



Project On

Survey on General Perception, Management & Treatment of Conjunctivitis

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APPROVAL

The present study, titled "An Investigation into the General Perception, Management, and Treatment of Conjunctivitis, was approved in terms of style and content and accepted as partial fulfilment of the requirements for the degree of Bachelor of Pharmacy by the Department of Pharmacy, Faculty of Allied Health Sciences, Daffodil International University.

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In accordance with the stipulations for a bachelor's degree in pharmacy (B. Pharm), Hereby I affirm that I am conducting this thesis investigation under the guidance of “Mr. Shadhan Kumar Mondal, a Lecturer in the Pharmacy Department, Faculty of Allied Health Science at Daffodil International University”. I affirm that this investigation is solely my own initiative. Furthermore, it is now stated that this thesis, in its entirety or any portion thereof, has not been previously presented anywhere for the purpose of obtaining a degree or bachelor's degree.

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Author

Kamrul Hasan Sujon

DEDICATION

I dedicate this effort to my parents, instructors, and friends.

ABSTRACT

In ophthalmology clinics across the world, conjunctivitis is a common illness. When treating patients who may have conjunctivitis, it is important to consider warning signs of more severe intraocular disorders, such as blurred vision, painful pupillary reactions and excruciating discomfort. A thorough physical examination and a medical and ophthalmology history should also be obtained for those with atypical results and a protracted diagnosis. This study was conducted with the intention of examining the current state of conjunctivitis and its management. There is a review at the beginning of the questionnaire, followed by 24 pertinent questions. Participants in this study included 109 patients. This was a cross-sectional study that was conducted entirely at the National Institute of Ophthalmology and Hospital. MS Word was used to create the questionnaires. 56% of respondents to this survey said they were using eye drops. Ophthalmic ointment was taken by 33%. Out of the total, 11% used the pill. Seasonal allergies are the primary cause of most cases of allergic conjunctivitis. Conjunctival inflammation increases the visibility of tiny blood vessels. Millions of Bangladeshis suffer from conjunctivitis, which can spread swiftly from person to person.

Keywords: Allergies, Intraocular, Conjunctivitis, Chronic

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Introduction

1.1. Conjunctivitis

Conjunctivitis is characterized by inflammation of the white portion of the eye and the inner surface of the eyelid, which is also known as pink eye. Purpura, erythema, and secretion are characteristic features that differentiate acute conjunctivitis. A crimson or sanguine hue is produced within the eye as a consequence. Puritus, pruritus, pruritus, or pruritus may constitute physical discomfort experienced by an individual. An abnormally large quantity of tears may be produced or the afflicted eye may initially appear to be "trapped shut" upon reopening. Moreover, a potential complication is an enlargement of the corneal surface. [1] Individuals who are predisposed to allergic reactions experience a greater prevalence of pruritus. In a single patient,



conjunctivitis has the potential to impact both ocular glands.

After viral infections, bacterial infections are the most prevalent cause of infection. When combined with supplementary symptoms that are frequently observed in cases of the common cold or influenza, the viral infection may become apparent. A bacterial or viral infection that an individual contracts has the potential to

Fig 01: Conjunctivitis [Courtesy; google] cause rapid transmission. In addition, allergies to animal fibers and pollen are common triggers for atopic dermatitis. A diagnosis is often arrived at through the evaluation of symptoms, indicators, and indications. A specimen obtained from the discharge is occasionally subjected to culture. Hand sanitation is a critical component in the prevention of disease transmission.[2] The treatment for a particular condition is determined by its underlying cause. Other than a solitary medication, there is no treatment available for the overwhelming majority of viral illnesses. Notwithstanding the tendency for bacterial infections to resolve spontaneously, pharmaceutical interventions may potentially extend the duration of the illness. Individuals who are afflicted with gonorrhea or chlamydia, in addition to those who use contact lenses, ought to give precedence to requesting medical attention for their respective ailments. Injections of mast cell inhibitors and antihistamines are both efficacious therapeutic

approaches when it comes to allergic reactions. In the United States, there are three to six million cases of conjunctivitis per year. [3] In contrast to adult patients, who are more likely to get sick from viruses, newborns are more frequently ill from bacterial agents. In general, the recuperation process requires a duration of one to two weeks before it becomes fully apparent. If symptoms persist for more than a week or include vision impairment, severe pain, light sensitivity, herpes manifestation, or vision impairment, additional evaluation and treatment may be required. Neonatal conjunctivitis represents an additional variant of conjunctivitis that has the potential to affect neonates. Furthermore, it may require medico specializzato intervention. [4]

1.2. History

During the year 1953, Rowe et al. accomplished the momentous feat of isolating an adenovirus. Two years later, Jawetz et al. published their findings regarding pandemic keratoconjunctivitis:437 When referring to the condition in India, the slang term "Madras eye" is commonly utilized in discourse. The severity of conjunctivitis has significant ramifications in both the social and economic domains. In the United States, the cost of treating bacterial conjunctivitis is estimated to be between \$377 million and \$857 million annually. In the US, conjunctivitis is thought to be the reason for 1% of all primary care office visits. Of those diagnosed with acute conjunctivitis, about 70% seek treatment at urgent care or primary care centers. [5]

1.3. Signs and symptoms

Conjunctivitis is distinguished by the universal manifestation of classic symptoms, such as conjunctival edema, ocular hydration, and erythema of the eyes. However, the students are expected to provide appropriate responses. Constriction-induced irritation and erythema of the conjunctiva are symptoms that could potentially indicate the presence of conjunctivitis. The utilization of a slit light (biomicroscope) to examine a subject may improve the precision of diagnostic procedures. Examining the area that covers the whites of the eyes, the bulbar conjunctiva, is generally more informative than examining the palpebral conjunctiva, which covers the interior eyelids. At the appropriate times, citations are necessary.

Viral

Adenoviruses are responsible for an estimated 65–90% of all recorded cases of viral conjunctivitis.[6] Viral conjunctivitis frequently presents alongside upper respiratory tract infections, such as common colds and irritated throats, among others. Pruritus and excessive moisture are two of its symptoms. Although the infection primarily presents itself in one eye, it possesses the capacity to rapidly disseminate to the other. Viral conjunctivitis is distinguished by a delicate yet widespread pink discoloration of the conjunctiva; this characteristic has the potential to misdiagnose iritis. However, upon closer examination, comparable symptoms emerge, including the prevalence of punctate keratitis as well as the tarsal conjunctiva's abundance of lymphoid follicles present.

