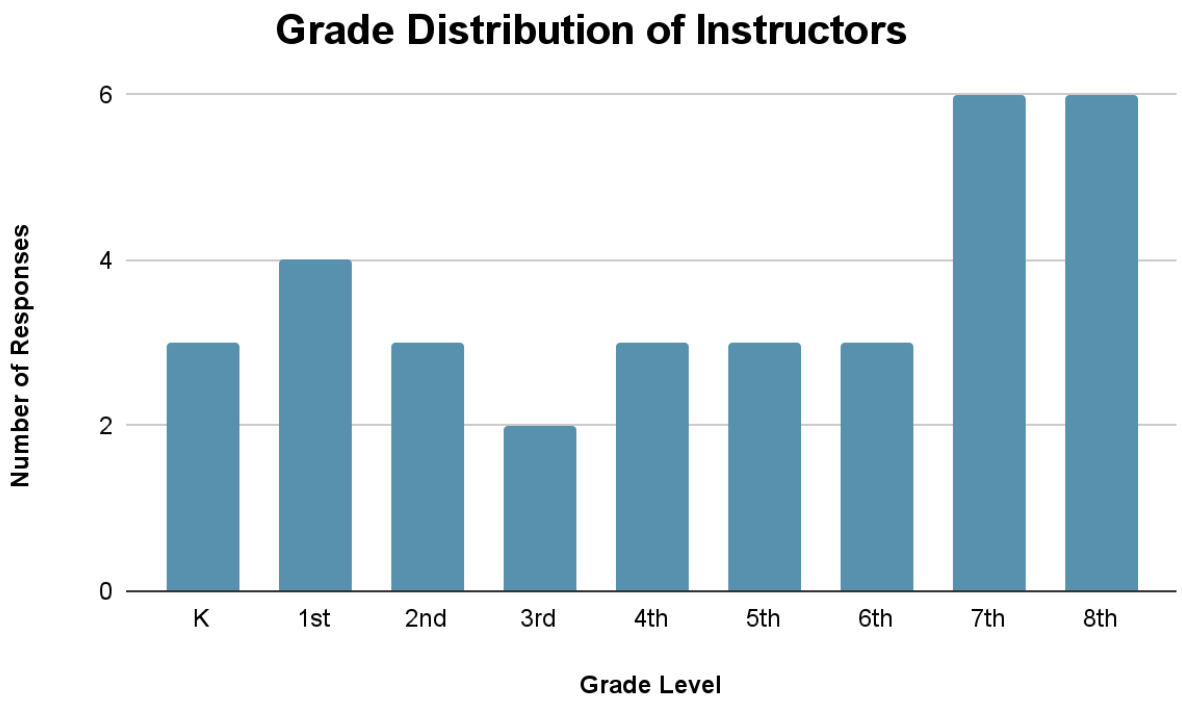
Data for this project was collected via a survey completed by teachers in Calloway County. Prior to drafting the survey, the school principals for the following schools were contacted via email: East Calloway Elementary, North Calloway Elementary, Southwest Calloway Elementary, and Calloway County Middle School. Through this initial contact, the intentions of the project were communicated and assistance was asked from the principals to

send out the survey to their staff once completed. The drafting process for the survey began by focusing on the content that should be included in the questions and the manner in which the questions should be structured. Prior to the survey being administered, it underwent the Institutional Review Board (IRB) approval process. All necessary documentation along with the completed survey was sent to the IRB at Murray State University. It did receive approval from the IRB under project IRB #23-118 (See Appendix A). Once approval was received, the survey was sent to the school principals through a follow up email. The principals from Southwest Calloway County and Calloway County Middle School confirmed they would send the survey to their staff. Therefore, those were the only two school principals that were sent the survey link. These principals were then able to forward the survey link to their teachers who were able to choose of their own will to participate in the survey or not. All responses were confidential and no identifying information was collected. See Appendix B for a copy of the survey that the educators filled out.

