

GTM4Health

Market Insights



Eye Care Market Insights

An Overview

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Introduction

The eye is our organ of vision. Its complicated design means that an image can pass through its many layers and end up crisply focused on the back of the eye, called the retina. The retina is covered with light sensitive cells, called rods and cones. Information on shape, color and pattern is picked up by the retina and carried to the brain via the optic nerve.

Structure of Components of Eye

1. External Components:

- **Eyelids-** are the outermost protective parts of the eye. They act as ‘shutters’ and primary barriers against the external environment. Boundaries of eyelids are covered by tiny hairlines termed as eyelashes.
- **Cornea-** Next component is the circular frontage of the spherical eyeball, termed the cornea. Cornea is the first optical component of the eye machinery, dealing first-hand with the incoming light. Its function is as a primary filter, before passing on the light to the lens and retina.
- **Iris-** The central portion of the front of the eyeball is termed as iris. Iris is a pigmented structure. Eye color (black, brown, blue etc.) is defined by the pigmentation of iris.
- **Pupil-** The central aperture of iris is called pupil. It is circular in shape, and allows light to pass through onto the lens. Just like the aperture of a camera, it controls the amount of light that goes in. In bright environments, the pupil of the eye constricts, while in dark environments, it dilates.

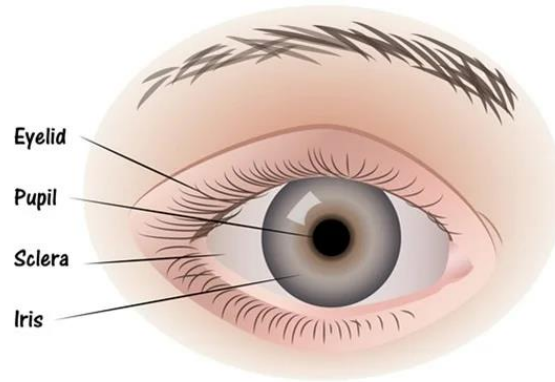


Figure 1: External Component of Eye
Reference: Pablofdezr / Shutterstock

2. Internal Components

- **Lens-** Located right behind the pupil is the transparent structure termed as the lens, responsible for correct focusing of the visuals. It is flexible in nature, and adjusts according to the external lighting. The lens is encapsulated in a thin transparent body, and is connected with the eyeball by a pair of muscles. It refracts the light, and helps in focusing it correctly to the back of the eyeball (retina).
- **Retina-** is the innermost layer of the eyeball structure. Retinal membrane can be imagined as the wall on which the images are projected. The light passing through cornea, pupil, and lens gets focused on the retinal membrane. In addition to tissue components, retina is made up of two types of cells: rod cells and cone cells. The former are considered to be responsible for dim light vision, whereas the latter are considered to be responsible for bright light vision. Cones play a critical role in perception of the images with sharp contrast. Deficiency of either type of cells would cause abnormalities in the ocular function.
- **Macula-** Retinal membrane contains an area called macula, which is yellow in color. The center of macula is called fovea, which contains the highest concentration of cone cells. The part of the image projected on the fovea is usually the most accurately registered visual memory.

- **Sclera-** is the outermost white colored protective coat of the eyeball. It is essentially tougher compared to the delicate internal structures within the eyeball.
- **Choroid-** is the middle layer of the eyeball wall, sandwiched between retina and sclera. It also helps in clarity of vision by absorbing excess light. The muscles which attach sclera to the iris are termed as ciliary body, which play a role in flexible focusing of the image through the lens.
- **Optic Disc-** Once the incoming light is filtered, reflected, and refracted appropriately to produce an image on the back of the eyeball, the neurological systems come into play. The part of the optic nerve that is attached to the back of the eyeball is named as optic disc.

