

Assignment # 1

1- Short Sightedness

Short sightedness which is also called myopia, is an eye disorder in which a person is not able to see distant objects clearly.

Cause:

The elongation of eyeball results in myopia. The image of distant object is formed in front of retina instead of retina itself.

Basically, eye has two parts that focus images: i.e. cornea and lens.

Cornea is the clear, dome-shaped front surface of eye and lens is a clear structure to focus light on retina.

In order to see, light has to pass through cornea and lens.

They refract (bend) the light, so that the light focused directly on

the nerve tissues (retina) at the back of eye. Retina translates light into signals sent to brains which enables you to perceive image.

But in case of ~~myop~~ myopia, light rays that should focus on retina are focused in front of retina.

Symptoms:

- Blurry vision when look at distant images/objects
- Headaches
- Eyestrain
- The need to squint or partially close the eyelids to see clearly.
- Children feel difficulty to see things on white boards or screen projections in classrooms
- Blink excessively, sit close to TV, rub eyes frequently, difficulty in reading signs in a store or street

signs. These are all symptoms of myopia.

Treatment.

This problem can be rectified by using eyeglass containing Concave lens. Concave lense is thinner from center. It is a diverging lens which means it spread out the light rays which have been refracted to it and helps light to focus on retina.

Some other treatments include Contact lenses and refractive surgery

2- Long Sightedness

Long Sightedness is an eye disorder in which a person is not able to see near objects clearly. This is called hypermetropia. In hypermetropia the image is formed behind retina. However, the person can see distant objects clearly.

Cause:

It happens when the eyeball shortens. So, the image is formed behind the retina.

Abnormal shape of Cornea and lens are also cause of hypermetropia.

Symptoms:

Persistent headache, blurred vision - near objects look blurred, difficulty in reading, stitching etc, eyestrain and squinting etc are symptoms of hypermetropia.

Treatment:

convex lens is used to rectify this problem. It is thick from center. It is a converging lens which means it converges the light rays and help to focus on retina.

Byeglasses is a simple and safe way to sharpen vision caused by long sightedness.

Contact lenses and refractive

surgeries like LASIK, LASEK and PRK are also used for the treatment of hypermetropia.

3- Night Blindness

Night blindness also known as Nyctalopia, is the inability to see well at night or in poor light.

Causes:

It is caused due to conditions that affect retina such as cataracts, deficiency of Vitamin A, usher syndrome, nearsightedness and retinitis pigmentosa, which occurs when dark pigment collects in your retina and creates tunnel vision.

Rods contain a pigment called rhodopsin. when light falls on rhodopsin, it breaks for generating a nerve impulse. In the absence of light, the breakdown products are again converted into rhodopsin. Body synthesized rhodopsin from Vitamin A

High glucose or diabetes also increase the risk of eye disorder such as cataracts which cause night blindness.

Symptoms:

The sole symptom of night blindness is difficulty seeing in dark or when switch from bright environment to low light.

Treatment:

Night blindness caused by cataracts, nearsightedness, vitamin A deficiency is treatable.

Corrective lenses such as eyeglasses or contact lenses can improve nearsightedness both during day and night.

Cataracts can be removed through surgery in which cloudy lens will be removed with artificial lense

Vitamin A deficiency can be recovered through vitamin supplements.

Retinitis pigmentosa.

However, if night blindness is due to genetics then it is not treatable. The gene that causes pigment to build up in the retina doesn't respond to artificial lenses. These people should avoid driving at night.

4- Colour Blindness

Colour blindness or colour vision deficiency (CVD) is an inability to see the difference between certain colours. It often happens when someone cannot distinguish between certain colours and they see everything in shades of black, white and gray.

Causes:

Cones contain pigment called iodopsin. There are 3 main types of cones and each type has specific iodopsin. Each type of cones recognizes one of the three primary colours i.e. blue,

green and red. If any type of cone is not working well, it becomes difficult to recognize that colour and in this way a person is unable to distinguish between colours and suffer from colour blindness. Inherited disorder, some disease like sickle cell anemia, diabetes, macular degeneration etc, some medications such as drugs that treat certain heart problems, high blood pressure, infection, nervous disorder and aging are the causes of colour blindness. Exposure to chemicals such as disulfid and fertilizers also included in causes of loss of colour vision.

Symptoms:

Person suffering with colour blindness can't distinguish between greens and reds usually and occasionally blues. They see

everything in black & white and grey shade.

Treatment

Colour blindness if due to some medications, then discontinuing the medication and treating underlying eyes disease may result in better colour vision.

Wearing coloured filter over eyeglasses or contact lens may enhance your perception of contrast between the confused colours. But such lenses won't improve your ability to see all colours.

Some rare retinal disorders associated with color deficiency could possibly be modified with gene ~~trans~~ replacement techniques.

These treatments are under study and might become available in future.