Sun Safety and the Deadly Effects of Skin Cancer in the U.S.

Clara Tandar, Avelyn Kulsophob, Sylvia Xi

Target Audience: Middle School and High School Students (7th-12th grade)

Number of Participants: 118 Students

Chapter: West High School HOSA, 31063, Middle School

Division: Middle School - Health Education

241 N 300 W, Salt Lake City, UT 84103

Utah
Lesson Plan

Educators: Clara Tandar, Avelyn Kulsomphob, Sylvia Xi

Subject: Understanding the Risks of Skin Cancer

Duration: Approximately 30 minutes

Target Audience: Middle School and High School Students (7th - 12th)

Overview: Skin cancer is one of the leading causes of deaths in the United States with Utah having the highest rates of melanoma. Due to this, learning about skin cancer’s causes and preventative measures is essential for potentially decreasing the risk of skin cancer in the next generation.

Learning Objective:

Instruction in this lesson should result in student achievement of the following objectives:

- Understanding the relevance of skin cancer in today's society.
- Types of skin cancer
- Stages of skin cancer
- ABCDE's of skin cancer
- Utilizing preventative measures for skin cancer and possible treatment plans

Materials:

- Powerpoint
- Assessment
- Jeopardy
- Candy
Instruction Guidelines:

1. Set up: Powerpoint Presentation
2. Introduction: participating members, topic overview
3. Review Game(only for participating classes): Jeopardy
4. Assessment and evaluation

Activities:

- Jeopardy
  - One student selects a category with a given point value, and attempts to answer the question. If the student’s response is correct, they receive the given point value. If the student responds with an incorrect answer, another student is allowed to “steal” the question for points. Top 3 students are awarded with incentive prizes.

Assessment:

- Multiple Choice
- Rating of overall presentation
Supportive Information

Skin cancer is a serious disease affecting America. It is the most common type of cancer, with about 5.4 million Americans diagnosed every year. The three most common types of skin cancer are basal cell carcinoma, squamous cell carcinoma, and the most deadly, melanoma. Melanoma is not the most common skin cancer but causes the most deaths, with 10,000 Americans dying per year from melanoma related cancer. Skin cancer is caused by the mutation of DNA in skin cells, or melanocytes. There are natural proteins that are found in our body to protect us from DNA mutations, but they can also become disabled or mutate due to UVA and UVB light-rays from the sun. Once this happens, the melanoma will typically spread to the lymph nodes and either to the lungs or brain where the cancer is then considered terminal. However, many people have beat these odds, and with advancing technology used by cancer scientists, we have been able to prolong the lives of patients and prevent skin cancer.

History of Skin Cancer

The first accounts of skin cancer date back to an early record in the 5th century B.C. Hippocrates, who recorded this event, observed a dark mole found on a patient's body. Archeologists have also found evidence of melanoma, due to carbon dating, on mummies acquired from pre-Columbian times in Peru. The first recorded person to successfully complete a removal of melanoma tumor was John Hunter in 1787. He did not know what it was, so described it as a "cancerous fungous excrescence". It was preserved and later studied in 1968, when scientists confirmed that the tumor was malignant. In 1844, skin cancer was studied by scientists and deemed untreatable in its
advanced forms by Samuel Cooper. However, in previous stages the best method for treatment was deemed as tumor removal through surgical incisions.

**Statistical Evidence**

According to a clinical study conducted by the American Cancer Society more women are diagnosed with melanoma than men before the age of 50. The study goes on to express that if the melanoma metastasizes to other parts of the body, such as the brain or lungs, that the survival rate would drop to 17%. Scientists have also examined the rates of melanoma between different ethnicities. These clinical studies have shown that melanoma is twenty times more common in Caucasians than African Americans. Researchers have also found that the risk for melanoma increase as a person grows older, most likely due to . This research and clinical studies have allowed doctors to track the progress of melanoma throughout the years of different ethnicities.

