



# Skin cancer and the effect it has on the darker skin individuals

By CFS students

# Hypothesis

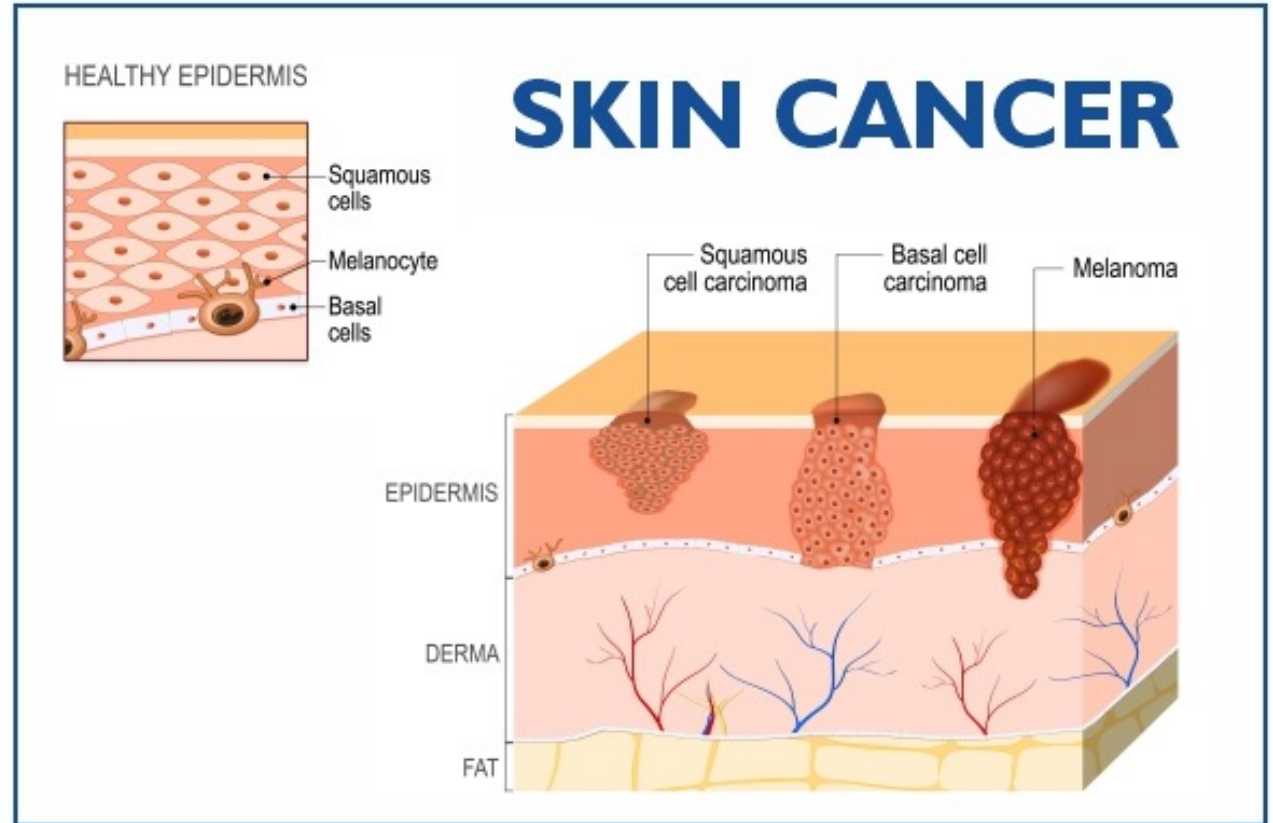
People with darker tone skin are less likely to wear sunscreen than those who are have paler skin tones. This leads to them having a higher mortality rate in skin cancer than the latter individuals.

# What is skin cancer?

Skin cancer is the uncontrolled growth of abnormal cells in the outermost layers of the skin, the epidermis. UV rays from the sun or tanning beds causing DNA damage triggers these mutations- this leads to skin cells rapidly reproducing and forming malignant tumours.