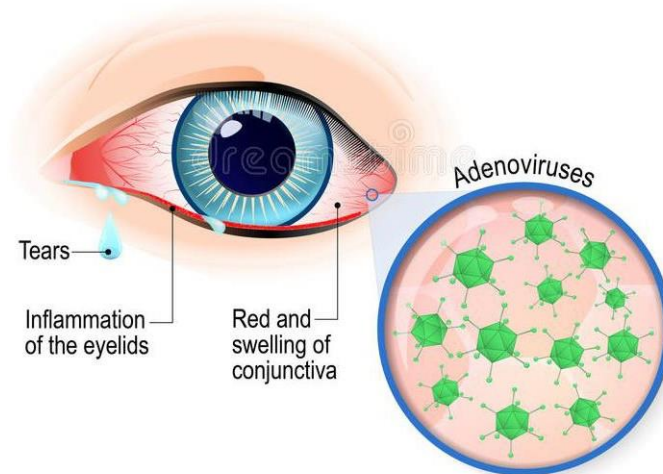


Fig 02: Viral Conjunctivitis [Courtesy; google]

Allergic

An eye that has developed conjunctival edema due to allergic conjunctivitis. Allergy-related conjunctivitis is the term for the inflammation of the conjunctiva caused by an allergic reaction. [7] Diverse patients may exhibit distinct sensitivities to allergenic substances. Mast cell secretion of histamine and other active compounds induces redness (primarily caused by dilatation of the peripheral small blood vessels), increased tear production, and conjunctival enlargement as symptoms.

Bacterial

Prompt manifestations of bacterial conjunctivitis sign and symptoms consist of conjunctival erythema, ocular edema, and a viscous discharge. The symptoms, which initially impact only one vision, may advance to the other within a comparatively brief period of two to five days. Conjunctivitis is caused by common pus-producing bacteria and is characterized by the development of a discharge that becomes stringy in consistency and has a granular or irritating feel. In general, the discharge manifests a yellow or grey coloration. This could potentially lead to the coverings becoming adhered, especially upon inspection the next morning. Additionally, the infected eye and the adjacent epidermis may develop severe crusting. Patients may, under extraordinary circumstances, assert that an extraterrestrial object has become lodged in their eye due to the localized granular or grainy sensation. At the appropriate times, citations are necessary. Nonacute bacterial conjunctivitis is frequently caused by species of *Staphylococcus*, *Streptococcus*, and *Hemophilus* [8]. On certain occasions, *Chlamydia* spp. may function as the causative agent. [9]

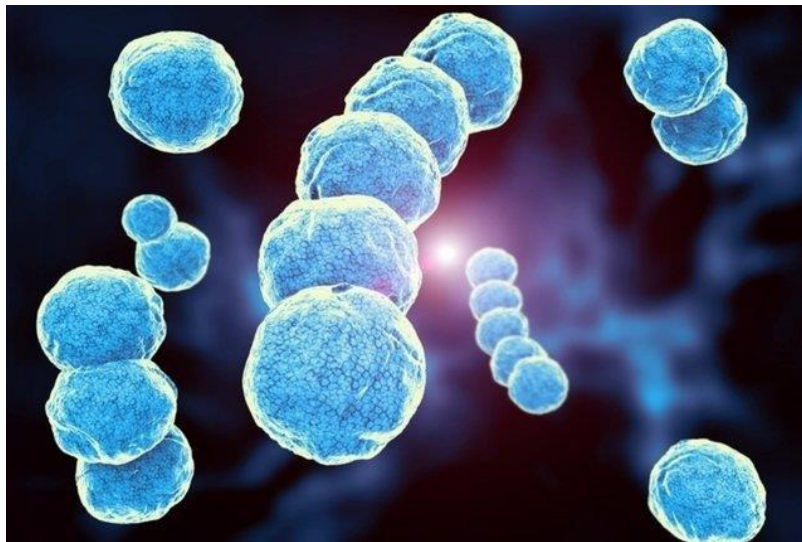


Fig 03: Streptococcus [Courtesy; google]

Typical membranous conjunctivitis

When exudate is absent and erythema is minimal, chronic conjunctivitis may develop, which may result from bacteria like *Moraxella* spp or *Chlamydia trachomatis*. Pseudomas or membranes that develop transocularly may manifest as a consequence of bacterial conjunctivitis. Pseudomembranes are composed of exudates and inflammatory cells that are permeable and

adhere to the conjunctiva. Conversely, authentic membranes are affixed firmly and are resistant to detachment. Conjunctivitis can be caused by beta-hemolytic streptococci, pseudomembranes, or membranes that are manufactured by *Neisseria gonorrhoeae*, *Corynebacterium diphtheriae*, or *Neisseria gonorrhoeae*. Neonatals who are not vaccinated develop a conjunctival membrane as a result of *C. diphtheriae* infection. [10]

Chemical

An acidic or alkaline substance that is ingested could potentially cause chemical ocular injury. Although not always the case, burns caused by alkalis typically cause more severe injuries compared to burns caused by acids [11]. Burns classified as moderate induce conjunctivitis, whereas burns classified as severe may result in corneal discoloration. For chemical verification purposes, litmus paper may be utilized. After determining the chemical cause, it is recommended to sanitize the afflicted eye or eyes until the pH level returns to a range of 6 to 8. In order to alleviate the distress, anesthetic-containing solutions should be applied to the affected regions of the eyes. The most conspicuous presentation of irritant or toxic conjunctivitis is ocular erythema. The majority of the time, the chemical discharge restricts the affected region to the lower conjunctival sac. A white eye may arise from necrosis of the conjunctiva due to vascular closure and concomitant epithelial sloughing, especially when exposed to corrosive alkalis like sodium hydroxide. The confirmation of the existence of anterior uveitis can be achieved through the utilization of a slit lamp examination. At the appropriate times, citations are necessary. [12]

Other

- ✓ Chlamydial conjunctivitis is the source of an eye infection.
- ✓ Acute, purulent conjunctivitis can develop from infant inclusion conjunctivitis, a form of conjunctivitis that may be caused by the bacterium *Chlamydia trachomatis*. Conversely, the norm is for self-healing.[13]

1.4. Causes

Infectious conjunctivitis is significantly more often than not precipitated by a virus contribution. Dryness, sensitivities, dust, bacteria are frequent causes. Bacterial and viral infections have the potential to propagate through human contact, contaminated surfaces, and liquids. The common

cold or direct contact with infected digits are both potential sources of conjunctivitis. Bacterial infections of the conjunctiva can arise from various anatomical locations, such as the genitalia, bloodstream, nasopharynx, contaminated eye drops or contact lenses, eyelid margins, and contiguous epidermis. [14] Adenovirus infection is the causative agent of viral conjunctivitis in 65% to 90% of all cases. [15]

Viral

Adenoviruses, and adenoviral keratoconjunctivitis in particular, are the principal causative agents of viral conjunctivitis. [16] Herpetic keratoconjunctivitis, an ocular infection induced by herpes simplex viruses, is treated with acyclovir. Acute hemorrhagic conjunctivitis is often induced by highly pathogenic microorganisms, namely enterovirus 70 and coxsackievirus A24. Since its initial identification in Ghana during an epidemic in 1969, this pathogen has caused a multiplicity of pandemics and spread globally. [17]

