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*Review Article*

# Raising Awareness for Skin Cancer Prevention, Early Detection, and Healthy Sun Practices

Muhammad Akram[1], Urooj Rehman[2], Fahad Said Khan[3], Ho Soonmin[4]

[1]*Department of Eastern Medicine, Government College University, Faisalabad, Pakistan*
[2]*Department of Eastern Medicine, Jinnah University for Women, Karachi, Pakistan*
[3]*Department of Eastern Medicine, University of Poonch, Rawalakot, Azad Kashmir, Pakistan*
[4]*Faculty of Health and Life Sciences, INTI International University, Putra Nilai, Negeri Sembilan, Malaysia.*

[1]*Corresponding Author : makram_0451@hotmail.com*

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***Abstract -*** *Skin cancer has developed into one of the most common cancers globally over the past few decades. The sooner researchers can recognize skin cells at risk of damage from harmful UV rays, the better humans can protect against the disease. While it accounts for a smaller percentage of cases, the deadliness of melanoma, the deadliest form of skin cancer, is to blame for most skin cancer-related deaths. The number one risk factor for skin cancer is too much sun, especially sunburns that a person may have experienced in their lifetime. Sunburn, especially in children, significantly increases the risk of skin cancer in later life. An increased risk is also present among those with fair skin, a weakened immune system, and a family history of skin cancer. People who work outdoors or enjoy outdoor activities that expose them to higher amounts of sunlight are also at increased risk. Prevention methods center around sun protection. As it is often curable in its early stages, early detection, self-examinations, and regular visits to the dermatologist are key to better outcomes. You should have an education and awareness campaign when targeting skin cancer now. Humans can save lives by spreading the word about the dangers of UV radiation, the importance of skin cancer prevention, and the need for early detection. Doctors recommend the ABCDE rule when it comes to identifying melanoma: Asymmetry, uneven borders, change in color, diameters greater than the length of a pencil eraser, and evolution in size. With the increasing incidence of skin cancers globally, decreasing mortality is dependent on early detection as well as prevention. Even as public health campaigns have worked to direct attention to prevention and education, research into new treatments, such as immunotherapy and targeted medicines, offers hope for advanced patients. Because early recognition and prevention remain the best weapons against this preventable and common disease, the more the public knows about skin cancer, the healthier the public will be.*

***Keywords -*** *Medicine, Cancer, Basal Cell Carcinoma, Human and disease, Fair skin, Skin health education.*

## 1. Introduction

Cancer of the skin begins as cells that grow out of control on the skin. The cells can invade and consume healthy body tissue. Sometimes cells break away and can move to other parts of the body [1]. There are many types of skin cancer. The most prevalent skin cancer types are basal and squamous cell carcinomas. Although these are most common, they can often be treated. Melanoma is the deadliest type of skin cancer. It is also more likely to spread, so it is more difficult to cure effectively [2]. Most skin cancers occur on the skin that gets the most sun. It is believed that much of the light that comes from the sun can lead to most skin cancers. You can also decrease your risk of skin cancer by covering up your skin with clothing to avoid the sun [3]. Some skin cancers develop on skin that is not usually exposed to the sun. This presumably means that something else is responsible for these cancers. To diminish your risk of developing these types of skin cancers, monitor your skin regularly for any alterations [4]. In this work, skin cancer will be described. Sun protection will be highlighted. Artificial intelligence treatment for skin diseases will also be reported.

## 2. Literature Review

Cancer is a condition where certain cells in the body grow uncontrollably and spread to other regions of the body. Cancer has the potential to begin in almost any location within the human body, composed of trillions of cells [5]. Typically, human cells develop and reproduce via a process known as cell division to generate the new cells as required by the body. As cells age or get harmed, they perish, and new cells replace them. Different varieties of sunscreens have different chemicals that provide different forms of UV protection. UV rays are repelled from the skin by a physical barrier created by ingredients like titanium dioxide and zinc oxide [6]. Sun

Protection Factor (SPF) is a crucial topic when advising patients on how to prevent skin cancer. The SPF value indicates how much protection against sunburn sunscreen provides in comparison to not using any sunscreen at all. For instance, it would take 30 times as long (300 minutes) for a patient's skin to burn if they properly applied SPF 30 sunscreen, when it would ordinarily take 10 minutes.