There are two variations of skin cancer:

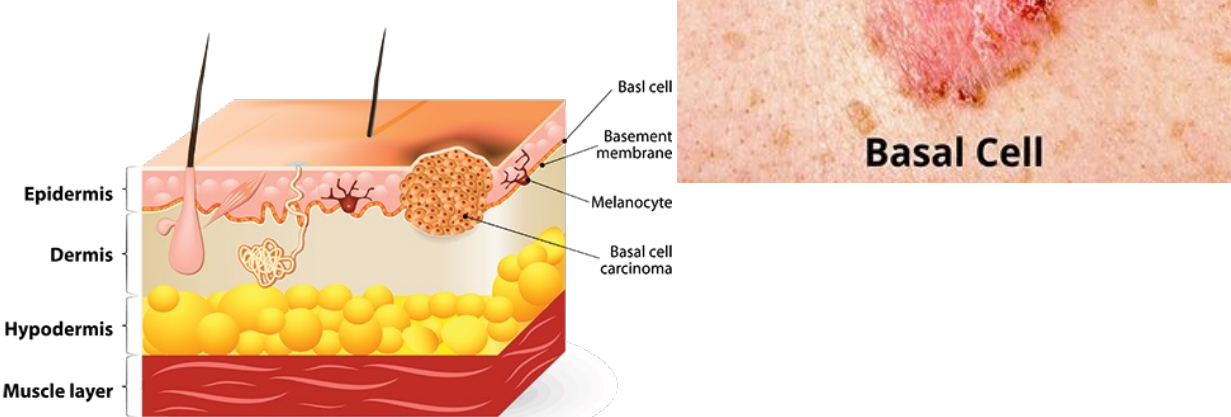
- **Non-melanoma**
- **Melanoma**



# Non-Melanoma

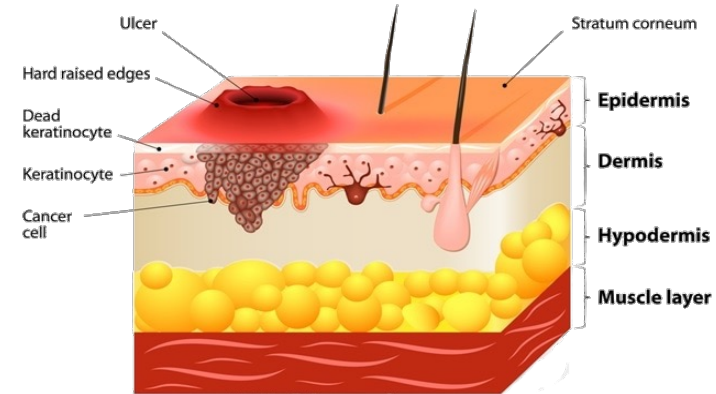
**Non-melanoma** cancers refers to the group of cancers that slowly develop in the upper layer of skin. The term *non-melanoma* is used to distinguish itself from the other group, melanoma which is more serious. The two most common types of non-melanoma is Basal-cell carcinoma and squamous cell carcinoma. These types are unlikely to spread.

## BASAL-CELL CARCINOMA



- Basal-cell carcinoma is also referred to as rodent ulcer.
- These start in the cells that line the bottom of the epidermis- the basal cells.
- These account for 75 of 100 cases in skin cancer.
- They usually appear as a small, shiny pink or pearly-white lump with a translucent / waxy appearance. It can also look like a red, scaly patch.
- Sometimes, some brown or black pigment within the patch.
- The lump slowly gets bigger and may become crusty, bleed or progress into a painless ulcer.