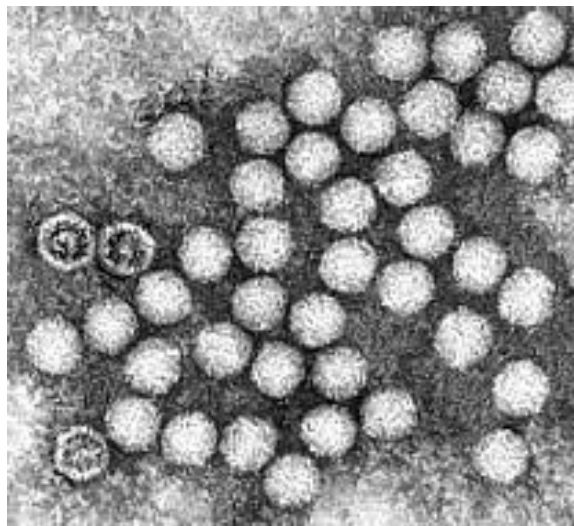


Fig 04: Enterovirus 70 [Courtesy; google]

Bacterial

Staphylococcus aureus, Haemophilus influenzae, and Streptococcus pneumoniae are the bacterial pathogens that cause acute conjunctivitis the most commonly. Although hyperacute cases are rare, Neisseria meningitidis or Neisseria gonorrhoeae are frequently identified as the causing microorganisms. If the duration of the condition exceeds three weeks, chronic bacterial conjunctivitis, which is most likely the result of an underlying cause that can be Moraxella lacuna, Gram-negative intestinal flora or Staphylococcus aureus.[18]

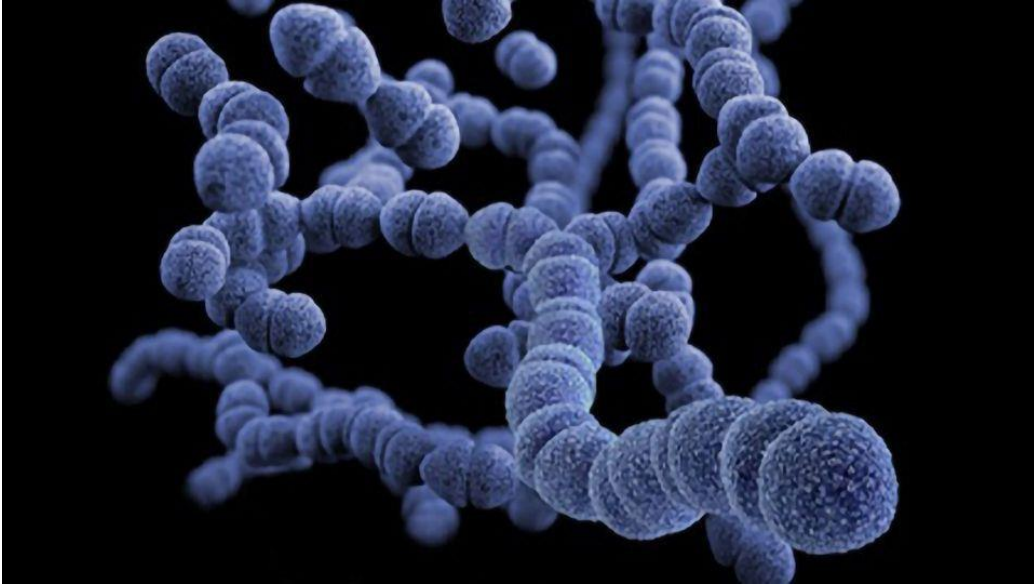


Fig 05: Streptococcus pneumoniae [Courtesy; google]

Allergic

Several allergens have been linked to cases of allergic conjunctivitis, including dust mites, cosmetics, tobacco use, balsam of Peru, eye drops, and fragrances. According to [19–21], 15–40% of the general population suffers from allergic conjunctivitis, which is the most prevalent type of conjunctivitis.[22] Pneumonia caused by allergies accounts for approximately 15% of the cases that primary care physicians are consulted about. Year-round conditions and pollen and other airborne pollutants are the most frequently identified triggers of this condition. [23]

Other

- ✓ The syndrome of visual perception through computerization.
- ✓ The reasons behind dry eyes.

As an element of reactive arthritis, conjunctivitis is postulated to arise from bacterial exposure-induced autoimmune cross-reactivity. An increased susceptibility to reactive arthritis has been linked to the presence of HLA-B27. There exists a correlation between conjunctivitis and relapsing polychondritis, an autoimmune disorder. [24-25]

1.5. Diagnosis

Given that the majority of ailments can be effectively remedied through the progression of time and conventional remedies, culture collection is neither customary nor obligatory. In cases where topical medications do not elicit a response consistent with the suspicion of bacterial conjunctivitis, obtaining specimens for bacterial culture analysis is advised. There are specific circumstances in which the spread of the virus might be considered critical, such as when the incidence rate approaches that of an epidemic. To ascertain the allergen responsible for allergic conjunctivitis, an epidermal patch test may be performed. This enhances the capacity to eventually avoid the allergen.[26] The application of conjunctival scrape for cytology is infrequent for several factors, like financial constraints & an overall lack of workers in laboratories with the necessary expertise in managing ocular specimens. Notwithstanding their utility in the identification of allergies, dysplasia, chlamydial, and fungal infections, these methods continue to be overlooked. The conjunctiva may be biopsied through an incision when autoimmune conditions (e.g., dysplasia or sarcoidosis) are clinically strongly suspected.

Differential diagnosis

Acute keratitis, irritation, and angle-closure glaucoma are all serious conditions that have the potential to induce a significant amount of inflammation. It is crucial to seek consultation with ophthalmologists as soon as possible in regards to the management of these conditions. One of these disorders may be accompanied by visual impairment, significantly heightened light sensitivity, difficulty maintaining an open eye, non-responsive pupillary dioptria, severe headache, or concurrent vertigo. Muroid discharge and tears are two common contributors to intermittent blurriness. The prevalence of photophobia is found to be of a lesser severity. However, in the event that any of these symptoms become conspicuously apparent, it is critical to conduct an assessment to rule out alternative conditions such as uveitis, keratitis, glaucoma, cortico-cavernous fistula or meningitis. The following elements have been added to offer a more thorough differential diagnosis for ocular irritation or inflammation:[27]

- Acute angle-closure glaucoma
- Pinguecula
- Dacryocystitis
- Blepharitis

- Hemorrhage under the conjunctiva
- Keratoconjunctivitis sicca (dry eye)
- Herpes simplex
- Keratitis
- Corneal abrasion
- Episcleritis
- Endophthalmitis
- Orbital cellulitis
- Uveitis [28]

1.6. Conjunctivitis risk factors

The primary mode of transmission for infectious conjunctivitis is through direct or indirect contact with the discharge released by an eye that is infected. Frequent risk factors for conjunctivitis include a medical history that encompasses ocular conditions such as blepharitis, dry eye, as well as autoimmune diseases, recent eye surgery, drug usage, and anatomical anomalies of the ocular surface. Furthermore, infants born vaginally to mother infected with *Chlamydia trachomatis* or *Neisseria gonorrhoeae* have an increased susceptibility to developing conjunctivitis. [29-30]