## Results

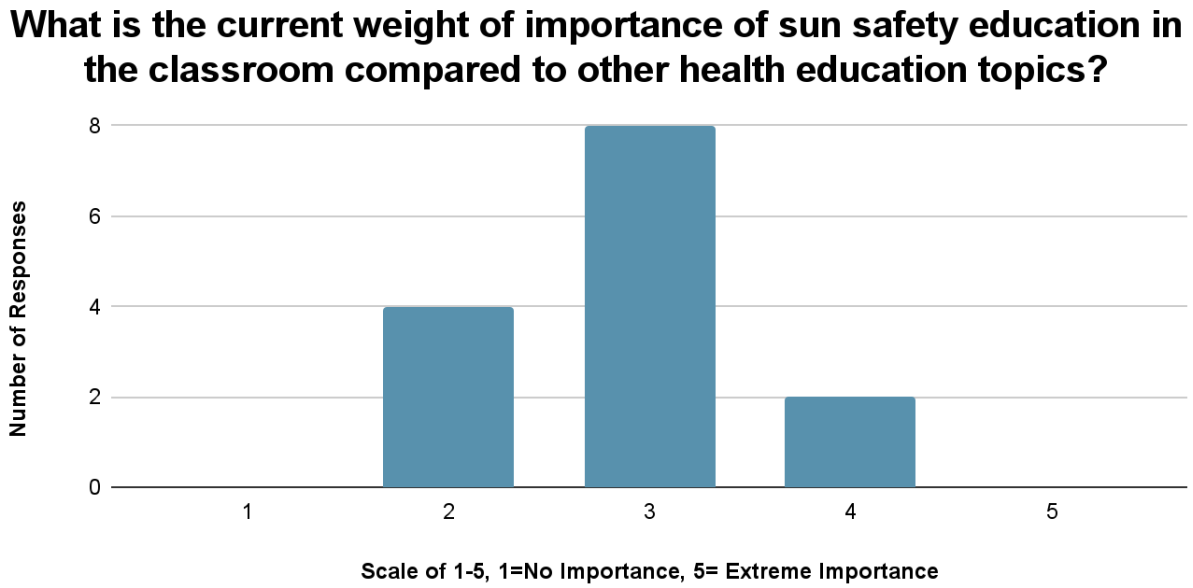
A total of 14 educators took the survey. **Figure 2: Grade Distribution of Instructors** is a graph representing the grade distribution of the educators that responded to the survey. There was at least one response per grade level. Some of the instructors teach more than one grade level, therefore the total number of responses exceeds fourteen on the graph.

**Figure 2**




Participants were asked their opinion of the current weight of importance of sun safety education in the classroom compared to other health education topics on a scale from 1-5 with 1 representing no importance and 5 representing extreme importance. **Figure 3: Weight of Importance of Sun Safety Education Topics** reflects the results of the responses.

**Figure 3**




When asked if students have access to certain materials when participating in outdoor activities, the responses were as follows out of 14 total responses: 7 count for sunscreen, 5 count for hat, 5 count for sunglasses. 57.1% of responses indicated that students are encouraged to put on sunscreen before participating in outdoor activities specifically when the UV index is a 3 or higher. Meanwhile, 76.9% of responses were “No” to when asked if there is currently any type of communication with parents/guardians informing them on the sun safety lessons being taught within the classroom. **Figure 4: Confidence in Student Ability to Identify Main Types of UV Rays s**hows the distribution of responses when asked for educators' confidence in their students ability to be able to identify the two main types of ultraviolet rays. As reflected in the chart, there were no responses indicated for a 4 or 5 on the scale. **Figure 5: Confidence in Students Ability to Identify Reasons to Protect Ourselves from UV Rays** reflects the distribution of responses when educators were asked to rate their confidence on a scale from 1-5 on their students current ability to be able to identify reasons why it is important to protect ourselves from UV rays.