## Squamous-cell carcinoma

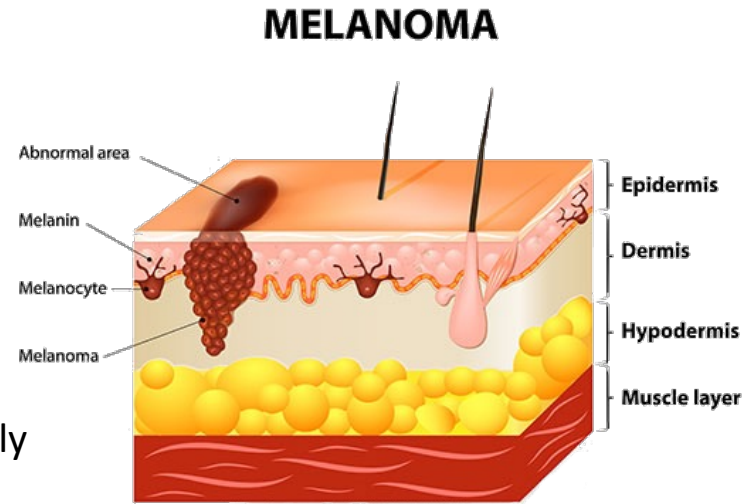


- These start in the middle of the epidermis layer of our skin- the squamous cells.
- These account for 20 out of 100 hundred cases in skin cancer.
- They usually appear as a firm pink lump with a rough / crusted surface. There can be a lot of surface scale and even can have a spiky horn sticking up from the surface.
- The lump often feels tender when touched, bleeds easily and may progress into an ulcer.



# Melanoma

This is a more serious form of skin cancer as it can spread to other parts of the body. This type of skin cancer is formed when healthy melanocytes mutate and grow abnormally, forming these cancerous cells.



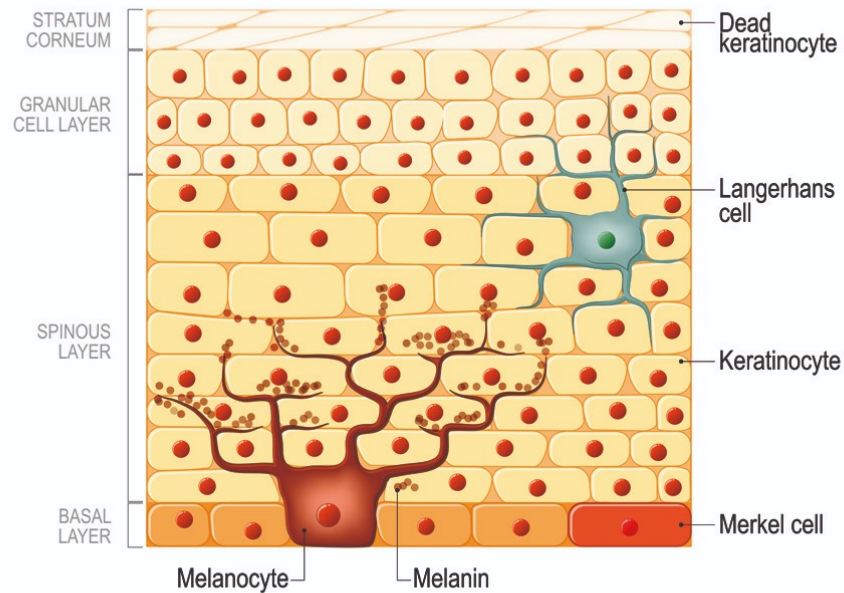
- Lentigo maligna melanomas most commonly affect older people, particularly those who have spent a lot of time outdoors.
- At the start they're flat and develop sideways in the surface layers of skin. They can gradually get bigger and may change shape.
- At later stages they can grow down into the deeper layers of the skin and form nodules.

- Superficial spreading melanoma are the most common type of melanoma in the UK.
- These are more common in people with pale skin and freckles, and considerably less common in people with **darker skin**.
- They primarily tend to grow outwards rather than downwards, so they do not pose a problem.
- If they grow downwards into the deeper layers of skin, they can spread to other parts of the body.



# The effect of your skin tone has on skin cancer

## EPIDERMIS



- The amount of melanin you have in your skin can increase the chances of you getting skin cancer.
- Melanin is a protective pigment that is located in the inner layers of the epidermis, next to the melanocytes. It protects our skin from UV rays by absorbing and redistributing light rays and protecting the nuclei of our cells. Lessening the change of damage that can lead to DNA damage. Having more melanin will lead you to have darker skin colour, eyes and hair.
- White people have less melanin than people of colour. Causing them white-skinned people are about 70 times more likely to develop skin cancer those with black skin. Asian individuals have, on average, two-fold more melanin than white people, while Africans have around three to six-fold more melanin than white people. This means that white people has less natural protection compared to people of colour, which can lead them to being diagnosed with skin cancer.