Risk Factor

Conjunctivitis Infectious

Frequent causes of infectious conjunctivitis include the following:[31-34]

- The state of sanitation in the restroom
- The disregard for the use of contact lenses
- Clothing and personal possessions that are susceptible to contamination
- Movement challenges resulting from densely populated areas (e.g., military barracks);
- The prolonged use of topical medicines on a regular basis
- The peak seasons for bacterial and viral conjunctivitis, respectively, are winter and summer.
- Lack of immunity

- In the family lineage are lid and ocular surface syndromes, blepharitis, and dry eyes.
- Foreign objects in the eyes, eye surgery or fresh suture exposure.
- Anatomical anomalies affecting the lid and ocular surface

Conjunctivitis in Newborns

Here are the most common reasons for the development of conjunctivitis in babies: [35-37]

- Suffering HIV-positive mothers
- The occurrence of birth-associated maternal infections
- Premature membrane rupture prematurity (PROM)
- Inadequate postnatal eye prophylaxis
- A silver nitrate effect
- Ocular trauma related to birth
- Artificial respiration system
- Prematurity
- Inadequate prenatal care
- Unhygienic conditions during labor and delivery

Conjunctivitis Allergic

Constant allergens are known to induce allergic conjunctivitis [38].

- Pollen from trees and grasses
- Animal tissues and fluids such as sputum
- Phenomena
- Cosmetics
- Air Pollution
- Tobacco

Keratoconjunctivitis Sicca

The following variables raise the risk of keratoconjunctivitis sicca (dry eye syndrome) [39]

- Reduced levels of hormones (as a result of pregnancy and aging)
- Allergies.

- Blepharitis.
- Eye disease linked to thyroid.
- Consumption of medications such as hormone replacement therapy, analgesics, sleep aids, beta-blockers and oral contraceptives,
- The examples of autoimmune diseases are Lupus, rheumatoid arthritis and Sjogren's syndrome
- Ocular transplantation.
- Absence of winking (as in prolonged computer use or Parkinson's disease, for instance).
- Environmental conditions (windy or sandy).
- Implementing a contact lens.
- Neurological disorders include but are not limited to stroke, Bell's palsy, Parkinson's disease, and trigeminal nerve dysfunction.
- Uveitis.
- Iritis.
- Diabetes.
- Vitamin A deficiency-related condition.

Superior Limbic Keratoconjunctivitis

Superior limbic keratoconjunctivitis (SLK) is a pathological state distinguished by conjunctival inflammation, which has the potential to impact both eyes [40].

- Soft tissue microtrauma induced by mechanical forces (laxity of the conjunctiva).
- Distinction in the upper conjunctival structure.
- Constantly obstructing one's eyes.
- Thyroid abnormalities.

1.7. Types of conjunctivitis

Conjunctivitis can manifest in three primary forms: chemical, infectious, and allergic. The etiology of conjunctivitis differs among different subtypes.

1.7.1. Allergic conjunctivitis

The inflammation that results from an allergic reaction to the conjunctiva, the membrane covering the white part of the eye, is known as allergic conjunctivitis (AC).[41] While there exist multiple contributing factors that may precipitate an allergic reaction in a patient, hay fever is frequently recognized as the primary etiology. Redness (primarily caused by peripheral vasodilation of small blood vessels), conjunctival edema (swelling), pruritus, increased lacrimation, and increased tear secretion are some of the symptoms.

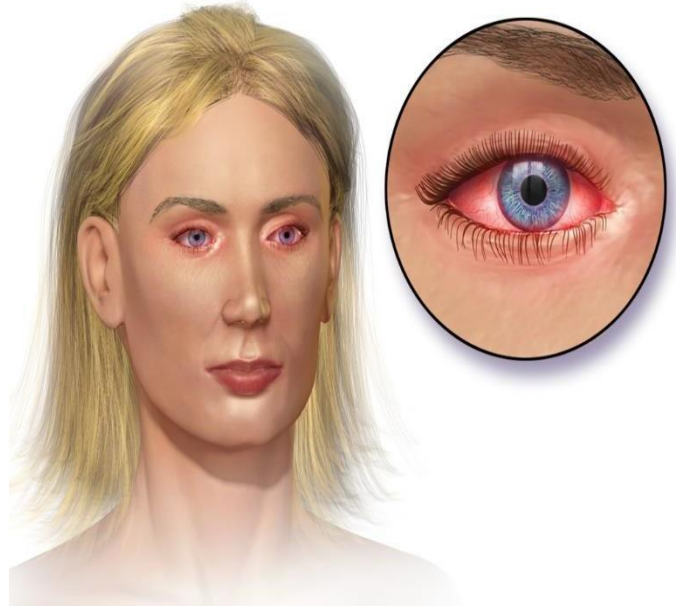


Fig 06: Allergic conjunctivitis [Courtesy; google]

The clinical presentation in which allergic rhinoconjunctivitis and rhinitis coexist is referred to as ARC. Mast cells release various bioactive substances, including histamine, which results in hay fever, which gives rise to its distinctive symptoms. These include increased tear production, vasodilation, and irritation of nerve endings. In conjunction with the application of topical or oral antihistamines, the management of allergic conjunctivitis entails preventive measures against allergen contact and abstaining from indoor activities, such as avoiding indoor activities during "hay fever season" when vegetation is in bloom.

Signs and symptoms Allergic conjunctivitis

Circumstrating the eyeball is a thin membrane called the conjunctiva. An allergen-induced conjunctival irritation accompanied by pain may give rise to various symptoms in the eye, including but not limited to ocular irritation, purpura, eyelid enlargement, pruritus, photophobia, and watery discharge. [42-43] A preponderant symptom reported by over 75% of individuals undergoing treatment for ophthalmic allergies is pruritus. A tendency exists for patients' conditions to worsen during periods of moderate, desiccated weather, while precipitation and low temperatures appear to ameliorate such conditions. A few days after onset, photicellular

keratoconjunctivitis is distinguished by the development of aqueous ulcerations on the cornea. [44] According to the findings of Klein et al., individuals diagnosed with allergic conjunctivitis not only endure physical discomfort but also alter their daily schedules by avoiding sleeping, commuting, reading, and outdoor excursions. Therefore, by effectively managing allergic conjunctivitis, afflicted individuals may experience a prospective enhancement in their overall standard of living.

Causes Allergic conjunctivitis

An allergen triggers an immunological reaction, which results in allergic conjunctivitis. Asthma, eczema, and hay fever sufferers are at a heightened risk of developing allergic conjunctivitis. The subsequent allergens, to paraphrase, are frequent contributors to conjunctivitis:[45]

- Pollen from weeds, vegetation, and trees, which is an allergen
- Skin and additional animal secretions, such as saliva
- Cosmetics
- Pharmaceuticals
- Perfumes
- Medications for treating the skin
- Smoke
- Air contamination
- Microparasites that migrate and live in dust
- Peruvian balsam which has therapeutic qualities in medicine and pharmaceutical goods, is used as a flavoring in food and drink, as well as a scent in cosmetics and perfumes.
- Ophthalmic ointment (Exposure to the preservatives in ophthalmic drops might cause allergic conjunctivitis).
- Contact lens solution can be used to treat conjunctivitis, an inflammation of the transparent membrane of the eye caused by prolonged exposure to certain preservatives.
- Eyewear featuring contact lenses, as recurrent mechanical irritation of the conjunctiva by individuals who wear contact lenses can also contribute to conjunctivitis.