It is advised that people wear sunscreen with a greater water resistance factor and reapply it at least every 90 minutes. This is particularly valid while engaging in water-based activities [7]. More people get skin cancer than any other kind of cancer combined. Melanoma and non-melanoma skin cancers are predicted to claim the lives of 30,000 individuals in 2018. To lower the risk of invasive skin malignancies, patients should have their skin examined annually; however, if the patient is at a higher risk, the examination may be performed more regularly.

Immunosuppression indicates weakening or suppression of the body's immune system, resulting in decreased capacity to resist infections and other diseases. Several factors cause immune suppression, such as medication, medical illness, or even various conditions of life [8]. Immunosuppressants can effectively treat certain kinds of autoimmune disease or make it less likely that your body will reject transplanted organs or stem cells. But there's the potential for side effects or complications. Your immune system shields you against intruders such as bacteria , viruses or cancer. Suppose you are taking immunosuppressants for some reason, such as an autoimmune disorder or recent organ transplant. In that case, your immune system will not work as it should to wipe out harmful invaders. Your doctor may refer to this as being immunocompromised. That raises your risk for life-threatening infections.

Immune suppression is among the factors that put patients at higher risk. Smoking and having a history of Human Immunodeficiency Virus (HIV), human papillomavirus, or polyomavirus infections are additional risk factors. Numerous drugs are known to make people more photosensitive, which raises the chance of developing skin cancer. Physicians should intentionally advise patients on these drugs to wear sunscreen and stay out of the sun. Adjustments or cuts back on steroid use may help reduce immune suppression overall, which may lower the risk [9]. Older males of Italian or Eastern European Jewish heritage or younger men residing in Africa are also at increased risk for Kaposi's sarcoma. When exposed to sunlight, melanocytes increase the production of melanin, which helps shield the skin's deeper layers.

Ultraviolet (UV) radiation is a type of invisible energy emitted by the sun and a few man-made sources. Many people nowadays do better due diligence regarding their exposure to ultraviolet radiation, especially given that even though it helps produce vitamin D, unreasonable exposure will give you sunburn [10], premature aging, or skin cancer. In terms of UV-A, the wavelengths range between 315 and 400 nm. It penetrates deep into the skin and so aids in causing both early aging and some skin cancers. In terms of UV-B, its range is from 280 to 315 nm. This is more energetic than UVA, and the principal cause of sunburn and skin cancers. In terms of UV-C, the wavelengths range from 100 to 280 nm. Much of this is absorbed by the Earth's atmosphere, and relatively little arrives at the surface in a significant amount.

The type of skin cancer and the available treatments depend on where it first appears. UV radiation from sunshine and tanning bed lights is mostly to blame for the damage done to Deoxyribonucleic Acid (DNA) [11]. Direct exposure to sunlight is among the most intense threats to human skin. Solar radiation comprises a spectrum of electromagnetic waves, including ultraviolet light.

## 3. Skin Cancer

This suggests that other variables, including exposure to toxins or a disease that compromises the immune system, may raise the chance of developing skin cancer. Skin cancer may strike anybody, regardless of skin color [12]. On the other hand, skin with less pigment (melanin) offers less defense against damaging UV rays. Compared to those with darker skin, those with blonde or red hair, light-colored eyes, and a tendency to freckle or sunburn are far more likely to acquire skin cancer [13].

Another risk factor is adult sunburn, which means much sun exposure. Skin cancer may strike anyone who spends a lot of time in the sun, particularly if they do not wear clothes or sunscreen [14]. The skin's lesional reaction to too much UV light is tanning. Living in a warm, sunny climate exposes humans to more sunlight than living in a cooler one. Living at higher elevations is exposed to more radiation since the sunshine is stronger there [15]. Skin cancer is more likely to strike those with many moles or dysplastic nevi, which are abnormal moles. These irregularly shaped atypical moles, which are often bigger than normal moles, are more prone to more likely to get cancer than others [16].

One of UVR's most critical short-term (acute) effects is the generation of photodamage in DNA. UVA and UVB express distinct physiological characteristics of their effects on the skin. UVB (280-320 nm) is more cytotoxic and mutagenic than UVA and a conservative estimate is that three to four orders of magnitude are more effective per unit physical dose than UVA irradiance for DNA photodamage, erythema, tanning and skin cancer risk in the murine models with evidence for a steeper "biologic" action spectrum [17]. However, UVA, which, unlike UVB, is not blocked by window glass, can penetrate more deeply and go into the dermis. It is the main cause of 50% of UVA radiation coming from the shade. While DNA (especially DNA in the skin) directly absorbs UVB, causing structural damage to DNA

bases, UVA mainly causes indirect effects on DNA, mediated by reactive oxygen intermediates, which can lead to single-strand breaks in DNA and in DNA–protein crosslinks [18]. UVR at 245-290 nm is efficiently absorbed by DNA, providing direct evidence for UVB as a principal mutagen.