## How skin cancer appears in people of colour

The following pictures show some examples of what skin cancer can look like in darker skin individuals



Skin cancer in Asians: The most common sign of skin cancer in Asians is often a roundish, raised brown or black growth. Skin cancer also shows up in other ways, so be sure to check your skin carefully



Skin cancer in African Americans: Skin cancer often develops on parts of the body that get less sun like the bottom of the foot, lower leg, and palms. This cancer may also begin under a nail, around the anus, or on the genitals.

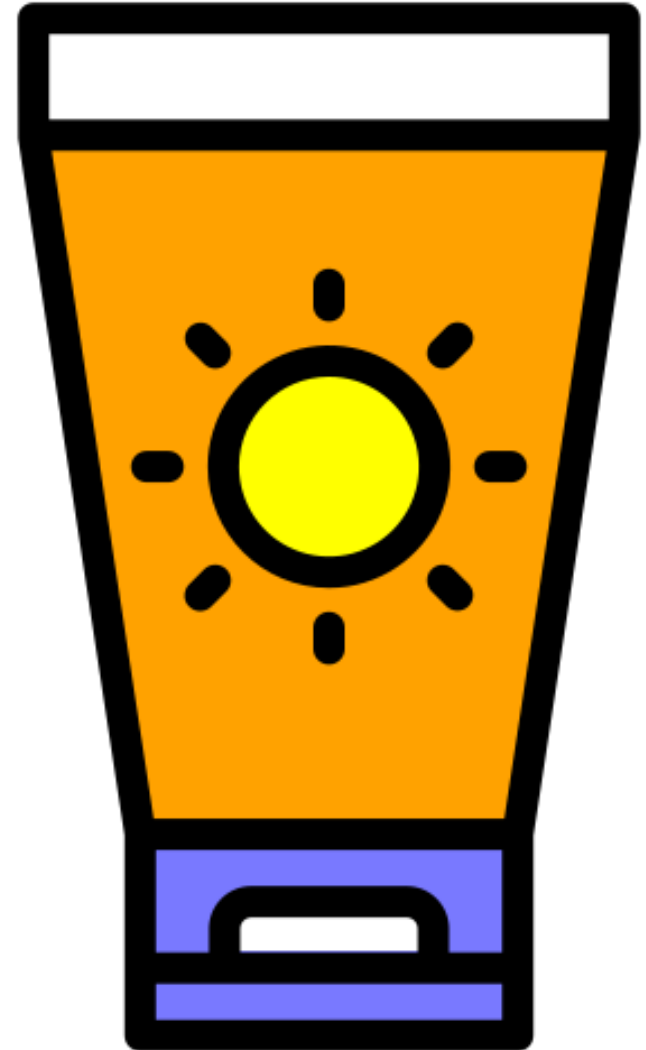


Skin cancer in Latinos: Skin cancer can appear on the skin in many ways. If you have a growth on your skin that is getting bigger, a patch of scaly skin, or a dark streak under or around a nail, make an appointment to see a dermatologist.