**Figure 4**

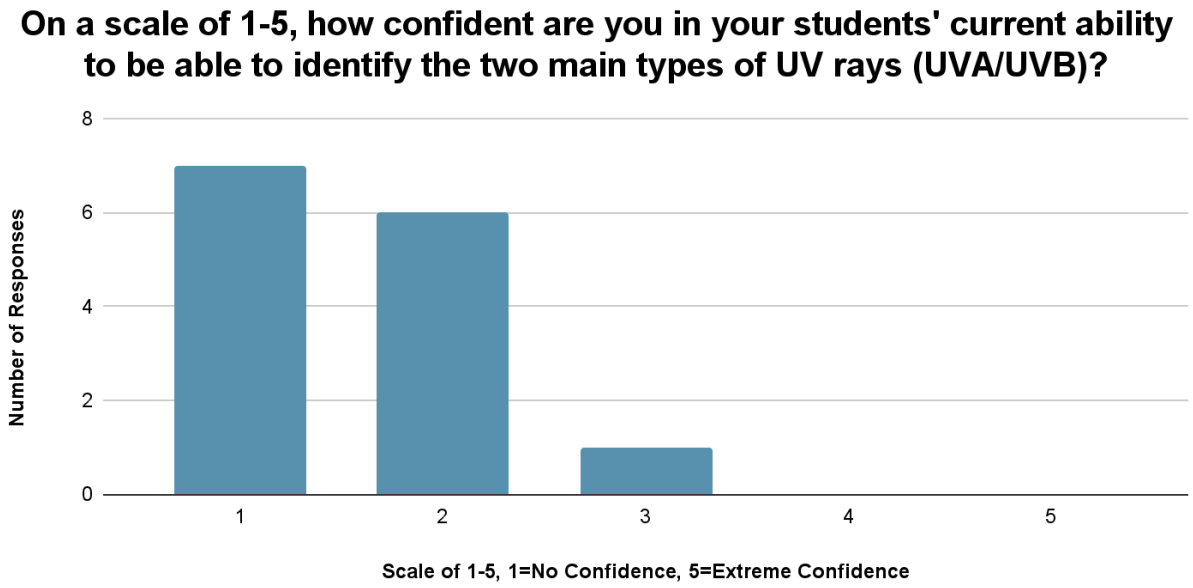
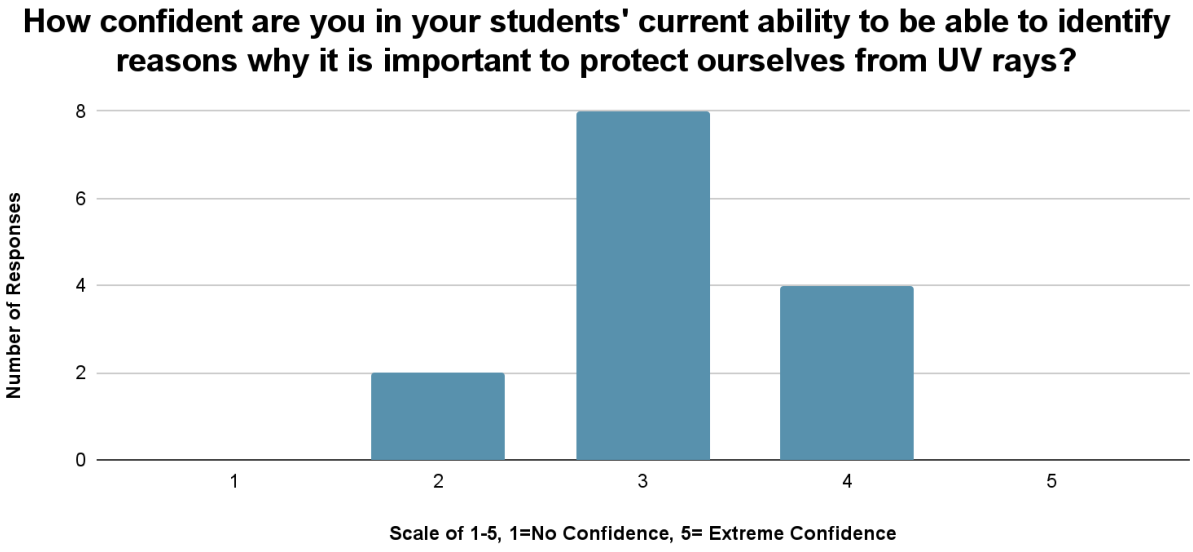



**Figure 5**



Teachers were asked if their students are currently instructed on the dangers of exposing themselves to ultraviolet rays in an attempt to develop a tan and 57.1% of the answers were "No." When asked about current educational modalities, videos were the most popular method of instructional materials used to teach sun safety education, followed by hand-outs , PowerPoint Presentations, and guest lecturers. When the educators were asked if there was any current awareness of state or district guidance that encourages education of safety from ultraviolet ray exposure 100% of responses were "No."

## Discussion

### Analysis

As indicated in the survey responses, 100% of the respondents were not aware of any current state or district guidance that encourages education of ultraviolet ray exposure. However, Kentucky Academic Standard 158.301 clearly states that schools are encouraged to educate students on the risks of exposure to ultraviolet rays. There may be a gap present in the communication of this Kentucky Academic Standard to the educators themselves or the school district as a whole. Therefore, if awareness of Kentucky Academic Standard 158.301 and its full content can be increased in Calloway County, sun safety educational lessons could be made more widespread and consistent. There are resources available on the Kentucky Academic Standards website that can serve as a guide to structuring educational content for these standards.

