SKIN WHITHENING SPECIALIST COURSE.

SKINANALYSIS.

LEARNING OBJECTIVES:

- At the end of this module student will be able to identify the different layers of the Skin.
- Functions of the skin and Factors that affect the skin.
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AVAILABLE RESOURCES FOR THIS MODULES.

-Detailed video on Skin composition.

- Lecture Worksheet for practice

INTRODUCTION TO SKIN.

The skin is the largest and most important protective organ of the body, covering the whole external surface and acting as a first-order physical barrier against the environment.

-It Provides Temperature regulation and protection against ultraviolet (UV) light, shock, infections, germs, and poisons are among its roles.

-The skin also aids in immunologic monitoring, sensory awareness, control of insensible fluid loss, and overall balancing.

-The skin is also highly adaptable, with varying thicknesses and specialized functions at various body regions.

SKIN COMPOSITION.

The Skin is made up of three layers.

EPIDERMIS – Outer Layer also known as Cuticle/scarf

DERMIS – Also known as the derma ,cutis, corium, true skin.

HYPODERMIS -hypo, under dermis/subcutis/subcutaneous layers

The **EPIDERMIS -** The skin's Outermost Layer, Acts as a Waterproof Barrier and Influences Skin Tone. Connective tissue, hair follicles, blood arteries, lymphatic vessels, and sweat glands are all present under the epidermis in the dermis.

Fat and connective tissue comprise the **deeper subcutaneous tissue (hypodermis).**

FUNCTIONS OF THE SKIN.

-The Skin protects the human body from pathogens, dehydration, UV light, and mechanical harm.

-The skin is the first organ to detect pain, warmth, touch, and deep pressure.

-Mobility: The skin permits the body to move freely.

-Endocrine activity: Vitamin D production is initiated by the skin, which is necessary for calcium absorption and appropriate bone metabolism.

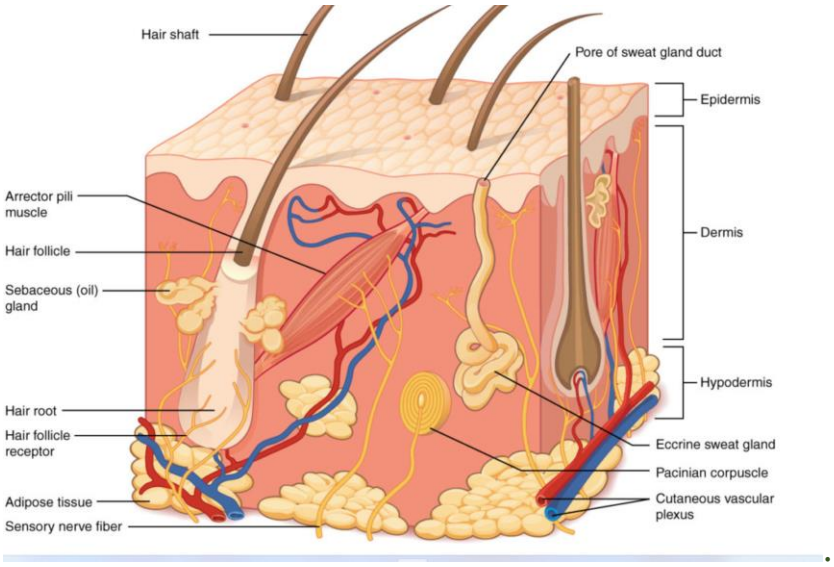
-The discharge of water, urea, and ammonia is one example of exocrine activity.

-Skin secretes sebum, perspiration, and pheromones, as well as performing crucial immunologic activities by secreting bioactive molecules such as cytokines.

-Pathogen immunity development

-Temperature regulation- Skin helps maintain the body's water and homeostatic balance by participating in thermal regulation by retaining or releasing heat.

DIAGRAM OF THE SKIN.



EPIDERMIS

- The skin's outer layer is the Epidermis,
- The epidermis is the layer of skin that is on the outside. It keeps getting new with a 21-day cycle of renewal.
- It has several layers underneath:

This layer are mentioned below-

Stratum Basale/Stratum Germinativum/Malpighian Layer. The stratum basale, which is also known as the stratum germinativum, is the deepest layer of the epidermis. It connects the epidermis to the basal lamina, and the layers of the dermis lie below it. The basement membrane is made up of intertwining collagen fibers that connect the cells in the basal layer to the cells in the dermis. In the top layer of the dermis, there is a projection or fold that looks like a finger. This is called a dermal papilla (plural: dermal papillae). The connection between the epidermis and dermis is made stronger by dermal papillae. The more folds there are, the stronger the connection.