**Descriptions of Melanoma**

The stage at which melanoma is caught is vital. Since skin cancer is more treatable in earlier stages, it is vital for people to know how to detect it in the form of moles. Melanoma moles are usually brown or black, but they can also appear in pink, tan, or even white forms. According to The American Cancer Society, factors that can increase a person’s risk for melanoma are: UV exposure, indoor tanning, increase in moles, fair skin, family history, etc. Unusual moles, sores, lumps, blemishes, marking, and or changes in the way an area of skin feels, can also be an indicator for skin cancer. Other warning signs include: a sore that doesn’t heal, spread of pigment, redness or swelling, change in sensation, and change in texture. If a person
experiences any of these indicators, a doctor should be consulted right away. The ABCDE rule is also a good way to tell if a mole is malignant or benign. ABCDE stands for Asymmetry, Border, Color, Diameter, and Evolving and is used for self evaluation.

Proposed and Current Solutions

Surgery is the most common method for removing skin cancer in its early stages, and most commonly recommended by a doctor. This is called a simple excision. During this procedure, the skin cancer, along with the surrounding area, known as the margin, will be removed. When the affected area is slightly larger a wide excision will be performed, and if the melanoma has grown deep, an amputation might have to be performed. If the cancer returns it can spread to the lymph nodes as stage II cancer. If this occurs a process called a lymph node dissection will take place to determine how severe the cancer is. These procedures usually occur during earlier stages when the melanoma is confined to a certain region or area of the body.

Chemotherapy is usually recommended when the cancer has spread throughout the rest of the body. Chemotherapy is usually given during earlier stages of other types of cancers, but is generally not considered for skin cancer until stage III or stage IV. It is administered through an IV and uses toxins and drugs to destroy cancer cells. The drugs circulate in the bloodstream throughout the body, but chemotherapy can also be administered into a vein or area for regional therapy. Regional therapy allows for doctors to target a specific area without amputating a limb. This has been used for the last twenty-five years, and is considered more effective than normal chemotherapy but doctors often try to catch it earlier as chemotherapy also has unfavorable side effects.
Skin Cancer

If certain precautions are not taken, the higher risk a person is at for skin cancer. Therefore, certain precautions need to be taken in order to ensure the safety of your bodies health. For example, the sun should be avoided around 10 A.M. to 4 P. M. However, if you need to go out into the sun, then a broad-spectrum sunscreen needs to be applied to protect your body from both UVA and UVB rays. Clothing can also be used to protect your body from the sun's harmful rays. Long sleeves and a broad hat would be ideal, but UV-blocking sunglasses are also recommended. Tanning and UV tanning beds should also be avoided due to the harm it could cause to your skin. Tanning beds increase the risk for melanoma by 75% for people under the age of 35.

In conclusion, melanoma is a very serious disease, but with right technology, it can be cured. The understanding of melanoma has greatly increased within the past decade, and continues to grow as more and more studies are conducted about melanoma each year. It is also important for people to know how to prevent skin cancer. Certain precautions need to be taken to decrease the increasing rate of cancer in America. Most of the general population doesn't know about the risks of skin cancer. Americans continue to use tan and use UV tanning bed, blissfully unaware of the consequences. Thankfully, researchers and scientists have started to make Americans aware of the harm UV rays can do. They have continued their efforts, and hope to decrease and completely eradicate melanoma within the next century, and with the help of modern technology, this may be a plausible solution.
Timed Outline

9:00 to 9:05

**Introduction:**

- We each introduced ourselves, and provided the class with contextual information about the primary purpose and objective of HOSA and Health Education.
- A minimal description of the relevance of skin cancer in today's society, and the importance of the topic was discussed.

