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The Risk of Tanning Beds for Cosmetic Use

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Abstract

As the popularity of indoor tanning increases, the risk at which many people utilize this machine increases as well. A tanning bed is an apparatus that uses light bulbs to emit ultraviolet rays. Tanning beds can cause premature aging of the skin, damage to the skin, and skin cancer. The use of tanning beds in younger populations increases the chances of this population developing melanoma increases tremendously (Congressional, 2015). The beds can be horizontal for lying down, or upright that is used for standing. The use of tanning beds is a fairly new practice, and before its debut, sun tanning was used in its place to achieve the same cosmetic outcome. Some salons specialize in tanning beds and offer memberships and fitness gyms that have tanning beds for patron use. These establishments have been found to not properly educate members on the dangers of ultraviolet radiation from tanning beds and promote its use as a health benefit. Receiving a healthy amount of UV radiation is recommended to produce Vitamin D in the body; however, many lack the understanding of what would be considered a healthy amount of UV radiation. The substantial amount of evidence regarding the correlation between tanning beds and developing skin cancer has led to several steps taken forward to ban the use of tanning beds for minors. A study was done in 2009 to measure the perception of risk that women aged 16-29 had on tanning beds.

Introduction

The beauty practice of indoor tanning by use of a tanning bed is widely utilized among women and men. It offers a more convenient way to achieve glowing, bronzed skin without laying in the hot sun for hours. Some salons offer memberships to tan in a tanning bed and even some fitness gyms offer membership plans that include the use of a tanning bed in the facility. Fitness gyms are believed to be a facility to go to get healthy, so this poses a controversy and might lead people to think that it is healthy for regular use of a tanning bed. Although its convenience and results make indoor tanning seem desirable, it comes with a price.

There are two types of ultraviolet rays or UV rays, and they are UVA and UVB. A sunburn is caused by only the top layer of the epidermis

being penetrated by UVB rays. Tanned skin is the result of the skin meeting UVA rays. These UVA rays can reach the lower layers of the epidermis, and this causes a reaction in which the skin produces a pigment known as melanin. Melanocytes are the skin cells that produce melanin through a process known as melanogenesis. Melanogenesis is a melanin synthesis pathway that produces two different types of melanin. Pheomelanin is the first, which is yellow-red soluble and has no correlation to skin pigmentation. The second is eumelanin, which is brown-black. Eumelanin is directly related to the pigmentation of the skin and is the main type of melanin that provides the skin with protection from UV rays.

Melanin production by melanocytes is a defense mechanism that the skin uses to protect itself from damage from ultraviolet rays. The main use of melanin synthesis is UV light absorption and scattering, which is why it is considered a defense mechanism when the skin meets harmful UV rays (Cichorek, 2013). The pigment in the skin darkens in two steps. The first step is immediate, visually obvious, and occurs while exposed to UV radiation. The second step is a delayed tanning response that occurs hours after being exposed to UV radiation and it is the continual darkening of pigment. This means that the body's response to UV radiation lasts even after it is not exposed to UV.

Skin cancer, also known as melanoma, arises on the surface of the skin and grows lower into the skin until it reaches the deepest part of the skin. This type of skin cancer is aggressive and can spread to other parts of the body. Melanoma is a result of a genetic mutation in the DNA of a melanocyte. This mutation causes melanocytes to produce rapidly and uncontrollably.

There is a benefit to having ultraviolet radiation in low doses. UV radiation is a key component in vitamin D production in the human body. Vitamin D is an essential nutrient that can be produced through UV, which is commonly absorbed through sunlight. Receiving a slight amount of UV can be considered beneficial for overall health. The amount of light that one should be exposed to varies on several things, such as natural skin pigmentation.

Recent Progress

An estimate states that over one million people use an indoor tanning apparatus in a day in the United States (Madigan, 2016). Roughly 59% of that number is adolescents, which is a large concern for healthcare and science professions. The development of skin cancer is a process that can take up to decades, so to decrease this risk of development, the Food and Drug Administration passed a policy to prevent the use of tanning beds for minors in December 2015 (Commissioner, 2015).

A study done in 2009 by the World Health Organization found that tanning beds are carcinogens and ranked them next to arsenic and cigarettes. The legislation in 42 states has since passed a bill that bans minors from the use of tanning beds to ensure that they will not be exposed to ultraviolet radiation early on in adolescent life to then develop melanoma that will continue developing for decades into their life.

A study was done in 2022 to measure the perceptions that women aged 16-29 had about tanning beds. The goal of the study was to determine whether these women knew of the risks that came with tanning beds. These women had all used a tanning bed within the past year in the United States and already had the base knowledge that a tanning bed could cause cancer. For the study, a software platform was used to screen the women. The women gave their opinions on exercise equipment, tanning beds, and several other items. To avoid response bias, they were asked if they had used a tanning bed in the past year and if they answered 'yes', they were then asked a series of other questions about

their perception of the risk of using a tanning bed. The women were also shown a sample warning label that might be used on tanning beds. This label stated that tanning beds could cause cancer in bold letters.

Discussion

Of all the participants, 83% were aware of the correlation between skin cancer and the use of tanning beds, a majority responded that they would 'definitely stop' using tanning beds, and when asked which part of the label stood out most, the most frequent response was "tanning beds can cause cancer" (McGrath, 2022).

The overall goal of this survey was to create a warning label to go on a tanning bed (McGrath, 2022). The study was designed to determine what knowledge was lacking on the use of tanning beds for the sake of putting it on a warning label to educate users even further on the risk of indoor tanning.

Fitness gyms that offer tanning beds as part of membership are deceiving customers who utilize the gym for a healthy lifestyle. Those who are not familiar with the evidence of tanning beds being extremely harmful to the skin and dangerous to use. It was found through a study that only 7% of tanning salons accurately educated their members about the dangers of indoor tanning and ultraviolet rays, and 78% of tanning salons claimed to their members that a tanning bed offered health benefits (Madigan, 2016). The promotion and lack of education by the tanning salons and fitness gyms urged health organizations to alert citizens by putting out statements.

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