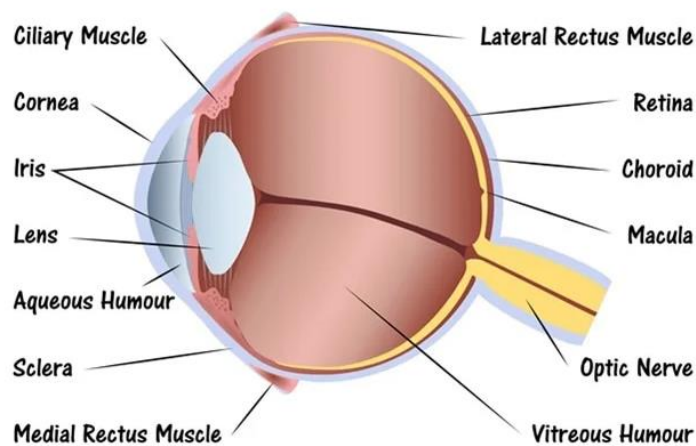


Figure 2: Internal Component of Eye
Reference: Pablofdezr / Shutterstock

Common Eye Disorder and Disease

There are hundreds of different eye diseases and vision problems. Some have no cure, but many others are treatable.

Nearly [half of India's urban population](#) is likely to be affected by dry eye disease by 2030, making it a bigger health concern than lifestyle diseases such as diabetes and heart attack, pointed out a recent study by researchers from LV Prasad Eye Institute.

The four most common eye conditions leading to loss of vision or blindness are:

- Cataracts.
- Diabetes-related retinopathy.
- Glaucoma.
- Age-related macular degeneration.

Macular Degeneration

Macular degeneration (also called age-related macular degeneration or AMD) is an eye disease that affects the central vision. It damages the macula, which is the center area of the retina that allows us to see fine details. It's the leading cause of vision loss in people over the age of 60.

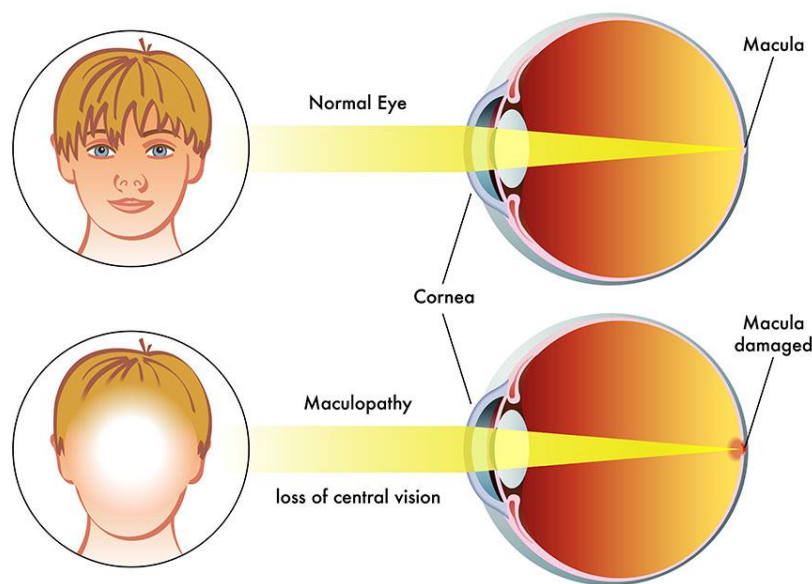


Figure 3: Age related Macular Degeneration

Ref: <https://anaheimyemd.com/age-related-macular-degeneration-facts-and-myths/>

Macular degeneration can either be wet or dry. Wet AMD happens when abnormal blood vessels grow under the macula and leak blood and fluid. This damages the macula and leads to loss of central vision. Dry AMD results in the thinning of the macula, which blurs your central vision over time. Dry AMD is more common than the wet form, accounting for 70% to 90% of cases.

Symptoms of AMD, which usually aren't noticed until the disease has progressed, include:

- Blurred central vision.
- Black or dark spots in the center part of your field of vision.
- Wavy or curved appearance to straight lines.