In terms of structuring educational content for sun safety lessons there are a few key components that should be included based on current literature and the responses gathered from educators. Students should be taught the main two types of UV rays (UVA/UVB) rays and how they affect the skin. By teaching that UVA rays cause premature aging while UVB rays cause sunburns, it provides tangible effects for students to be able to grasp. Therefore, students can

begin to understand at the elementary level that ultraviolet rays can cause wrinkles and sunburns which is why protecting oneself from them is important. As students progress throughout their educational journey, there can be more in depth information provided about ultraviolet rays and their effects on the body as appropriate for students' comprehension level.

Another critical component of information that students should be taught are the dangers of intentionally tanning the skin from both the sunlight and artificial ultraviolet light sources. It is a common misconception that intentionally tanning the skin is safe, unlike sunburns, however this is not the case (Center for Devices and Radiological Health & Center for Devices and Radiological Health, 2019). With over half of the responses indicating that students are not currently taught about the harmful consequences of tanning, this information should be consistently included in lesson content. Students at the elementary level can be taught that it is not healthy for the skin to intentionally expose oneself to ultraviolet rays from the sun in the hope to develop a tan. As students progress in age, in addition to the dangers of tanning from the sun, there should be lessons included on the harm artificial ultraviolet light sources such as tanning beds can cause. Currently research shows that the use of tanning beds before the age of 20 can increase the chances of developing melanoma by 47% and that the risk of developing melanoma increases with each use of a tanning bed (*Indoor Tanning, 2022*). As of 2022 in Kentucky a minor under the age of 14 may use a tanning bed if accompanied by a parent and between the ages of 14-17 may use tanning beds if there is written consent from a parent or guardian (*Indoor Tanning Legislation 2022 - AIM at Melanoma Foundation,* 2022). Students may not know the serious threats to their health that tanning beds propose and therefore it should be a goal of sun safety education to make the students aware of these risks in order to make fully informed decisions in regards to using artificial ultraviolet tanning sources.

It is important not to only include preventive measures against skin cancer in sun safety lessons but to also include how to be proactive in checking the skin for the signs of skin cancer. Melanoma is the most deadly type of the three common skin cancers, however the five year relative survival rate is over 99% if detected while still in its localized stage (*Melanoma Survival Rates | Melanoma Survival Statistics*, 2023). A common acronym used to look for the warning signs in moles and freckles on the skin are the ABCDEs of Melanoma (*Melanoma Warning Signs, 2021).* Per information from The Skin Cancer Foundation (2021) the letters each stand for a different warning sign as follows:

| | |
|---|---|
| A is for Asymmetry | One should be able to draw a line down the center of a mole/freckle and it looks the same on both halves. If asymmetrical, this is a warning sign. |
| B is for Border | Cancerous moles and freckles often have uneven, jagged, unsmooth borders . |
| C is for Color | It is a warning sign if moles and freckles are colors not close to the skin color (blue, red, purple, etc) or are more than one color |
| D is for Diameter | Moles and freckles on the skin should not be larger than around the size of a pencil eraser (6mm or ¼ inch diameter). |
| E is for Evolving | Any type of change of a mole or freckle on the skin (size, shape, color, bleeding, elevation, etc.) is a warning sign. |

If students are taught about how to be vigilant in monitoring their skin for the warning signs of Melanoma this may assist in being able to detect the skin cancer while it is still in a stage that can successfully be treated.

Survey results indicate that students do not always have access to sunscreen or other sun safe clothing such as hats or sunglasses on days where the UV index is three or higher. There should be some form of sunscreen available to all students for use when participating in outdoor activities when there are high enough levels of ultraviolet rays to cause damage to the skin. It

should also be noted that per the CDC recommendations that sunscreen should be broad spectrum and have a minimum sun protection factor (SPF) of 15 or higher (*Sun Safety 2022).* One method as to how to increase access to sunscreen in the school is to have teachers include it on the school supply list typically administered to families at the beginning of the school year. While it may not be possible to require students to wear sunscreen there should be some sort of formal encouragement to the students in addition to access to sunscreen while in school.