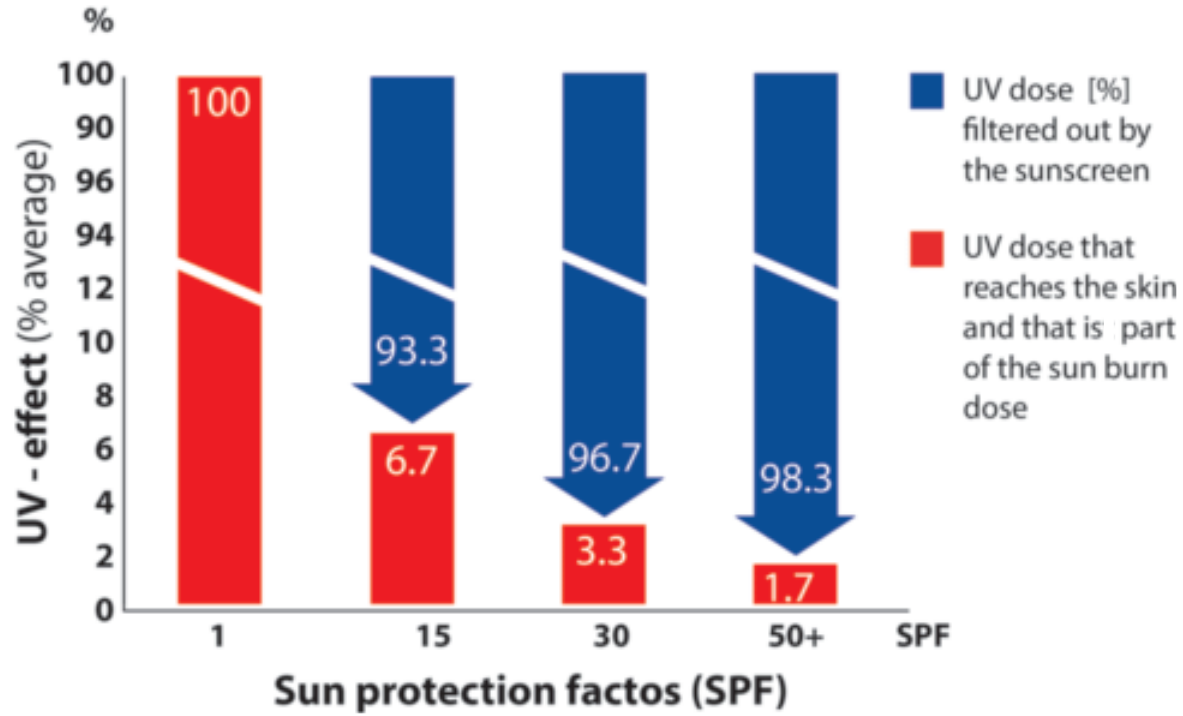
# What is Sunscreen and how does it work

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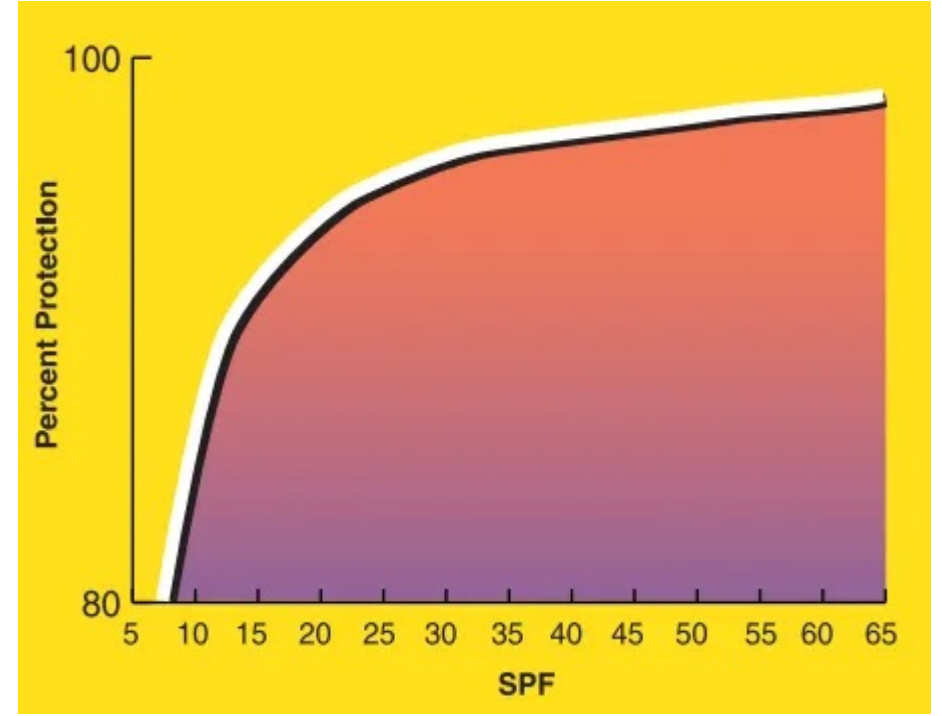
- Sunscreens are products that contain active ingredients that protect skin cells from the sun's ultraviolet radiation, including UVB (the rays that causes burning) and UVA (the rays that causes skin aging), in order to prevent skin damage that can lead to skin cancer.
- Sunscreens work by incorporating either chemical or physical active ingredients (or a combination of both) to protect skin against UV damage:
  - Physical sunscreen works as a barrier on top of your skin, reflecting the UV rays. These sunscreens usually include zinc oxide and titanium oxide
  - Chemical sunscreens absorb the sun rays. These sunscreens usually include oxybenzone and homosalate.
- The "SPF" stands for Sun Protection Factor and is followed by a number (i.e. 15, 30, 50, etc.) that indicates how long it would take the sun's UVB rays to burn skin when the product is applied as directed on the label versus how long it would take skin to burn without any SPF. For example, an SPF 50 indicates it would take 50 times longer for skin to burn during sun exposure when wearing the product than when not wearing SPF.