Actinic keratoses predominantly occur on the sun-exposed areas of the body, especially in older people who have had years of sunlight. Most actinic keratoses are found on such areas of the body as the face, shoulders or scapula, forearms and hands [19]. Actinic keratosis is a disease with its own set of independent risk factors for development. With advancing age, actinic keratosis has become an increasing health problem in older people. This is due to a lifetime of high cumulative exposure to the sun and inadequate protection measures. In terms of the male gender factor, the prevalence of actinic keratosis is higher in men than in women [20].

People with light or pale skin, such as Scots or Irish people, have less Melanin pigment in their skin. This means they are easily sunburned, and UV radiation can cause more damage to their skin tissue. Physical characteristics of such people might be red or blonde hair and grey or blue eyes [21]. Countries that are nearer the equator generally have higher rates of Actinic keratoses. For instance, the prevalence of actinic keratosis in Australia is close to 60%, at least approximately, because it has its position on the equator to thank for that (almost). However, the prevalence of actinic keratosis in the United States is around 20%. So, it can only be considered a "rare" condition.

Actinic keratosis is a kind of skin lesion that might raise the risk of skin cancer [22]. Brown to dark pink, these precancerous skin growths typically show up as rough, scaly areas. Light-skinned people with sun-damaged skin are most likely to have them on their hands, face, and head [23]. Skin cancer is more common among those with compromised immune systems. This includes persons on immunosuppressive drugs following an organ transplant as well as those living with HIV/AIDS [24].

## 4. Basal Cell Carcinoma

The most common cancer in humans is Basal Cell Carcinoma (BCC), which has an increasing incidence rate around the world. The ratio of basal cell carcinoma in men is usually higher than in women. The prevalence of basal cell carcinoma is greater in regions with more UV exposure at higher or lower latitudes [25]. It was noted that the most prevalent predictor is the history of Squamous Cell Carcinoma (SCC). The “old patients” are more than ten times as likely to develop a second Basal cell carcinoma than patients who have not developed a non-melanoma skin cancer. In the past 30 years, estimated incidence rates increased by 20 to 80%. It was noticed that patient age is considered another factor [26] that affects incidence rates for Basal cell carcinoma as well; however, the median age for diagnosis is 68 years. Mortality from Basal cell carcinoma is rare and is limited to immunosuppressed patients. Metastatic Basal cell carcinoma (1%) would be more likely through tumours with aggressive histopathologic features. If Basal cell carcinoma did metastasize, it spread to nearby lymph nodes, bones, lungs and skin [27]. The median age at death is not as young as for squamous cell carcinoma; the age-castrate mortality rate is 0.12/100,000. The risk of mortality is associated with older age, male sex (2-fold higher than in females), and a genotype of white race.

The usual pattern seen in basal cell carcinoma consists of islands or nests of basaloid cells, with peripheral palisading and haphazard arrangement in the centers of the islands. These small pleomorphic cells present with a basophilic nucleus without a visible nucleolus and scant cytoplasm [28]. A cleft or retraction artefact is typically evident on paraffin sections between the tumour and the surrounding stroma. The tumour and the stroma outside the tumour may have mucin deposition. Mitoses are also occasionally observed. Perineural spread [29], also called perineural invasion, may be a sign of aggressive disease. Basal cells overproduce, leading to lesions or lumps (tumours) on the epidermis, the skin's outermost layer [30]. Skin cancer can spread slowly and spread to deeper tissues, including muscle, bone, and cartilage, if basal cell carcinoma is left untreated [31]. Bleeding and infection may result from the basal cell carcinoma becoming uncomfortable and ulcerating. Rarely, basal cell carcinoma may spread to other body areas and result in potentially fatal adverse effects [32]. Two drugs have been authorized by the Food and Drug Administration (FDA). Those who are not suitable candidates for radiation treatment or surgery may be treated with these drugs.