Another recommendation that can be made based on project results and current literature is that parents should be informed of the sun safety lessons in the classroom being taught to the students. There are studies that have found that sun safety behaviors were more common in children with families that actively converse and participate in sun protection methods (Reinau et al., 2014). Sun safety practices should not be limited to school activities that are outdoors but rather are incorporated into a health conscious lifestyle. If students are taught these sun safety lessons in the classroom and also receive encouragement on the homefront there may be a better chance of sun safe habits becoming a consistent part of their routine. Additionally, parents and guardians may become aware of information such as the risks of tanning beds which may influence their decision to give their children permission to use the tanning bed as required for 14-17 year olds in Kentucky. It is also important that parents and guardians are aware of the early warning signs of skin cancer so they can not only look for these signs on their children's skin but on their own as well.

**Limitations**

There are some limitations that should be addressed in relation to this study. The number of educators able to respond to the survey was smaller than initially thought. There were barriers in receiving responses such as no communication from school principals when contacted,

Calloway County Schools being on spring break around the time the survey was administered, and educators perhaps simply not seeing the email. Additionally, certain instructors may only teach specific subjects therefore not having knowledge of sun safety lessons or if they occur with other teachers. As typical with research centered around survey responses, this project also relied on respondents to answer the survey truthfully and fully understand the questions being asked. These limitations should be kept in mind when analyzing the context and recommendations of this project.

**Future Research & Implications**

There is the possibility for future research on sun safety education in Calloway County Schools. There could be surveys of the students themselves to gain a better understanding of their knowledge and comprehension level of sun safety educational content. Skin cancer is a public health concern that needs to be addressed as it is the most common cancer in the United States even with the knowledge that the most common risk factor is exposure to ultraviolet rays. Comprehensive educational lessons in sun safety is one avenue that can be utilized in order to address this public health concern not only in Calloway County but across school districts within the United States.

**Conclusion**

Overall, the results of the study indicated there is the opportunity for improvement for sun safety education content in Calloway County schools. Once the project was completed the participating school principals were contacted through a follow up email that shared the results and recommendations of the project. The ideal outcome is that Calloway County Schools have the ability to practically apply recommendations given to their sun safety education content and structure. Teaching school age children about the dangers of ultraviolet rays and how to protect

themselves is knowledge that can be practically put to use over the course of their lifetime. Although skin cancer is the most common cancer within the United States, placing focus on sun safety and skin cancer prevention education can be a piece to the solution of this public health crisis.

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# Appendix A

MURRAY STATE UNIVERSITY

Institutional Review Board

328 Wells Hall
Murray, KY 42071-3318
270-809-2916 • msu.irb@murraystate.edu

**TO:** Elizabeth Gordon, Public and Community Health

**FROM:** Jonathan Baskin, IRB Coordinator JB

**DATE:** 3/2/2023

**RE:** Human Subjects Protocol I.D. – IRB # 23-118

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The IRB has completed its review of your student's Level 1 protocol entitled *Sun Safety Education Survey*. After review and consideration, the IRB has determined that the research, as described in the protocol form, will be conducted in compliance with Murray State University guidelines for the protection of human participants.

**The forms and materials that have been approved for use in this research study are attached to the email containing this letter. These are the forms and materials that must be presented to the subjects. Use of any process or forms other than those approved by the IRB will be considered misconduct in research as stated in the MSU IRB Procedures and Guidelines section 20.3.**

**Your stated data collection period is from 2/28/2023 to 5/12/2023.**

If data collection extends beyond this period, please submit an Amendment to an Approved Protocol form detailing the new data collection period and the reason for the change.

**This Level 1 approval is valid until 3/1/2024.**

If data collection and analysis extends beyond this date, the research project must be reviewed as a continuation project by the IRB prior to the end of the approval period, 3/1/2024. You must reapply for IRB approval by submitting a Project Update and Closure form (available at murraystate.edu/irb). You must allow ample time for IRB processing and decision prior to your expiration date, or your research must stop until such time that IRB approval is received. If the research project is completed by the end of the approval period, then a Project Update and Closure form must be submitted for IRB review so that your protocol may be closed. It is your responsibility to submit the appropriate paperwork in a timely manner.

The protocol is approved. You may begin data collection now.

# Appendix B



## Sun Safety Education Survey

You are invited to participate in this study because you are an educator within the Calloway County school system. The following information describes the study and your role as a participant. Please read this form carefully and do not hesitate to ask questions about any aspect of the study.