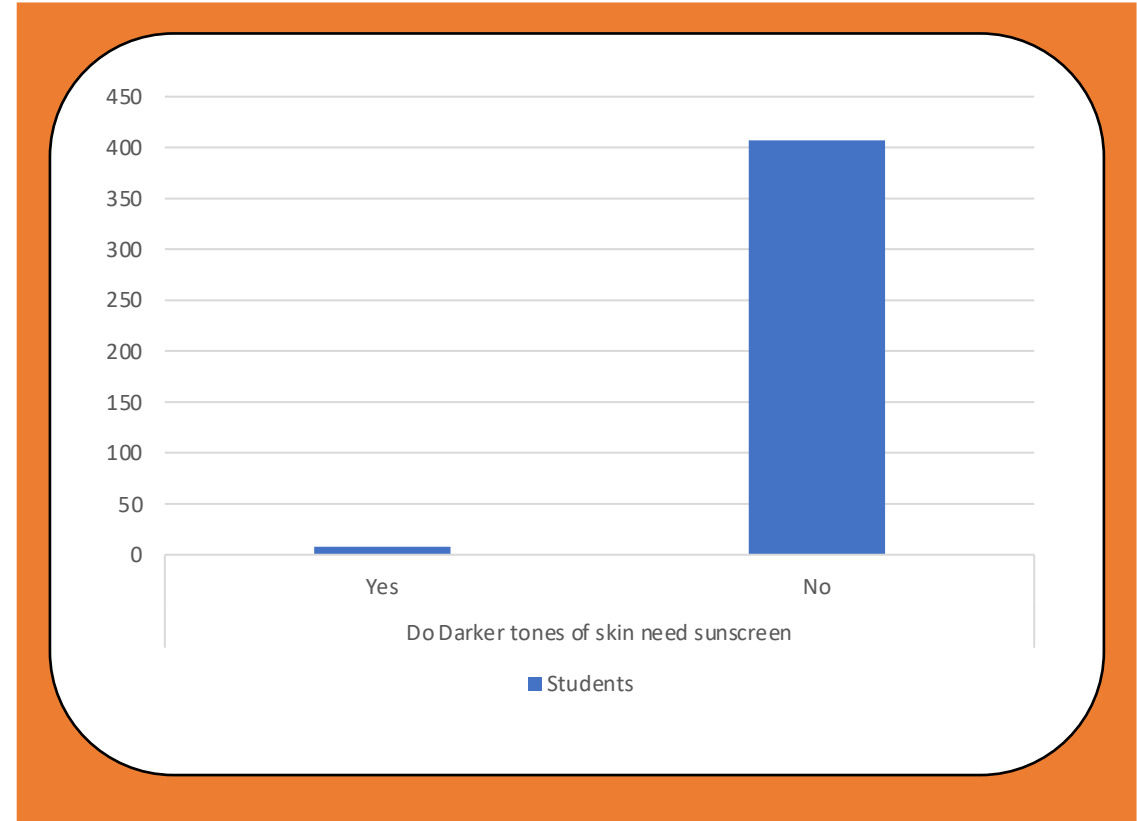
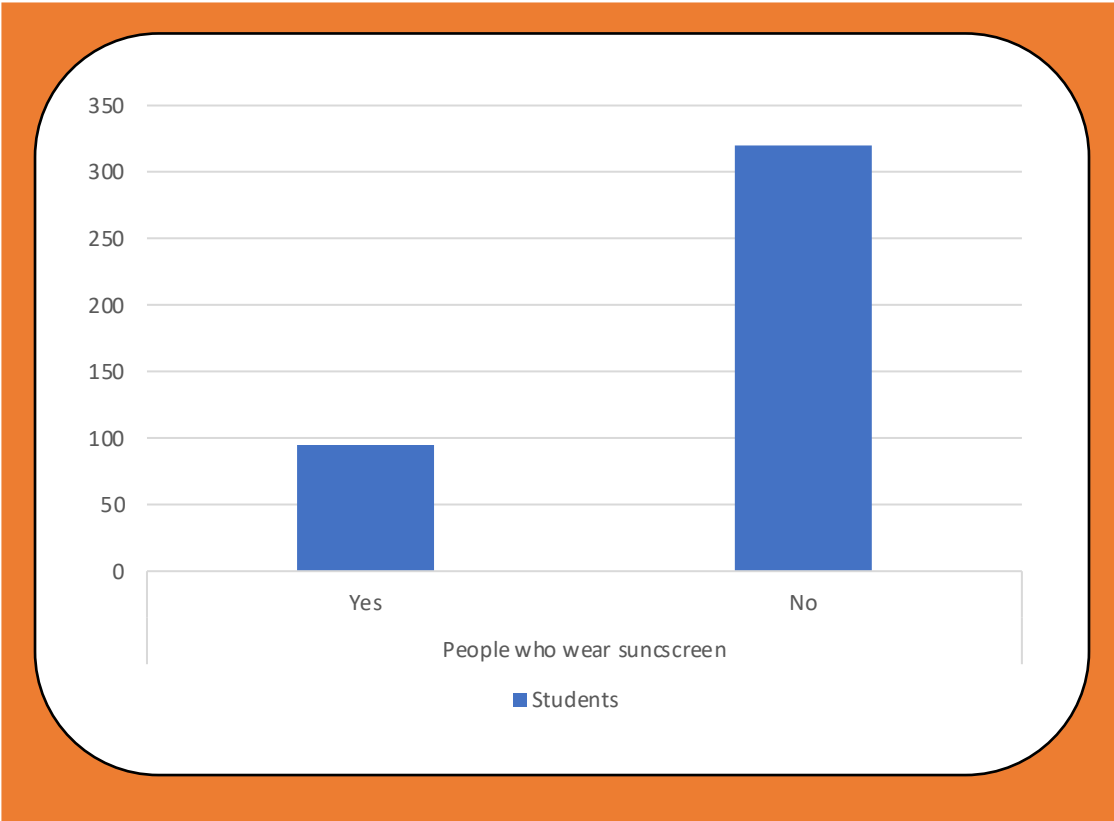
A figure from the study “Brazilian Consensus on Photoprotection” showing the relationship between sun protection factor (SPF) and ultraviolet (UV) effect 2014