The Hedgehog Pathway Inhibitor (HPI), such as vismodegib and sonidegib, is known to cause multiple common adverse effects, including muscle spasm, alopecia, dysgeusia, and weight loss [33]. Other less frequent side effects are nausea, diarrhoea, tiredness, and decreased appetite. Muscle effects, including rhabdomyolysis, can be severe and cause kidney failure. These toxicities are usually mild and treatable; however, they can influence quality of life and sometimes may result in cessation of treatment [34].

Muscle cramps, taste changes, and hair loss are the most frequent adverse effects of vismodegib and sonidegib. Although melanoma is less frequent than BCC or SCC, if it is not identified and treated promptly [35], it can spread swiftly throughout the body. Skin cancer is not the same as an actinic keratosis. Actinic keratosis is epidermal cell growth brought on by extended sun exposure [36]. Although this disease is benign and not malignant, it has the potential to progress to squamous cell carcinoma, a kind of skin cancer. The skin of the head, neck, arms, legs, and the upper parts of the ears and lips are the areas most frequently affected by actinic keratoses [37].

## 5. Sun Protection

There are many benefits to sun protection, particularly in the form of sunscreen, such as helping to avoid sunburns, skin cancer, and premature aging [38], and maintaining an even skin tone. It can also cut down on inflammation, protect against the sun sensitivity the drugs can cause and prevent some skin conditions from flaring up. The thinning of the ozone layer has caused a reduction in the capability of our atmosphere to shield us from the sun's harmful ultraviolet rays. A little bit of sun exposure is enjoyable, but too much is harmful [39]. Many individuals do not realize that skin cancer is the most preventable type of cancer, yet it is also the most prevalent in the United States. Each year, more than 3.5 million new cases of skin cancer are diagnosed.

Although it feels pleasant and supports life, the sun may be the worst thing for skin. Even while every sunburn raises a chance of developing skin cancer, issues do not only arise on special occasions like baseball games or beach outings. However, no sun protection technique will completely shield [40]. For that reason, researchers put up this compilation of advice. Including as many of these measures as you can into your daily routine and making them a habit wherever you go is the greatest way to get gorgeous, healthy skin throughout the year.

An excellent defense against the sun's Ultraviolet (UV) radiation is clothing [41]. Unlike sunscreen, it maintains its protection throughout time without fading. Additionally, a lot of modern textiles provide breathability and advanced protection. Cover your skin when you are in the sun. Some clothes offer more protection against UV. And covering up is not a barrier to all UV rays. Where there is light that can get through the fabric, so can UV rays. Shirts with long sleeves, long pants and long skirts cover the most amount of skin and offer the most protection. In general, darker colors offer increased protection compared to their lighter counterparts. Wear tightly woven clothing , making it easier to protect yourself than loosely woven clothing. It is usually better to have a dry cloth than a wet one for protection.

You can purchase clothing that's lightweight, comfortable and UV-ray-protective when wet. The fabric used for these items is typically more tightly woven, with some carrying special coatings to absorb UV rays. Sun-protective clothing may have a tag with a UV protection factor number (the level of protection the garment provides from the sun's UV rays on a scale from 15 to 50+). The higher the UPF, the greater the protection against UV radiation. Healthy, normal skin (Figure 1) is properly regulated and balanced, not too oily or dry. It is not overly oily or overly dry and usually has little to no visible skin issues like breakouts or redness. It is a much broader term, so any cancer that comes from anything to do with skin, not necessarily the melanocytes, is considered skin cancer or a tumor area. They are caused by the growth of abnormal cells that can spread to other parts of the body. It happens when cells in the skin grow too much, causing cancerous tumours to develop.

When selecting sunglasses, prioritise UV protection, consider the lens color and tint according to your activities and ensure the frame fits your face shape and lifestyle. Select sunglasses according to your lifestyle, whether for sports, driving or everyday use. It was noted that trying different styles and colors was considered an important step. Sunglasses must be comfortable while wearing. In addition, some mirroring sunglasses are made of spaced layers or gel, which will cause a feeling of pressing on the nose or ears and sometimes, even leave red imprints when you wear them. Sunglasses must fit your nose and ears and feel comfortable. Oversized or wraparound shapes offer more coverage and protection. To protect the eyes and the surrounding skin, put on sunglasses that filter UV rays [42]. Check the labels of garments, caps, and textiles for UPF or UV protection factors. The percentage of UV radiation from the sun that may pass through the cloth. For instance, just 1/50 of the UV rays may reach the skin via a garment with the marking UPF 50.