Although there is no cure, treatment can slow the progress of disease or prevent severe vision loss. Recent advances have been made in the treatment of wet AMD using intraocular injections of anti-VEGF medications.

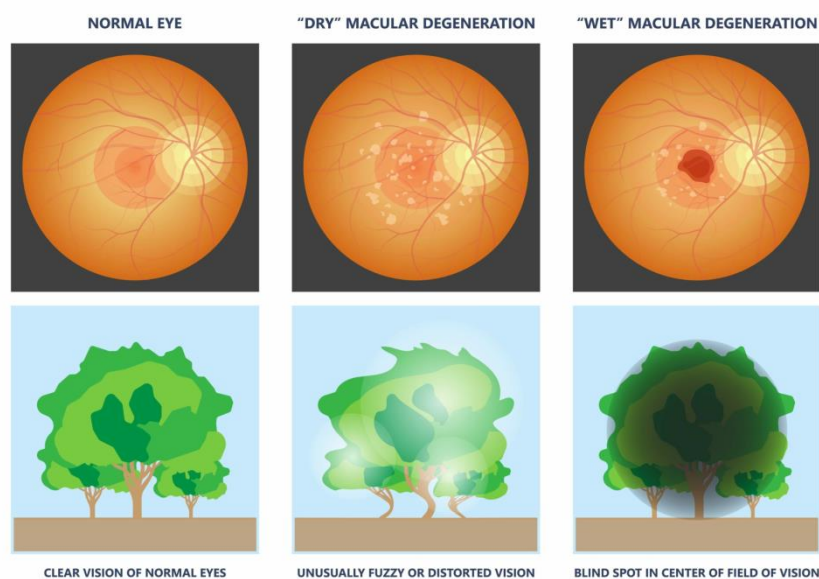


Figure 4: Dry and Wet Macular Degeneration

Ref:<https://midatlanticrotina.com/2023/03/23/macular-degeneration-vision/>

Cataract

A cataract is a clouding of our eye's lens. This cloudy lens can develop in one or both eyes. Cataracts are the world's leading cause of blindness.

Cataracts can occur at any age and even be present at birth, but are more common in people over the age of 50.

Symptoms of a cataract include:

- Cloudy/blurry vision.
- Glare around lights at night.
- Trouble seeing at night.
- Sensitivity to bright light.
- Need for bright light to read.
- Changes to the way you see color.
- Frequent changes to your eyeglass prescription.

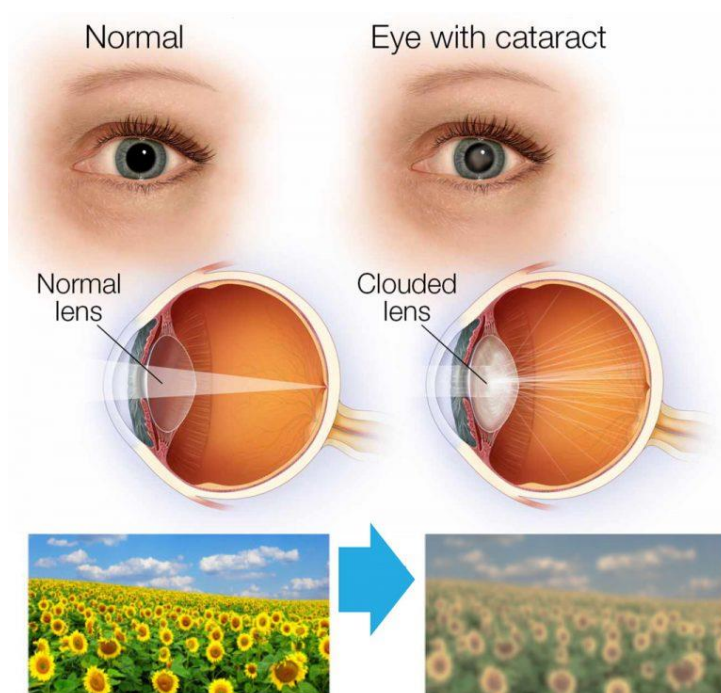


Figure 5: Eye with Cataract

Ref: <https://www.glaucomaassociates.com/glaucoma-and-cataracts/>

Diabetes-Related Retinopathy

Diabetes-related retinopathy is a common complication of diabetes. It is a disease in which there's ongoing damage to blood vessels in the retina due to long-term unmanaged high sugar (glucose) levels in our blood.