Relationship between SPF and sun protection



We did our own survey with our entire school to ask them how often they apply sunscreen, and if they believe that people with darker skin tones need sunscreen. Below is the data shown:





Why is there a lack of awareness for darker skin group's skin cancer

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For health-care providers, there's often a lower index of suspicion for skin cancer in patients of color, because the chances of it are smaller. So, these patients may be less likely to get regular, full-body skin exams.

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Those with a higher melanin content have darker skin, this can lead to their cancerous symptoms blending in with the skin, meaning that they may have a misdiagnosis.



# *How can believing that darker skin individuals do not need sunscreen affect their survival rates of skin cancer?*

- Differences in survival rates may be accredited to skin cancers being diagnosed at a more advanced stage. Skin cancer prevention and screening practices historically have been lower among Hispanics, Blacks, and Asians. Late diagnosis can be deadly when the person has melanoma, a type of skin cancer that can spread quickly. Treatment for any type of skin cancer can be difficult in the late stages.
  - Late diagnosis can be deadly when the person has melanoma, a type of skin cancer that can spread quickly. Treatment for any type of skin cancer can be difficult in the late stages. . One study, for example, found an average five-year melanoma skin cancer survival rate of only 67% in Black people versus 92% in white people.
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# Conclusion

People with darker tone skin are less likely to wear sunscreen than those who are have paler skin tones. This does not mean they have higher rates of gaining skin cancer, but rather higher case of late stage cancer diagnosis.