Sun Protection Factor (SPF) is calculated based on UVB protection because that is the radiation that burns skin and can cause skin cancer and damage. If you would burn in 10 minutes, you could stay in the sun 15 times longer if you applied an SPF 15 sunscreen; that is, 150 minutes (15 times 10 minutes). This is an approximate number, and it varies greatly depending on the skin type, intensity of sunlight, and the quantity of sunscreen that is applied. SPF reflects the amount of protection the product offers against UVB exposure, regardless of time. For optimal protection conditions, a minimum SPF of 15 should be used and reapplication every 2 hours.

Sunscreen is also necessary because any clothes expose some skin [43]. Remember to use it on your hands, particularly after cleaning them. Sun protection factor is referred to as SPF. The figure indicates how long it would take for UVB radiation from the sun to cause redness on the skin. Therefore, if you follow the directions on an SPF 30 product (applying it liberally and generously and then reapplying it after two hours or after perspiring or swimming). Compared to not wearing sunscreen, it will take thirty times longer to burn.

A sunscreen label that reads "broad spectrum" means that it contains chemicals that provide efficient protection from UVA and UVB radiation [44]. Sunscreens can be branded as water-resistant for 40 or 80 minutes, but they cannot be said to be waterproof. UVA rays can also enter via buses, trains, and aircraft windows. Because of this, skin cancer is more common in airline pilots, crew members, and even regular passengers than in the general population. It is easy to avoid tanning beds at all costs. Even a single indoor tanning session raises the risk of melanoma and other forms of skin cancer.

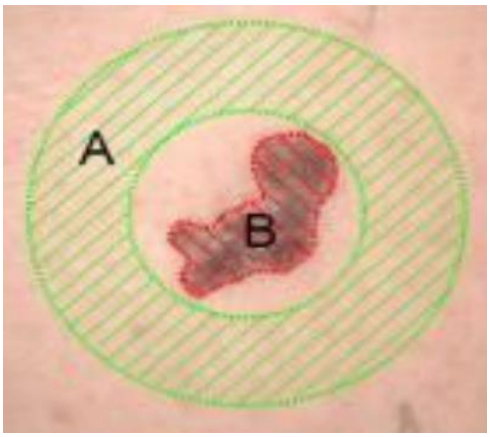


**Fig. 1 Healthy normal skin (A), and tumor area (B)**

## 6. Fair Skin

Vulnerable individuals are continuously pressured by market forces to undergo unnecessary appearance-altering procedures. Three factors determine facial appeal in biologically based beauty standards: sexual dimorphism, symmetry, and average. However, there are six primary characteristics that are globally associated with attractiveness: symmetry, sexual dimorphism, averageness, perceived health, youth, and body shape. These traits suggest fertility and youth. More recent studies on male attractiveness have shown that people find feminine male looks more appealing.

On the other hand, negative attributes and viewpoints like violence, dominance, coldness, and dishonesty are linked to more masculine facial features. The brain's reward regions are activated by attractive faces, and smiling intensifies facial attractiveness by enhancing pleasant responses. Research has indicated that facial beauty is influenced by neoteny [45].

It is thought that since curvaceous women have greater amounts of specific female hormones, they are more fertile than other women.

In contrast to individuals with darker skin tones, those with fair skin have a lower melanin content [46]. Melanin aids in giving skin its color while also shielding it from sunburn and harm. Melanin is a dark pigment that gives human and animal skin, hair and eyes their color. It is made by a kind of cell called melanocytes. These features are darker in individuals with more melanin, resulting in darker skin, hair, and eyes. Your body makes more melanin when you spend time outside in the sun.

It soaks up light from UV rays so that the radiation can be repurposed toward the skin's surface layers. It also guards your cells' genetic material from damage by harmful UV rays. But remember, melanin alone is not going to save your skin from sun damage. That is why it is so important to wear sunscreen and wear clothing that will help protect you from the sun's rays anytime you are outside.

## 7. Skin Health Education

Skin health education concentrates on understanding skin's well-being, preserving it from damage, and controlling common skin diseases. It stresses proper skin care routines, sunscreen, and when hard-to-moderate, call it a day on upcoming skin disorders. When the sun is at its strongest in the day, you must stay in the shade. People become bronze in the sun [47]. The reason is that UV rays cause skin to produce more melanin, which darkens the skin. As old skin cells die and new ones take their place.