9:05 to 9:08

**What is Skin Cancer?**

- Definition of skin cancer
- Deadliest type of skin cancer
- Statistics of affected Americans

9:08 to 9:11

**Types of Skin Cancer:**

- Summary of the 3 most common types of skin cancer
9:11 to 9:13

Stages of Skin Cancer:

- Summary of the 5 stages of skin cancer

9:13 to 9:15

ABCDE's of Skin Cancer:

- Each letter of the ABCDE's of skin cancer is discussed

9:15 to 9:20

Current Solutions for Skin Cancer:

- Summary of 3 primary methods of surgical removal
- Brief description of chemotherapy
9:20 to 9:23

Prevention:

- Helpful tips on avoiding skin cancer

9:23 to 9:33

Jeopardy (only for classes that apply):

- Jeopardy game is conducted and candy is used as an incentive to ensure participation from all students.

9:33 to 9:40 OR 9:23 to 9:30

Skin Cancer Assessment & Evaluation:

- Skin cancer assessment and evaluation is distributed among students.
Skin Cancer

Health Education
HOSAA

By Clara Tander, Avelyn M. Keompah, Sylvia X.

Types of Skin Cancer
- The most common types of skin cancer are squamous cell carcinoma, basal cell carcinoma, and melanoma.
- Melanoma is the most deadly form of skin cancer.

Stages of Skin Cancer
- Stage 0: Carcinoma in situ or early cancer.
- Stage I: Tumor diameter is equal to or less than 2 cm.
- Stage II: Tumor diameter is wider than 2 cm.
- Stage III: Cancer has metastasized to the lymph nodes.
- Stage IV: Metastasizes to other internal organs.

The ABCDE's of Skin Cancer
- A: Asymmetry
- B: Border
- C: Color
- D: Diameter
- E: Evolving

Current Solutions

Chemotherapy
- Recommended for when the cancer has metastasized.
- Not considered until stage III or IV.
- Uses toxins and drugs administered through an IV.

Surgery
- Simple excision: the suspected area is removed with surrounding margin.
- Wide excision: performed for larger areas of skin.

Prevention
- Try to avoid the sun between 10 A.M. to 4 P.M.
- Use a broad spectrum sunscreen and wear clothing that protects from both UVA and UVB rays.
- Avoid tanning beds.
Jeopardy

<table>
<thead>
<tr>
<th>Types of Skin Cancer</th>
<th>Descriptions</th>
<th>Prevention</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>What is the most deadly form of skin cancer?</td>
<td>What is skin cancer?</td>
<td>What is the easiest way to prevent sun damage?</td>
<td>When is chemotherapy considered?</td>
</tr>
<tr>
<td>Melanoma</td>
<td>The uncontrolled growth of abnormal skin cells</td>
<td>Wear sunscreen</td>
<td>Stages III and IV</td>
</tr>
</tbody>
</table>

200 Describe what happens when skin cancer reaches stage IV

200 Approximately what percentage of Americans are diagnosed with skin cancer?

200 What should you NEVER use?

200 Tanning beds!

200 What surgery is performed in extreme measures?

300 What are the two main kinds of skin cancer?

300 What are the ABCDEs of skin cancer?

300 Between 10 A.M. to 4 P.M.

300 If suspected carcinoma is smaller than 2 cm, what is typically performed?

A: Asymmetry

B: Border

C: Color

D: Diameter
Materials

- Skin Cancer Assessment
- Skin cancer jeopardy game
- Incentive for student participation
- Skin Cancer Powerpoint Summary

I. What is Skin Cancer?
   a. The uncontrolled growth of abnormal skin cells and is the most common type of cancer that affects approximately 3 million Americans per year

II. Types of Skin Cancer
   b. The most common types of skin cancer are squamous cell carcinoma, basal cell carcinoma, and melanoma. Melanoma is the most deadly form of skin cancer.