The season of hay fever, When grass and other plant pollen are abundant, seasonal conjunctivitis is most common. Later in the summer, fungi and other spores may also induce symptoms.[46]

1.7.2. Infectious Conjunctivitis

As the tissue enveloping the white of the eye and lining the eyelid, the conjunctiva is vulnerable to infection from an extensive range of microorganisms. Human-recognizable entities consist predominantly of viruses, more precisely adenovirus family members. Infections that are introduced by microorganisms are extremely rare. Contactivitis is an extremely contagious disease that can be swiftly transmitted between individuals or from an infected eye to an uninfected eye within the same individual. It is also capable of being caused by either bacteria or viruses. Ocular inflammation and redness are clinical manifestations of particular viruses that have a systemic reach. [47] Moreover, in addition to the aforementioned viruses that elicit symptoms resembling those of the common cold and the flu, these classifications of viral illnesses also encompass the Zika virus, measles, mumps, and rubella. the propensity for SARS-CoV2 to induce conjunctivitis. Those who sustain ocular injuries through protracted exposure to corticosteroid eye drops or come into contact with organic substances (e.g., vegetation or soil) have an increased susceptibility to developing fungal infections. Fungal infections are rare in nature. Neonatal contactivitis refers to ocular infections caused by *Neisseria gonorrhoeae* or *Chlamydia trachomatis*. The susceptibility of newborns to these infections is increased as a result of their transmission between birth canal creatures and their moms. A characteristic feature of inclusion conjunctivitis is its protracted course of action. Particular genotypes of the bacterium *Chlamydia trachomatis* are the causative agents. A genitourinary tract chlamydial infection is frequently transmitted through the interchange of genital secretions, which can cause inclusion conjunctivitis. Trachomas are a distinct form of conjunctivitis that are induced by the pathogen *Chlamydia trachomatis*. This condition does not have a prerequisite etiology of genital chlamydia. Gonococcal conjunctivitis, also referred to as gonorrhea, is a conjunctivitis that is caused by *Neisseria gonorrhoeae*. Someone whose genitalia are infected with gonorrhea has the potential to transmit the sexually transmitted disease gonorrhea to their eye via contact with their vaginal secretions. Severe infections are capable of inducing conjunctival fibrosis, which can result in impairments of the discharge film. Acute conjunctivitis has the potential to progress to the cornea, which is an anterior transparent layer. situated prior to the pupil and iris. It may, in rare instances, lead to visual impairment. Allergic

conjunctivitis is a condition that may develop from an allergic reaction-induced inflammation of the conjunctiva. This stands in opposition to infections that are viral or bacterial in nature.[47-48]

Symptoms of Infectious Conjunctivitis

A conjunctival release accompanied by a stain that is pinkish are both suggestive of an infection. The discharge often induces ocular closure, particularly during phases of relaxation. There is a possibility that a temporary visual impairment may occur as an adverse consequence of this discharge. Vision is restored simply by averting one's gaze from the discharge. A corneal infection results in visual impairment that cannot be remedied by blinking. Eye distress may arise under particular circumstances as a result of intense light exposure. It is rare for acute conjunctivitis scarring caused by a severe infection to result in permanent visual impairment.[49]

- Bacterial conjunctivitis manifests with distinct symptoms from viral conjunctivitis.
- Virus conjunctivitis is characterized by a watery discharge from the eyes; bacterial conjunctivitis is characterized by a viscous discharge that may be yellow, green, or white in color.
- A virus is more likely to be the causative agent of upper respiratory illnesses. In contrast to viral conjunctivitis, It is rare for bacterial conjunctivitis to present in this manner, although it can cause pain and swelling in the lymph node located in front of the ear.

Nevertheless, the dependability of these indicators in distinguishing bacterial conjunctivitis from viral conjunctivitis cannot always be ensured. Genital symptoms, including vaginal or penile discharge and urinary tract discomfort, are frequently observed in patients diagnosed with gonorrhea-associated conjunctivitis or inclusion conjunctivitis. In neonates, when conjunctivitis occurs, the conjunctiva becomes inflamed and a pus-like discharge is released.[50]

1.7.3. Chemical conjunctivitis

Poisonous pink eye, also known as conjunctivitis or chemical pink eye, can result from ocular exposure to substances including chemicals, liquids, smog, or mists. Applying a cleansing motion with water movement is imperative to eliminate the dangerous material or liquid from the eye right away. A correlation between chlorine exposure in swimming pools and the development of a moderate form of conjunctivitis has been established. Occasional physician visits are deemed unnecessary.

Chemical conjunctivitis symptoms

- Pink eye is an ocular disorder that can be precipitated by contact with inflammatory such as chlorine (present in swimming pools, smoke, or vapors).
- The development of a crust or discharge on the eyelids.
- Excessive discharge of tears or moist eyes.
- The sensation is comparable to being scratched in the eye or sand.
- The individual experiences light sensitivity and eye distress.[51]

1.8. Preventive measures for Conjunctivitis

- Prevent inessential eye touch by refraining from placing your palms near your eyes.
- You ought to cleanse your hands frequently.
- Make sure to consistently utilize a clean washcloth and towel.
- It is impolite to share towels and washcloths with other individuals.
- Should you obtain the impression that your pillowcases are unclean, it is advisable to replace them.
- Avoid applying eye cosmetics such as mascara.
- Makeup for the eyes and other private eye care items should never, under any circumstances, be shared with others.
- The most effective course of action is to practice proper sanitation, avoiding contact with contaminated hands in particular. Vaccination against *Neisseria meningitidis*, adenovirus, *Hemophilus influenza*, and pneumococcus is also highly effective.
- Research has indicated that the use of povidone-iodine eye drops could potentially protect newborns from conjunctivitis. Due to its low price, it has been widely adopted throughout the world.[52]

1.9. Management

Approximately 65% of conjunctivitis cases demonstrate spontaneous resolution within a span of two to five days. Prescriptions are typically unnecessary in the overwhelming majority of circumstances. [53]

Viral

Virus-induced conjunctivitis frequently resolves spontaneously, often without requiring any special therapeutic interventions. Pharmacological interventions such as mast cell stabilizers (cromolyn) or antihistamines (e.g., diphenhydramine) may offer potential benefits in mitigating particular symptoms. A prospective therapeutic approach utilizing povidone-iodine has been suggested for this particular ailment; nevertheless, the existing data was inadequate to substantiate this hypothesis as of 2008.[54]

Allergic

In order to mitigate discomfort during mild instances of allergic conjunctivitis, synthetic tears may be utilized. In addition, capillary constriction can be facilitated by having the patient lie with their head inclined downward while cool water is poured over their face while a cloth is placed over their head. Antihistamines and nonsteroidal anti-inflammatory medications (NSAIDs) may be prescribed by a physician if symptoms worsen. In specific circumstances, the application of topical steroid injections may be necessary for the management of chronic allergic conjunctivitis.