The basal layer is made up of a single layer of cells, which are mostly basal cells. A basal cell is a stem cell in the shape of a cube that gives rise to keratinocytes in the epidermis. All keratinocytes come from this single layer of cells, which are always making new cells through a process called mitosis. As new cells are made, the old ones are pushed away from the stratum Basale on the surface. In the stratum Basale, there are two other types of cells that are spread out among the basal cells.

The first is a **Merkel cell,** which acts as a receptor and sends signals to nerves that the brain interprets as touch. The hands and feet have a lot of these cells on their surfaces.

The second one is a **Melanocyte**, which is a cell that makes melanin. Melanin is what gives hair and skin their color. It also helps protect the living cells of the epidermis from damage caused by ultraviolet (UV) light. When a fetus is growing, fingerprints are made where the cells of the basal layer meet the papillae of the dermal layer below (called the papillary layer). This makes the ridges on your fingers that you know as fingerprints. Fingerprints are unique to each person and are used in forensics because the patterns don't change as people grow or get older.

KEYPOINT-The basal layer is the epidermis's most deep layer. This is the layer where melanocytes are found. Melanocytes make melanin, which

protects against UV rays and is what gives you a tan.It also derives nutrients fluid from the capillary blood vessels of the dermis.A healthy basal layer will give a youthful glow and a passive basal layer will cause formation of lines and wrinkles.

Stratum Spinosum- The cell processes that stick out of the stratum spinosum and connect the cells with a structure called a desmosome give it a spiny look. Desmosomes connect to each other and make the link between cells stronger. It's interesting to note that this layer's "spiky" look is a result of how it was stained. Samples of epidermis that haven't been stained don't have this look. The cells that make up the eight to ten layers of keratinocytes in the stratum spinosum divide in the stratum basale . This layer's keratinocytes are interwoven with Langerhans cells, which act as immune cells by ingesting bacteria, foreign particles, and damaged cells. In the stratum spinosum, keratinocytes start making keratin and release a water-repelling key to protecting. This helps keep water from leaving the body and makes the skin waterproof. As new keratinocytes are made on top of the stratum basale, the keratinocytes of the stratum spinosum are pushed into the stratum granulosum.

keypoint- The stratum spinosum is found between the stratum granulosum and stratum basale. The stratum spinosum helps the epidermis withstand friction and abrasion by providing flexibility. The stratum spinosum is thicker in areas with more abrasion, such as the soles of the feet and palms of the hands. In these areas, the sub-layer seems thick enough to provide strength and flexibility.

Stratum Granulosum- As the keratinocytes move out of the stratum spinosum, they change even more, giving the stratum granulosum a grainy look. Three to five layers of cells get flatter, their cell membranes get thicker, and they make a lot of the protein molecules keratin and keratohyalin, which build up as granules inside the cells . The keratinocytes in the stratum granulosum are mostly made up of these two proteins, which gives the layer its grainy look. As cells die, their neutrons and other cell types break down, leaving behind keratin, keratohyalin, and cell membranes that will become the stratum lucidum, stratum corneum, and other parts of hair and nails.

Keypoint - **The stratum granulosum is the third layer of the epidermis that lies below the stratum corneum and stratum lucidum, The waterproofing ability of stratum granulosum is also effective at keeping the moisture trapped**

in the deeper layers of epidermis. It helps retain moisture and does not allow them to dehydrate.

Stratum Lucidum

The stratum lucidum is a layer of the epidermis that is smooth and seems to be see-through. It is right above the stratum granulosum and below the stratum corneum. Only the thick skin of the palms, soles, and fingers has this thin layer of cells. The dead and flattened keratinocytes that make up the stratum lucidum.

Keypoint- The stratum lucidum is a layer of dead skin cells within the epidermis. The epidermis is present throughout the human body, but the stratum lucidum is only on the soles of the feet and palms of the hands. This transparent layer helps the body manage friction.

Stratum Corneum

The top layer of skin is called the stratum corneum. It is the layer that is open to the outside world. The cells in this layer have become more "keratinized," which is another way of saying "cornified." This is how the name of the layer came about. Most of the time, there are 15 to 30 layers of cells in the stratum corneum. This dry, dead layer helps keep microbes out and keeps the tissues underneath from drying out. It also keeps the layers underneath it from getting scratched. This layer is made up of cells that die and are replaced by cells from the stratum granulosum (or stratum lucidum in the case of the palms and soles of feet). The whole layer is changed over the course of about 4 weeks. Secondary Cleansing can helps remove some of the skin's keratinized top layer. The goal is for the skin to always look "fresh" and healthy.