III. Descriptions
   a. Stages of Skin Cancer

Stage 0: Carcinoma in original position

Stage I: Tumor diameter is equal to or less than 2 cm

Stage II: Tumor diameter is wider than 2 cm

Stage III: Cancer has metastasized to the lymph nodes

Stage IV: Metastasis to other internal organs

   b. The ABCDE's of Skin Cancer

A: Asymmetry

B: Border

C: Color
Skin Cancer

D: Diameter
E: Evolving

IV. Current Solutions

a. Surgery
   - Simple excision: the suspected area is removed with surrounding margin
   - Wide excision: performed for larger areas of skin
   - Amputation: surgical removal of a limb

b. Chemotherapy
   - Recommended for when the cancer has metastasized
   - Not considered until stage III or IV
   - Uses toxins and drugs administered through an IV

c. Prevention
   - Try to avoid the sun between 10 A.M. to 4 P.M.
   - Use a broad spectrum sunscreen and wear clothing that protects from both UVA and UVB rays
   - Avoid tanning beds

d. Importance
   - 40-50% of Americans are diagnosed with skin cancer
   - More people are diagnosed with skin cancer than all other cancers combined
   - Utah has the highest rates of melanoma in the U.S. (most likely due to the high elevation)
Presentation Script

Slide 1: (Skin Cancer Health Education HOSA)

Avelyn: Hi everyone! Today we're going to talk to you about skin cancer and its prevalence in society.

Clara: Afterwards we will be (playing jeopardy based on these questions - for the jeopardy classes- and) taking a short assessment and when you finish you can grab a piece of candy.

Sylvia: So please pay try to pay attention and let us know what you think about it later.

Slide 2: What is Skin Cancer?

Avelyn: Skin cancer is the uncontrolled growth of abnormal skin cells. Skin cancer kills approximately 3 million Americans per year and its prevalence rate is growing.

Slide 3: Types of Skin Cancer

Avelyn: There are three main types of skin cancer: basal cell carcinoma, squamous cell carcinoma, and melanoma. Melanoma is the deadliest and kills about 10,000 Americans per year.

Slide 4: Descriptions

Avelyn: Next, we will explain the various stages of skin cancer and how to recognize it in the form of moles to make sure you can catch as soon as possible.

Slide 5: Stages of Skin Cancer
Sylvia: There are four stages of cancer. Stage 0 is when the carcinoma is in its original position, stage I is when the diameter has spread from its original position but is smaller than 2 cm. The cancer can then spread to stage II and grow bigger than 2 cm. After that it is considered stage III when it metastasizes to the lymph nodes. After this it can then spread to the major internal organs where it’s considered fatal.

**Slide 6: ABCDE’s of Skin Cancer**

Sylvia: Skin cancer is identified through the ABCDE’s. A stands for Asymmetry. B stands for Border, C stands for color, D stands for Diameter, and E stands for Evolving

**Slide 7: Surgery**

Clara: Different methods of treatment are used for skin cancer. Procedures are determined by the severity of the skin cancer. When the skin cancer is not too severe, simple excisions are used. Simple excisions are when the suspected area is removed with the surrounding margin. Then, a wide excision is performed for larger areas of skin. But when the skin cancer is so severe, almost deadly, amputation is used. Amputation is when a limb is surgically removed.

**Slide 8: Chemotherapy**

Clara: Chemotherapy is only recommended for when the cancer has metastasized, usually at Stage III or Stage IV. Chemotherapy uses toxins that are administered through an IV targeted towards the cancerous area.

**Slide 9: Prevention**

Clara: Try to avoid the sun between 10A.M. - 4P.M.
Sylvia: Use broad spectrum sunscreen and make sure to wear clothing that protects from UVB and UVA rays

Aelyn: Avoid tanning beds at all cost !!

Slide 10: Why Does This Matter?