Bacterial

When left untreated, bacterial conjunctivitis resolves spontaneously in the majority of instances. In specific circumstances, the utilization of topical antibiotics may be necessary in the absence of discernible amelioration following a three-day period. Without regard to the administration of the therapy, no adverse effects were observed. One rationale for researching antibiotics' possible use is that they speed up healing in cases of bacterial conjunctivitis. Additionally, contact lens users and individuals who are immunocompromised, have an infection causing chlamydia or gonorrhea, are experiencing significant distress, or have profuse discharge are advised to use antibiotics. The management of gonorrhea and chlamydia infections requires the administration of topical

and oral medications, respectively. The selection of antibiotics ought to be predicated on the particular strain or bacterial strain that is postulated to be accountable for the ailment. It is generally advised to administer sodium sulfacetamide, trimethoprim / polymyxin, or fluoroquinolones for a duration of seven to ten days. Meningococcal conjunctivitis may be treated with systemic penicillin under certain circumstances, contingent upon the susceptibility of the strain to the antibiotic. Furthermore, there have been reports suggesting that the povidone-iodine ophthalmic solution exhibited a certain degree of efficacy in the treatment of bacterial and chlamydial conjunctivitis. This has generated apprehensions regarding the potential use of the solution in areas where it is either too costly or impossible to obtain topical medications. [55-56]

Chemical

Chemical conjunctivitis, an infection resulting from chemical exposure, is typically managed with saline solution or Ringer's lactate irrigation. Chemical burns, in particular, are classified as medical emergencies due to the substantial potential for intraocular harm and disfigurement. It is recommended that individuals who have contracted conjunctivitis due to chemical exposure refrain from making direct eye contact to impede the transmission of the substance.[57]

1.10. Conjunctivitis care and treatment

Depending on the underlying cause, there may be variations in the conjunctivitis treatment plan, which may consist of an irritant (e.g., a stray eyelash), an allergic reaction, or an infection.

Self-care

A variety of distinct home remedies are accessible for the treatment of infectious conjunctivitis. The following recommendations should aid in mitigating some of your discomforts.

- It is advisable to remove contact lenses if one is wearing them until all symptoms of the infection have subsided. Old lenses should not be reused once the infection has healed because they may become a source of reinfection. In addition, it's advised to keep using fresh cases, solutions, and contact lenses even after the infection has cleared.
- It is recommended to employ emollient eye solutions, which are available for purchase over-the-counter or by prescription at pharmacies. The aforementioned drops possess the

capacity to mitigate ocular irritation and adhesion. Nevertheless, it is of the utmost importance to rigorously follow the guidelines stipulated by the manufacturer.

- Obstacle and lash strands with cotton wool that has been moistened with water in a methodical manner in order to remove any viscous discharge.
- It is critical to prioritize hand hygiene by thoroughly cleansing hands before and after contacting one's eyes, as this will significantly reduce the risk of disease transmission to others.

Antibiotics

Antibiotic treatment is rarely utilized for infective conjunctivitis due to the condition's propensity for self-resolving and the low likelihood of complications that may arise from untreated conjunctivitis. On the contrary, if the illness progresses beyond a period of two weeks or becomes exceptionally severe, a prescription could potentially be written for antibiotics. While rare, it is not implausible for a child's playgroup or school to require the child to undergo antibiotic treatment prior to your return. Despite the availability of numerous antibiotics, fusidic acid and chloramphenicol are the most prevalent.



Fig 07: Antibiotics [Courtesy; google]

Chloramphenicol

Chloramphenicol-containing antibiotic eye solutions are frequently prescribed as the principal therapeutic strategy for bacterial eye infections. Without a prescription, it is commercially available at pharmacies for the treatment of bacterial conjunctivitis. To optimize therapeutic outcomes associated with chloramphenicol, it is imperative that you strictly adhere to the instructions provided by your pharmacist regarding its administration, including the proper timing and technique. An alternative course of action would be to consult the patient information leaflet

accompanying the medication in order to verify its proper utilization. If ocular droplets are unable to effectively deliver the antibiotic, an alternative solution such as an ocular cream may be suggested.



Fig 08: Chloramphenicol [Courtesy; google]

Fusidic acid

If your doctor decides that fusidic acid is a better option for treatment than chloramphenicol, then the former may be prescribed. When caring for young infants and the elderly, this method is frequently preferred due to its infrequent application. Additionally, pregnant women favor this therapeutic method. Fusidic acid, similar to chloramphenicol, is commercially accessible in the formulation of ocular drops. It is critical to strictly abide by the instructions supplied by a healthcare professional or those that are explicitly stated on the medication. A transient deterioration of vision may result from the use of eye drops. Immediately following the administration of ocular drops, it is not recommended to operate large machinery or operate a motor vehicle. Additional adverse effects can be elicited by chloramphenicol and fusidic acid. A moderately intense eye symptom, such as a burning sensation or a tingling sensation, never be allowed to continue for too long.



Fig 09: Fusidic acid [Courtesy; google]

Additional medical attention

If symptoms persist beyond two weeks, you are required to schedule an appointment with your primary care physician without delay. Furthermore, it is critical that you promptly arrange an emergent consultation with your primary care physician in the event that you encounter any of the following symptoms:

- ✓ Ocular irritation
- ✓ Photophobia, or light sensitivity
- ✓ Obstructive vision
- ✓ Dominant flushing of the eyes

Literature Review

**2.1. Terrence P O'Brien, Bennie H. Jeng, Marguerite McDonald & Michael B. Raizman
"Acute conjunctivitis: truth and misconceptions" Volume 25, 2009 - Issue 8.**

One common condition that has the potential to cause substantial morbidity and financial consequences is acute conjunctivitis. The aforementioned condition remains the subject of considerable debate with regards to its diagnosis, treatment, management and prevalence. A panel of eminent ophthalmologists was convened to review and assess the most recent evidence-based literature pertaining to each of these lengthy disputes. Particular attention has been paid to episodes of acute microbial conjunctivitis induced by adenovirus. Recent scientific investigations have provided disproof to long-standing misconceptions. Healthcare expenditures will decline and patients will experience enhanced management and treatment options due to physicians' advancements and implementation of more effective antiviral medications and diagnostic tools.