Keypoint -The stratum corneum is the topmost layer of skin. It is made up of flat cells and corneocytes, which together make an impenetrable lining. This surface is always peeling off.

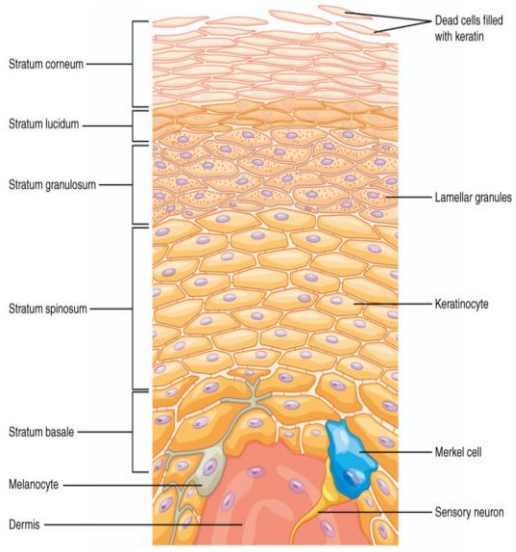


Figure 4. The epidermis of thick skin has five layers: stratum basale, stratum spinosum, stratum granulosum, stratum lucidum, and stratum corneum.

Stratum disjunctum-is the top layer of the cornea. Because it contains air, it looks different from the layers below it. Horny cells detach by dissolving cell contacts. Most of the time, this process can't be seen. If there is a problem with how the skin sheds, the corneocytes separate in larger groups. Skin flakes are groups of 500 or more cells that can be seen with the naked eye.

Key Point-
The outermost layer of desquamating keratinized cells of the stratum corneu m.(advanced stage of keratinization)Flaking of cells commonly known as furfur(exfoliation)

DERMIS.

The layer of skin between the epidermis and the hypodermis is called the dermis.

The dermis can be as thin as 0.6 mm (eyelid) or as thick as 3 mm (palmar and plantar skin).

The dermis is made up of blood vessels, nerves, and parts of the epidermis (like hair follicles, the arrector pili muscle, and glands). These parts are encased in a tough fibroelastic tissue made of collagen (mainly types I and III) and elastic

fibers, and the whole thing is surrounded by an amorphous ground substance (glycosaminoglycans, glycoproteins and bound water).

There are two main parts to the dermis:

Papillary layer and Reticular layer.

The Papillary Layer.

-The papillary layer is the top layer of the dermis. It is right under the epidermis.

-It is made up of loose connective tissue that forms many papillae that stick out and connect to the ridges of the skin.

-The papillary layer is mostly made up of type III collagen, elastic fibers, and a capillary loop that brings blood to the epidermis.

-This network of blood vessels also helps keep the epidermis and top layer of dermis at the right temperature.

The Reticular Layer.

-The reticular layer of the dermis blends with the bottom of the papillary layer, making it hard to tell where its edge is.

-It makes up the deepest layer of the dermis and is a lot thicker than the next layer up.

-The reticular layer is made up mostly of type I collagen and a smaller amount of elastic fibers. It has dense, irregular connective tissue.

-The reticular layer and the hypodermis are connected at the bottom**.**

FUNCTIONS OF THE DERMIS.

-The main function of the dermis is to hold the skin together and give it strength and flexibility.

-Because it has blood vessels and nerves, it also helps control the body's temperature and sense of touch.

-The cells of the dermis (fibroblasts, macrophages, mast cells, and dermal adipocytes) also help make collagen, respond to skin injury or inflammation with inflammation, and store energy.

HYPODERMIS.

The layer of tissue under the skin is called the subcutaneous tissue. It is also called the hypodermis or the superficial fascia.

The words come from the Latin and Greek words subcutaneous and hypoderm, which both mean "beneath the skin."

The subcutaneous tissue is made up of subcutaneous fat and a variety of other cell types.

The skin is thickest in places like the buttocks, palms, and soles of the feet.

The most common type of subcutaneous tissue is fat, which is made up of cells called adipocytes.

The adipocytes group together to make lobules, which are separated by connective tissue.