Our retina is the light-sensitive tissue in your eye that is needed for clear vision. Most people with diabetes-related retinopathy show no vision changes until the disease is severe. In others, symptoms come and go.

Symptoms include:

- Blurred or distorted vision.
- New color blindness or seeing colors as faded.
- Poor night vision.
- Small dark spots or streaks in your vision.
- Trouble reading or seeing faraway objects.

Treatments include injections of a specific type of medication and surgery that addresses repairing or shrinking blood vessels in the retina.

DIABETIC RETINOPATHY

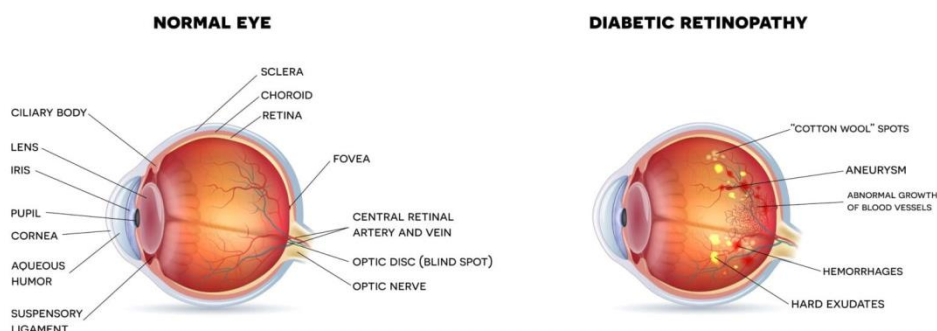


Figure 6: Diabetic Related Retinopathy

Ref: <https://www.nvisioncenters.com/retinopathy/>

Glaucoma

Glaucoma is an eye disease that results from higher-than-normal fluid pressure in the eye. The pressure damages our optic nerve, which affects how visual information is transmitted to our brain. Undetected and untreated glaucoma can lead to vision loss and blindness in one or both eyes. Glaucoma often runs in families.

There are two main types of glaucoma. Open-angle glaucoma develops slowly over time and you may not notice vision change until the disease is far along. Closed-angle glaucoma can happen suddenly. It's painful and causes loss of vision very quickly.

Symptoms include:

- Eye pain or pressure.
- Headaches.
- Red eyes.
- Rainbow-colored halos around lights.
- Low vision, blurred vision, tunnel vision, blind spots.
- Nausea and vomiting.

Treatments focus on reducing eye pressure and include prescription eye drops, laser therapy and surgery.