-Researchers and Overview: This study is being conducted by Tess Henderson, student, Public and Community Health, under the supervision of Elizabeth Gordon, PhD, director of the Public and Community Health Program at Murray State University. Dr. Gordon can be contacted at egordon5@murraystate.edu or 270-809-5745.

-Purpose and Procedures: The purpose of this research is to gain insight to the current sun safety educational activities and policies within the Calloway County School system. The following survey is brief and is expected to take approximately 10 minutes to complete.

-Risks and Benefits: There are no known potential risks associated with completing the survey. There are no individual benefits; however, your participation will assist in an evaluation and recommendations for sun safety education and practice in Calloway County Schools.

-Voluntariness: Your participation in this study is voluntary. You may refuse to participate, discontinue participation, or skip any questions you do not wish to answer at any time without penalty.

-Confidentiality: Any information that you provide will be kept strictly confidential (private), and your name will not be published or reported. Your responses will be confidential and we do not collect identifying information such as your name, email address or IP address. All data is stored in a password protected electronic format. To help protect your confidentiality, the surveys will not contain information that will personally identify you. The results of this study will be used for scholarly purposes only.

-Institutional Review Board: This project was determined to need a cursory review. Any questions pertaining to your rights as a participant should be brought to the attention of the IRB coordinator at (270) 809-2916 or msu.irb@murraystate.edu. Any questions about the conduct of this research project should be brought to the attention of Dr. Elizabeth Gordon, director of the Public and Community Health Program at Murray State University. Dr. Gordon can be contacted at egordon5@murraystate.edu or 270-809-5745.

1. Please indicate which grade(s) you are an instructor for below.

*Check all that apply.*

- [ ] K
- [ ] 1st
- [ ] 2nd
- [ ] 3rd
- [ ] 4th
- [ ] 5th
- [ ] 6th
- [ ] 7th
- [ ] 8th

2. In your opinion, what is the current weight of importance of sun safety education in the classroom compared to other health education topics?

*Mark only one oval.*

| | |
|---|---|
| | Not important at all |
| 1 | ◯ |
| 2 | ◯ |
| 3 | ◯ |
| 4 | ◯ |
| 5 | ◯ |
| | Extremely Important |

3. Please indicate which of the following (if any) students have access to within school when participating in outdoor activities (recess, field day, etc.)

*Check all that apply.*

- [ ] Sunscreen
- [ ] Hat
- [ ] Sunglasses

4. Are students currently encouraged to put on sunscreen before participating in any outdoor activities specifically when the UV Index is a 3 or higher?

*Mark only one oval.*

- ◯ Yes
- ◯ No
- ◯ Other: _____

5. Please indicate which of the following below (if any) are currently being included in sun safety lessons within the classroom.

*Check all that apply.*

- [ ] Facts and statistics about skin cancer.
- [ ] The cause and impact of skin cancer.
- [ ] Strategies and behaviors to reduce individual risks for skin cancer.

6. Is there currently any type of communication (flyer sent home, email, etc.) with parents/guardians informing them on the sun safety lessons being taught within the classroom?

*Mark only one oval.*

- ◯ Yes
- ◯ No
- ◯ Other: _____

7. How confident are you in your students' current ability to be able to identify the two main types of UV rays (UVA/UVB)?

*Mark only one oval.*

No confidence in students ability to identify both.

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

Extreme confidence in students ability to identify both.

8. How confident are you in your students' current ability to be able to identify reasons why it is important to protect ourselves from UV rays?

*Mark only one oval.*

No confidence in students ability to identify reasons.

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

Extreme confidence in students ability to identify reasons.

9. Are students currently instructed on the dangers of exposing themselves to ultraviolet rays in an attempt to develop a tan?

*Mark only one oval.*

◯ Yes

◯ No

◯ Other: _____

10. Please indicate which of the following instructional materials are being used in order to teach sun safety lessons.

*Check all that apply.*

- [ ] Video
- [ ] PowerPoint Presentation
- [ ] Hand-outs
- [ ] Guest Lecturer
- [ ] Other: _____

11. Are you currently aware of of any state or district guidance that encourages education of safety from ultraviolet ray exposure?

*Mark only one oval.*

- ◯ Yes
- ◯ No
- ◯ Other: _____

12. Please leave any recommendations or changes you feel should be made to sun safety education in Calloway County Schools below.

_____