Apply at least 30 SPF of broad-spectrum sunscreen, about the size of a palm. Avoid being in the sun from 10 am to 5 pm. The sun's Ultraviolet (UV) rays are at their highest during this time. Put on protective gear. Wear long sleeves, long trousers, and hats with wide brims to cover the skin. Dark clothing offers greater protection than light clothing. UV rays are blocked by some sun protective apparel [48].

Another option is laundry additives that provide additional UV protection for a specific number of washes. In addition to making wrinkles more noticeable, smoking ages the skin. The skin becomes duller because of the decreased blood supply. Furthermore, wrinkles might be influenced by people's repeated facial expressions when smoking. These facial gestures include squinting to escape the smoke and pursing the lips when breathing it [49]. Limit the amount of time spent in the bath. Some experts recommend bathing for no more than five minutes at a time. Instead of using hot water, use warm water. Avoid using powerful soaps. Oil on the skin can be eliminated using harsh cleansers and detergents. Instead, use mild cleaners [50].

After taking a bath, it is best to shave when the skin is still moist. Make use of a sharp, clean razor. Instead of cutting against the direction hair grows, shave with it. And after every blade passes, rinse the razor. Use a towel or pat dry skin after bathing or washing to retain some moisture. According to certain research, a diet high in refined carbs and deficient in nutrients may hasten aging [51].

A dermatologist is a medical professional who focuses on treating illnesses and disorders of the skin. Following a rigorous medical education and residency, dermatologists are certified by the American Board of Dermatology. They cure it all, from mild skin rashes like hives to more serious ones like psoriasis or eczema. Dermatologists can differentiate between illnesses with identical symptoms since they are skilled diagnosticians. Many doctors nowadays are also skilled in cosmetic dermatology operations, which assist in enhancing the way skin looks with the client's age [52].

## 8. Treatment of Basal Cell Carcinomas

Not all Basal Cell Carcinomas (BCCs) are treated with surgery, either painful and complete or involving what amounts to scrapings. Some forms of BCC may respond to

medical therapy or radiation treatment instead. Thus, the range of therapies includes Mohs Micrographic Surgery (MMS), standard surgical excision, Electrosurgery and Curettage (EDC), radiation, photodynamic therapy, cryosurgery, topical treatments and systemic agents such as Vismodegib. Recurrence rates were reported, such as Mohs (1%), simpler surgical resection (10%), electrodesiccation and curettage (7%), radiation (8.7%) and cryosurgery (7.5%).

Mohs surgery boasts a high cure rate and the best long-term results. In treating high-risk BCCs and recurrent BCCs, MMS is the gold standard because of its higher cure rate and its advantages for preserving normal tissue. Traditional methods, with a low cure rate and high recurrence rates, do not compare well with this at all. The high cure rate is due to examining 100% of all tissue margins locally rather than just more than 1% outwards towards the peripheral and deep margins using standard vertical sectioning. It is possible by just shaving away areas where the perimeters come back positive that the wound size is minimized, not only ceasing further disfigurement but also delivering a superior cosmetic result.

Radiation therapy is a primary alternative for treating patients with BCC or Squamous Cell Carcinoma (SCC) in whom surgery is contraindicated. It can also be used as supplementary therapy for basal cell carcinoma when additional surgery might mean sacrificing major nerves or other essential structures, or if there is an invasion along a nerve by cancer cells. The difficulty with radiation therapy lies in its expense, in some instances of ruined cosmesis, the lengthy course of treatment (15 to 30 visits), and the risk of future skin cancers increasing. Moreover, scars will tend to get worse with time after radiation therapy, while scars of surgical procedures improve over time.

In terms of cryosurgery, it involves freezing liquid nitrogen onto the tumor and the surrounding skin for margin control. If a probe is used, it is inserted at the lateral end of the tumor, and its position is adjusted so that its tip just underlies the tumor volume. Liquid nitrogen is then applied, and the application is continued until the temperature of -60 degrees Celsius is achieved. In real terms, temperature is seldom utilized in this procedure. The procedure is suitable for people who are averse to aggressive surgery. It is also relatively rapid. Afterwards, the region of treatment may be swollen and sore. Cryosurgery can trigger hypertrophic scarring and permanent changes in pigment.

In terms of topical therapy, several substances, such as cream and topical 5-fluorouracil, were used. Both topical treatments are good options for patients with multiple superficial BCCs or patients who are unsuitable for surgery. Application site reactions are common and include tenderness, pruritus, itching, erythema, discomfort, swelling, hypopigmentation, hyperpigmentation, crusting, and bleeding. Another shortcoming is that no histological evidence can be furnished to indicate the tumor has been completely removed after treatment.