THE FUNCTION OF THE HYPODERMIS.

The hypodermis connects the dermis layer to the muscles and bones underneath.

INSULATION: The hypodermis keeps your body warm, so you don't get sick from the cold. It also makes sweat to keep your body temperature in check, which keeps you from getting sick from the heat.

Your body is protected by the hypodermis, which makes it easy for your skin to move over the tissues and muscles underneath it.

Without the hypodermis, these muscles and tissues would rub against your skin.

It also protects your organs, muscles, and bones from damage by acting as a shock absorber.

ENERGY STORAGE: The fat cells (adipocytes) that store energy are made in the hypodermis.

FACTORS THAT AFFECT THE SKIN.

Climate Condition.

People's skin often gets dry in the winter because of the cold weather. During the winter, you may notice that your lips feel chapped or that your skin becomes flaky and itchy. Exposure to the biting wind frequently dehydrates the skin, aggravating preexisting skin conditions such as psoriasis. When going outside on a cold and windy day, try to cover up so your skin is not exposed.

Remember to drink plenty of water during the winter to maintain hydration. Applying a moisturizer to your face and body may also be beneficial. Use only a product that has been dermatologist-tested or recommended by your beauty therapist.

On a cold winter day, you may be tempted to take a hot shower to warm up, but you should use warm water instead. Hot showers and baths can further dry and irritate the skin.

Dust and Pollutant Exposure

If you work in a dusty environment, it's possible that your skin will take a direct hit. Dust, pollutants, and chemicals may clog pores and dull the skin's appearance when exposed. Pollutants may also cause acne flare-ups. A good skin care regimen is the best way to combat environmental effects on the skin.

Face should be washed twice daily to remove dirt and grime. Remember to use lukewarm water as opposed to hot water. Forgetting to cleanse your skin at the end of the day can lead to clogged pores and blackheads, so stick to your skin care routine.

Poor Diet

A poor diet is in no way healthy, and your food selections may be affecting your skin. Your skin requires antioxidant-rich fruits and vegetables to combat the free radicals that cause skin aging. In addition, excessive amounts of sugar and carbohydrates may contribute to acne, so limit your intake of these foods.

Consider supplementing your diet with cashews and berries. Certain nuts and berries are high in zinc and may aid in reducing inflammation. Additionally, reduce your intake of sodium and caffeine, as both can increase the likelihood of acne breakouts.

Absence of Sleep

If you are sleep deprived, your skin may appear dull or be more susceptible to acne outbreaks. Insomnia may cause the body to produce excessive amounts of cortisol. Cortisol is a stress hormone that causes inflammation in the body and on the skin when levels are high.

You may observe that sleep deprivation also causes dark circles under the eyes. The dark appearance is caused by dilated blood vessels, which frequently result from insufficient sleep. Give your skin a huge favor and get enough sleep each night.

Hormonal Alterations

Your skin is frequently affected by hormonal changes and fluctuations. During their menstrual cycle, women may experience acne outbreaks. As you age and approach menopause, dry skin may become more common. During different stages of life, hormonal fluctuations may contribute to skin problems.
Remember to be proactive in your skin care routine. During hormonal fluctuations, cleansing, moisturizing, and consuming a healthy diet may help maintain skin balance.

If you have additional concerns regarding skin problems and skin care in general, you should consult a dermatologist, If over-the-counter remedies do not begin to work, you may need a prescription.

Stress

Stress can exacerbate diseases and make treatments less effective. "Many symptoms, such as pain, can arise or be perpetuated by stress, this is relevant in skin-related diseases, which are best managed through holistic, multidisciplinary care. stress can make almost anything worse, including acne flares or eczema symptoms.

Pregnancy

Pregnancy is associated with a variety of skin conditions, including eczema, blistering diseases, and pigmentation changes. "Changes in your hormones, blood flow, and body shape can cause stretch marks, acne, and other complex skin changes during pregnancy,"

It's easy to overlook slow skin health changes, such as long-term sun exposure, but these changes can include solar lentigines — or brown spots from the sun — and an increase in skin wrinkling. "Prolonged sun exposure results in skin that is weaker and more susceptible to bruising or tearing.

STUDY ACTIVITES .

Work Sheet One -

Explain the Difference between dermis and hypodermis.

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Worksheet Two.

What are the benefits of the skin.

Worksheet Three

What are the two main part of the dermis

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Worksheet Four

List out Factors that affect the skin.

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Worksheet Five

List out and explain layers of the Epidermis.

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