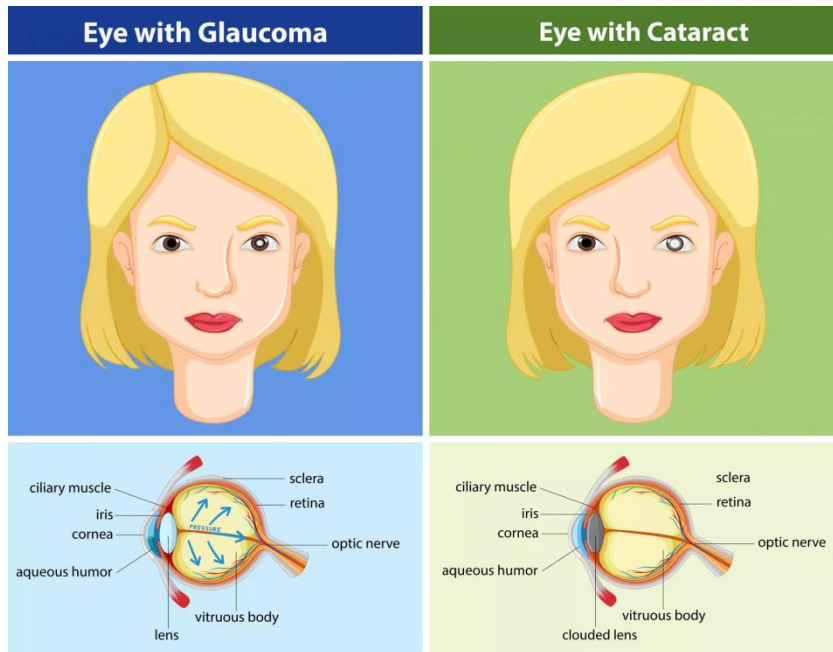


Figure 7: Glaucoma vs Cataract

Ref: <https://responsumhealth.com/conditions/glaucoma/glaucoma-vs-cataracts/>

Retinal Detachment

Retinal detachment is a separation or detachment of the retina from its underlying tissues that hold it in place within our eye. This is a serious eye condition that can lead to blindness if not treated.

We may or may not have symptoms, depending on the severity of the detachment.

Symptoms include:

- Seeing flashes of light.
- Seeing dark spots or squiggly lines drifting across your vision.
- Darkening/covering of part of your vision or your side vision.

Treatments include laser therapy or different surgical approaches to seal or close the retinal tear and reattach the retina.

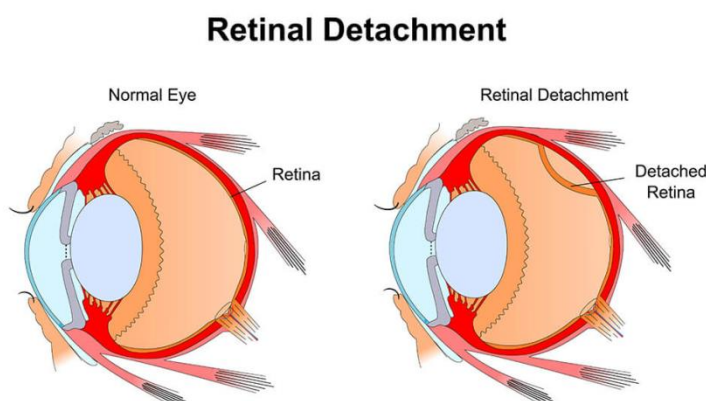


Figure 8: Retinol Detachment

Ref: <https://www.vitreoretinal.net/retinal-detachment/>

What Are The Most Common Eye Conditions In Children?

Eye conditions commonly seen in children include:

- **Amblyopia:** also called “lazy eye” happens when the child’s brain and one eye aren’t working together properly and the brain favors the other better-seeing eye. They’ll have reduced vision in the non-favored eye. This is the most common cause of vision impairment in children.
- **Strabismus:** is a lack of coordination between the child’s eyes, which causes the eyes to cross or turn out. The child’s eyes don’t focus together on a single image at the same time. This can cause reduced 3D vision and/or the brain may favor one eye over the other, which can cause loss of vision in the non-favored eye (amblyopia, see above).
- **Conjunctivitis:** also known as pink eye, is an inflammation of the clear tissue that lines the inside surface of the eyelid and the outer coating of an eye. This tissue is called conjunctiva. It helps keep our eyelids and eyeballs moist. Pink eye can be highly contagious, especially among children. Although it doesn’t damage vision, it causes itchy, red, blurry, tearing and discharge.

What Can We Do To Keep Our Eyes As Healthy As Possible?