2.2. Gary L. Morrow, M.D., And Richard L. Abbott, M.D. "Conjunctivitis" Am Fam Physician. 1998;57(4):735-746.

The membrane that covers the visible portion of the sclera and borders the eyelids is called the conjunctiva, and it becomes inflamed when conjunctivitis occurs. It is the primary etiology of the medical condition commonly referred to as "red eye." While a comprehensive history and visual examination can typically determine the underlying cause, there are specific situations in which a culture may be important for validate treatment. Microbiological and viral pathogens are common causes of conjunctivitis. . If an adult who is sexually active or neonatal neonate who is not yet five days old experiences acute, bilateral conjunctivitis with purulent discharge, this could be a sign of a Neisseria infection. Chlamydia trachomatis or Neisseria gonorrhoeae related conjunctivitis typically resolves spontaneously without the need for treatment, whereas conjunctivitis caused by other bacteria typically requires intensive antibiotic therapy. Chronic conjunctivitis frequently manifests in conjunction with blepharitis, meibomianitis, or recurrent styes. Conjunctivitis is an inflammatory condition affecting the conjunctiva; thus, effective management necessitates adherence to proper ocular hygiene practices and the application of culture-determined topical antibiotics. The diagnosis of allergic conjunctivitis requires the presence of severe pruritus and direct exposure to the allergen in question. In the majority of cases, this condition is managed through the administration of topical antihistamines, anti-inflammatory medications, or mast-cell stabilizers.

2.3. Amir A. Azari, MD. Neal P. Barney, MD “A Systematic Review of Diagnosis and Treatment” JAMA. 2013;310(16):1721-1730.

The majority of cases of infectious conjunctivitis are caused by viruses, which can present with a wide range of clinical symptoms and often left untreated. The second most common type of conjunctivitis that is infectious usually goes away in two weeks to two months for simple cases of bacterial conjunctivitis. Determining bacterial conjunctivitis is most accurately accomplished by observing the eyelids for adhesion and matting on awakening, lack of pruritus, the absence of a prior conjunctivitis episode. It is possible to resume work or school earlier when bacterial conjunctivitis is managed with topical antibiotics. Systemic therapy is required in addition to topical antibiotic treatment to effectively manage conjunctivitis due to sexually transmitted infections (STIs), like gonorrhea and chlamydia. Although allergic conjunctivitis is 40% prevalent in the general population, it is infrequently observed among individuals who elect to seek medical attention. When treating allergic conjunctivitis, inhibitors of mast cell function and topical antihistamines are used because of the characteristic irritation associated with this condition. Antibiotic therapy is typically unnecessary in the management of bacterial conjunctivitis as the condition often resolves on its own accord. In the case of conjunctivitis caused by gonorrhea, chlamydia, or contact lens use, antibiotics should be prescribed. In order to treat viral conjunctivitis, the patient is administered supportive care. For the treatment of allergic conjunctivitis, mast cell stabilizers and antihistamines work well.

Lorenzo Loffredo, MD, Fernanda Pacella, MD, et al “Conjunctivitis and COVID-19: A meta-analysis” J Med Virol. 2020 Sep; 92(9): 1413–1414.

The outbreak of coronavirus illness 2019 (COVID-19) was initially concentrated in Wuhan, and subsequently spread throughout the world. COVID-19, when in its severe manifestation, causes hypercoagulation, acute respiratory distress syndrome (ARDS), and severe pneumonia. The lungs serve as the principal site of infection, which frequently gives rise to complications. The exact trajectory of COVID-19 transmission remains unknown at this time. Some authors suggest that the conjunctiva, which could potentially become contaminated via contact with contaminated palms or COVID-19 aerosols, could function as an initial point of contact for the transmission of a widespread illness. It is exceedingly unlikely that pneumonia serves as the exclusive means of transmission for this viral infection. Common conjunctivitis, colloquially referred to as "pink eye,"

is provoked by viral or bacterial pathogens. It has historically been associated with coronavirus infections in animals and human. Recent studies have indicated that conjunctivitis could potentially manifest as a symptom of the COVID-19 virus. An intriguing area of research revolves around the correlation between the severity of COVID-19 and conjunctivitis, given the possibility that the eye serves as a direct entryway for the virus. Notwithstanding this, inconsistent data is extremely scarce. The topic was investigated in an exceedingly small number of studies, specifically three, all of which focused on the Chinese populace and produced distinct outcomes for each.

2.4. Gunnar Høvdig “Acute bacterial conjunctivitis” Acta Ophthalmologica 28 June 2008; 86

Acute bacterial conjunctivitis is the ocular condition that general practitioners encounter most frequently, comprising an estimated one percent of all visits to initial effort. It's provides a comprehensive analysis of acute bacterial conjunctivitis, covering its clinical manifestation, epidemiology, complications, etiology therapeutic management & in vitro diagnosis procedure. Due to the fact that topical antibiotic therapy generally reduces the length of time the illness lasts and enables children to return to school or kindergarten earlier, it has conventionally been advised by medical professionals and patients alike. In line with well- established clinical knowledge, recent primary care articles offer additional evidence to support the concept that the disease is characterized by frequent spontaneous remissions and a favorable prognosis. Consequently, there is presently extensive advocacy and support for the adoption of an expectant mindset or the implementation of a delayed prescription policy. Furthermore, the findings of this study underscore the considerable difficulty that exists in clinical environments when attempting to accurately differentiate within viral & bacterial conjunctivitis. The impact of prevalent non-prescription attitudes on pathogen transmission rates is a subject of uncertainty. This must be taken into account prior to developing a strategy for these patients. Social, economic, and medical considerations are incorporated into the evaluation of various treatment philosophies, alongside a subjective evaluation of the most efficient patient management approach.

Purpose of this study

Pink eye, also called conjunctivitis, is the result of inflammation or infection of the conjunctiva, a thin, transparent membrane that covers the white part of the eyeball and lines the inner eyelid. Tiny blood vessels visible in the conjunctiva are affected by inflammation. There is a concerning prevalence of conjunctivitis infections among the general population; the purpose of this investigation is elaborated upon in the following section.

- To assess the prevalence of conjunctivitis infections in Bangladesh.
- To ascertain the age group most susceptible to conjunctivitis.
- To identify the principal etiology of conjunctivitis.
- To furnish a synopsis of the most widely prescribed pharmaceuticals utilized in the management of conjunctivitis.
- To ascertain public opinion regarding this ailment.
- Initiate a novel field of scholarly inquiry.

Methodology

4.1. Introduction:

After a thorough overview, there are 24 pertinent inquiries in the questionnaire. This investigation included 109 patient items in total.

4.2. Research Design:

This survey is intended to gather perspectives on conjunctivitis and its impact on individuals' daily lives. The questionnaires were developed in Microsoft Word for a cross-sectional study that was conducted entirely in person. The National Institute of Ophthalmology and Hospital conducted the survey.

4.3. Method of Data Analysis:

Following the collection of data, each piece of information underwent internal consistency & accuracy check to eliminate any absent or contradicting information, which was subsequently eliminated. Utilizing Microsoft's superior updated version, conduct the information investigation.