## 9. Artificial Intelligence: Clinical Applications

Artificial intelligence-based software could enhance primary care by helping screen for skin cancer and facilitating referrals to dermatologists [53]. Referral from primary care doctors to tele-dermatology consultations was utilized to train a model that achieved a top-3 accuracy of 93% and specificity of 83% based on 26 skin conditions that constitute 80% of consultations in primary care. It was equivalent to the dermatologist level but outperformed the primary care physician and nurse practitioner level [54]. Such a model could make it likely to support the primary care provider in diagnosing patients with more precision and a wider differential diagnosis [55].

Models that predict an individual's risk of developing melanoma and non-melanoma skin cancer have been created from personal health data such as Electronic Health Records (EHRs) or gene sequencing data. While AI models have shown potential in identifying high-risk patients in skin cancer screening [56]. It is limited by the heterogeneity of the predictive factors, such as different modalities of assessments and a lack of validation. Moreover, EHRs often miss some important risk factors of skin cancer (exposure to UV light and familial history). Also, omitting this information might decrease efficiency.

The Whole Slide Imaging (WSI) has been validated for several applications in the field of pathology since it was first proposed nearly 20 years ago. The recent US FDA approval of a WSI system for primary surgical pathology diagnosis has enabled broader adoption and implementation of this technology in routine pathology practice. Ongoing technical progress in digital scanners, image visualization approaches, and the combination with algorithms from artificial intelligence creates chances of new findings. It has various advantages like accessibility on the internet, no need for physical storage, etc., eliminating the risk of decay or loss of stain quality, and breakage of slides.

There are several ways in which whole slide imaging can be used to provide greater support for dermatopathologists, and, potentially, artificial intelligence could be helpful in this sense, including in skin cancer diagnosis [57]. Of the artificial intelligence models trained to diagnose melanoma from digitized slides, two models performed similarly to pathologists in a test set [58]. These models were limited in that they were provided with only a small section of a single Hematoxylin And Eosin (H&E) stained slide. Conversely, pathologists are at liberty to use additional information such as immunohistochemistry or relevant patient information [59]. However, adding patient information, such as age, sex, and lesion site, into the Convolutional Neural Networks

(CNN) models did not enhance the performance. A limitation of the use of AI for dermatopathology is the unstable predictions when a model is presented with cases that are not like those used to train it. Skin cancer detection based on CNNs is emerging, providing automated, accurate, and low-cost diagnostic methods. CNNs perform well in analyzing dermoscopic images to detect and classify skin lesions, sometimes outperforming human dermatologists in terms of accuracy and efficiency. Attaining high accuracy for skin cancer detection, they significantly outperform traditional methods as well and form a useful tool for dermatologists. The point of augmented intelligence is to deploy the best principles established in augmented intelligence and service research to advance cognitive performance. Such improvement runs the gamut from learning and decision making to brand-new experiences. It is a model that seeks to enhance human wisdom as opposed to replacing it. Augmented intelligence is a model that focuses on humans rather than the computing element. Using it to assist humans in their duties, not to replace them.

In other words, this can include employing augmented intelligence to analyze large datasets and spot trends or using virtual assistants for answering questions. In dermatology, augmented intelligence can augment dermatologists' diagnostic and therapeutic competencies. In terms of diagnosis, augmented intelligence can help dermatologists better handle teledermatology referrals and improve the efficiency of face-to-face visits.

## 10. Conclusion

Despite being mostly avoidable, skin cancer still affects millions of people worldwide. Most cases may be effectively treated with early detection, underscoring the need for education and awareness. If appropriate measures are followed, skin cancer is mostly avoidable due to major risk factors, especially excessive sun exposure and tanning. Frequent dermatological checkups and self-examinations also aid in the early detection of questionable changes, which greatly enhances the effectiveness of therapy. Reducing incidence and death rates requires ongoing public health initiatives to increase knowledge about skin cancer, inform people about the value of sun protection, and promote early identification. Additionally, the future holds the potential of more potent therapies for advanced instances due to scientific advancements. Furthermore, more potent therapies for advanced skin cancer instances are anticipated in the future due to scientific advancements. In conclusion, we can significantly advance the battle against skin cancer and foster a better future for all if we educate people on how to protect their skin and seek prompt medical attention.

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