There's a lot you can do to protect your vision. Recommendations include:

- See your eye care professional at regularly scheduled intervals, even if you don't have any noticeable changes in your vision. Some eye diseases don't have early warning signs. Ask your eye care professional how often you should be seen.
- Know your risk factors for eye diseases. Some include age, family history of eye diseases, your ethnic background or having other health conditions such as high blood pressure or diabetes.
- Make healthy lifestyle choices. Keeping your body as healthy as possible will lower your risk for eye diseases or vision problems. Maintain a healthy weight, eat healthy foods, exercise for at least 30 minutes a day on most days of the week and stop smoking are some examples of healthy choices.
- Protect your eyes. Wear sunglasses even on cloudy days to protect your eyes from UVA and UVB light. Wear proper protective eyewear when playing sports or when working on home or industrial projects. Follow instructions for wearing and cleaning contacts. Avoid prolonged computer and phone eye strain. Rest your eyes and focus on distant objects for a minute every 20 minutes.

The Future of Eye Health Care in India

- [EyeNetra](#): envision a world where all people feel empowered to make informed decisions about their health. We are, in particular, passionate about sight – enabling everyone to experience their world and their journey with perfect visual performance.
Using patented, cutting-edge technology developed by our team, we've developed vision-testing tools that enable anyone, anywhere to gain access to the best care possible.
- [Forus Health](#): is a medical technology company with an audacious goal — to eradicate preventable blindness, which is a global healthcare challenge today. We develop and manufacture highly advanced medical devices, designed for the effective management of visual health. Our technology solutions are built for affordability and accessibility for both urban and rural patients.
- [Remidio](#): is aggressively decentralizing comprehensive eye testing using AI and telemedicine integrated, easy to use ophthalmic devices. Healthcare workers, vision technicians, and even an inexperienced volunteer can use these products with minimal training in non-specialist contexts such as Public Health Centers, Supermarkets and even in the convenience of a patient's Home.

Consumer Aspect of Eye Care Industry

Eyewear is essential in the current time and age. With the increasing screen time, more people are finding out the various issues with their vision more quickly than before. It is also becoming essential to have comfortable, and branded eyewear with an affordable range for the consumer.

Here is the list of the top player in eye wear in Indian market.

- **Lenskart:** In the eyewear market in India, Lenskart is among the dominant brands. The first of its kind, Lenskart laid the foundation by being pioneers in the online eyewear industry. The brand bridges directly to the professional eye consultancy and product delivery without discontinuance making it easy for customers while also exploiting doorstep delivery.
- **Fastrack-** a brand which has taken this path from being sports-focused to becoming one of India's top eyeglass brands. By switching on the versatility means Fastrack is offering a large variety of eyeglasses according to mixture, outfit or occasion. Fastrack has been highly praised for its immaculate product quality and designs to be innovative.
- **Ray-Ban:** Is known brilliantly for their iconic wayfarer sunglasses and has successfully branched out to other styles of eyeglasses along with prescription glasses.

- Titan Eye Plus: Among the others, Titan stands out as a top champion with several years of impressive performance and vast recognition becoming one of the leading premium eyewear brands in India. Currently, Titan is represented by more than 550 brick-and-mortar stores throughout India which are complemented with a strong online trading system.

Abbreviations

Abbreviations	Full Form
AMD	Age-related Macular Degeneration
Anti - VEGF	Vascular Endothelial Growth Factor
AI	Artificial Intelligence
3D	3 rd Dimensional
UVA	Ultraviolet – skin cancer formation
UVB	Ultraviolet - sunburn

References

1. <https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/eyes#:~:text=The%20eye%20is%20our%20organ,cells%2C%20called%20rods%20and%20cones.>
2. <https://my.clevelandclinic.org/health/diseases/17130-eye-diseases>
3. <https://medlineplus.gov/eyecare.html>
4. <https://www.webmd.com/eye-health/good-eyesight>
5. <https://www.cdc.gov/visionhealth/basics/ced/index.html#:~:text=The%20leading%20causes%20of%20blindness,disorders%20include%20amblyopia%20and%20strabismus.>