Clara: 40-50% of Americans are diagnosed with skin cancer, affecting approximately 3 million Americans per year. More people are diagnosed with skin cancer than all other cancers combined. Utah has the highest rates of melanoma in the U.S. (most likely due to the high elevation)

All: We hope you enjoyed our presentation. Thank you !!
Lesson Evaluation Tools and Feedback

Contribution

Clara Tandar:

- Created Skin Cancer Powerpoint
- Researched data on skin cancer
- Contributed to portfolio
- Graded and entered data for skin cancer assessment

Sylvia Xi:

- Created Skin Cancer Jeopardy
- Acquired incentive
- Contributed to portfolio
- Graded and entered data for skin cancer assessment

Avelyn Kulsomphob:

- Created Skin Cancer Assessment and Answer Key
- Acquired incentive
- Contributed to portfolio
- Graded and entered data for skin cancer assessment
Skin Cancer Assessment Test and Answers

1. What is skin cancer?
   a. A medical condition in which patches of skin become rough and inflamed
   b. The uncontrolled growth of abnormal skin cells
   c. A skin disease marked by red, itchy, scaly patches
   d. Abnormal, uncontrolled growths or lesions that arise in the skin's basal cell

2. Approximately how many Americans are affected by skin cancer yearly?
   a. 1 million
   b. 2 million
   c. 3 million
   d. 4 million

3. What is Stage III of skin cancer described as?
   a. Abrasive and untreatable
   b. When the cancer has metastasized to the brain
   c. When the cancer has metastasized to the lymph nodes
   d. When the cancer has metastasized to the heart and lungs

4. What is A in the ABCDE’s of skin cancer?
   a. Abstraction
   b. Antigen
   c. Asymmetry
   d. Abnormality

5. What is a simple excision?
a. When only the spot is removed
b. When the spot is removed by radiation
c. When the skin cancer and a small margin of healthy tissue around it is cut out
d. When the suspected area is removed with surrounding margin

6. What is the most deadly form of skin cancer?

a. Melanoma
b. Basal Cell Cancer
c. Squamous Cell Skin Carcinoma
d. Merkel Cell Carcinoma

7. What are precaution(s) that minimize the risk of skin cancer?

a. Try to avoid the sun between 10 A.M. to 4 P.M.
b. Use a broad spectrum sunscreen and wear clothing that protects from both UVA and UVB rays
c. Avoid tanning beds
d. All of the Above

8. What are the three most common types of skin cancer?

a. Melanoma, cell carcinoma, and actinic keratoses
b. Cell carcinoma, squamous cell carcinoma, and basal cell carcinoma
c. Melanoma, basal cell carcinoma, squamous cell carcinoma
d. Actinic keratoses, cell carcinoma, basal cell carcinoma

9. Which state has the highest rates of melanoma in the U.S.?

a. New Hampshire
b. Texas

c. Utah

d. Minnesota

10. On a scale of 1-10 what would you rate your enjoyment of this presentation? ______
Results

No Jeopardy Scores in Secondary Data Group

No Jeopardy Scores in Initial Data Group
Results Analysis

After careful analysis of all data, the principle investigators concluded that while the jeopardy itself had no constructive results on the assessment scores; it provided a positive improvement on the overall moral of the students. As shown in the “Average Test Score for Jeopardy Data” and “Average Test Score for No Jeopardy Data” graphs, the scores only differed by 0.230303 points. In relation to the standard deviations of each graph, the jeopardy was not a significant factor in the overall test scores. However, in the future, health professionals may want to consider using the jeopardy to encourage young students to become engaged and learn about notable health concerns.

External Feedback

To whom it may concern,

Clara Tandar, Avelyn Kulsomphob, and Sylvia Xi did a presentation about skin cancer in two of my classrooms. Their presentation was well prepared, and I must say that I personally learned a lot from it. They were able to capture the students’ attention, and they had a little jeopardy game prepared at the end. The students thoroughly enjoyed that game, and participated in order to get prizes for having correct answers. Please feel free to contact me if you have any questions regarding their presentation.

Sincerely,

Laila Lamani

Laila.lamani@slcschools.org

(801) 578-8500 EXT: 426
References


"Skin Cancer Foundation." How to Choose the Right Sunscreen for Your Skin Type - SkinCancer.org, www.skincancer.org/prevention/sun-protection/sunscreen/choosing.