4.4. Ethical Considerations

Prior to commencing the data collection process, informed consent was obtained from the members of the investigation team. The confidentiality of the participants was maintained, and they had the freedom to leave the program at any moment that was made clear to them

4.5. Survey Questionaries

1. Patient Name

2. Gender

- ☐ Male
- ☐ Female

3. Occupation

- ☐ Student
- ☐ Job Holder
- ☐ Business
- ☐ Others

4. Education Level

- ☐ College Student
- ☐ Undergraduate student
- ☐ Postgraduate student

5. Your Age

- ☐ Under 20 years old
- ☐ 20-40 years old
- ☐ Upper 40 years old

6. Location

- ☐ Rural
- ☐ Urban

7. Do you know about Conjunctivitis?

- ☐ Yes
- ☐ No

8. Do you suffer from Conjunctivitis?

- ☐ Yes
- ☐ No

9. How long have you suffered from Conjunctivitis?

- ☐ Under one Week
- ☐ 1-2 week
- ☐ Upper 2 week

10. Symptoms of Conjunctivitis

- ☐ The pink or red color in the white of the eye
- ☐ Swelling of the conjunctiva
- ☐ Increased tear production.
- ☐ Itching, irritation, and/or burning.
- ☐ All of this

11. What do you think about the cause of Conjunctivitis inflammation

- ☐ Infective conjunctivitis
- ☐ Allergic conjunctivitis
- ☐ Irritant conjunctivitis

12. Do you ever follow up doctor for Conjunctivitis?

- ☐ Yes
- ☐ No

13. Do you take any medicine for Conjunctivitis?

- ☐ Yes
- ☐ No

14. Which type of medical therapy do you take for Conjunctivitis?

- ☐ Ophthalmic Ointment
- ☐ Ophthalmic Drop
- ☐ Tablet

15. Is conjunctivitis Spreadable?

- ☐ Yes
- ☐ No

16. Is conjunctivitis spread through the air?

- ☐ Yes
- ☐ No

17. Is conjunctivitis sensitive to sunlight

- ☐ Yes
- ☐ No

18. Is it make any vision problem

- ☐ Yes
- ☐ No

19. What do think, is conjunctivitis bacterial or viral attack

- ☐ Bacterial Attack
- ☐ Viral Attack

20. Have you used any natural therapy for conjunctivitis

- ☐ Yes
- ☐ No

21. Write down the name of the drug you have used for conjunctivitis

.....

22. What class of medicine you have used for conjunctivitis

- ☐ Antibiotic drop
- ☐ Paracetamol
- ☐ Anti-allergic tablet

23. What do you use to wipe your eyelashes?

- ☐ Tissue
- ☐ Towel.

24. Have you used anyone's towel before infected

- ☐ Yes
- ☐ No

Result and Discussion

5.1. Gender

Male	49
Female	41

Table 01 : Gender

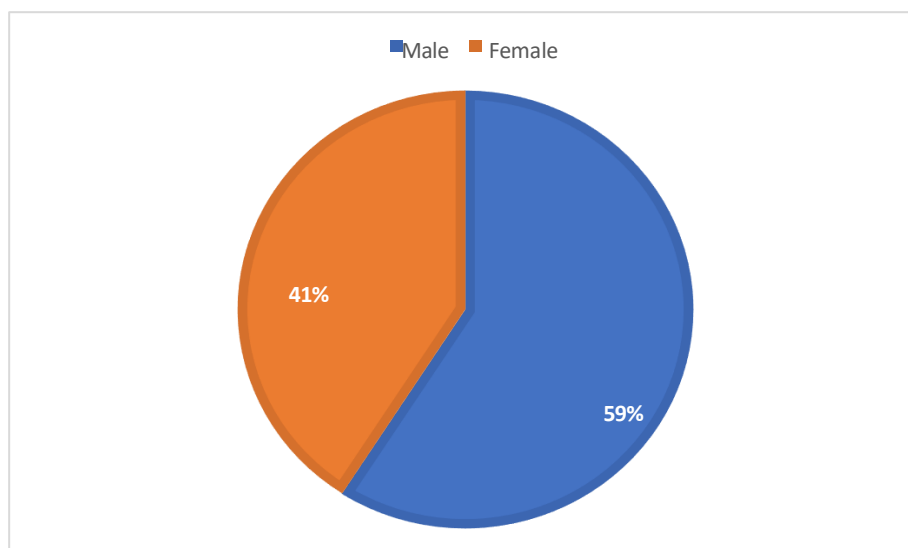


Fig 10: Gender

This survey indicates that 59% of males are afflicted with conjunctivitis. Conjunctivitis affects 41% of the female population.

5.2.Age of patient

Younger than 20 years	58
20-40 years old	17
Older than 40 years old	25

Table 02: Age

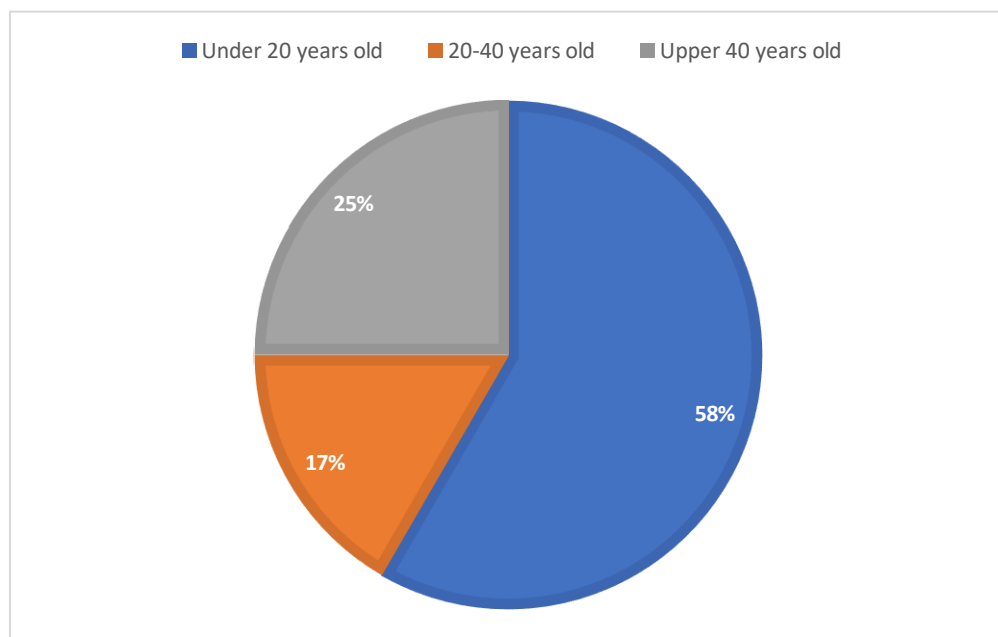


Fig 11: Age

58% of those surveyed are younger than 20 years of age. 25% are aged 40 or older. in addition, 17% of patients are between the ages of 20 and 40. Teenagers are therefore more likely to be suspected of having this disease.

5.3.Location of respondents

Rural	67
Urban	33

Table 03: Location

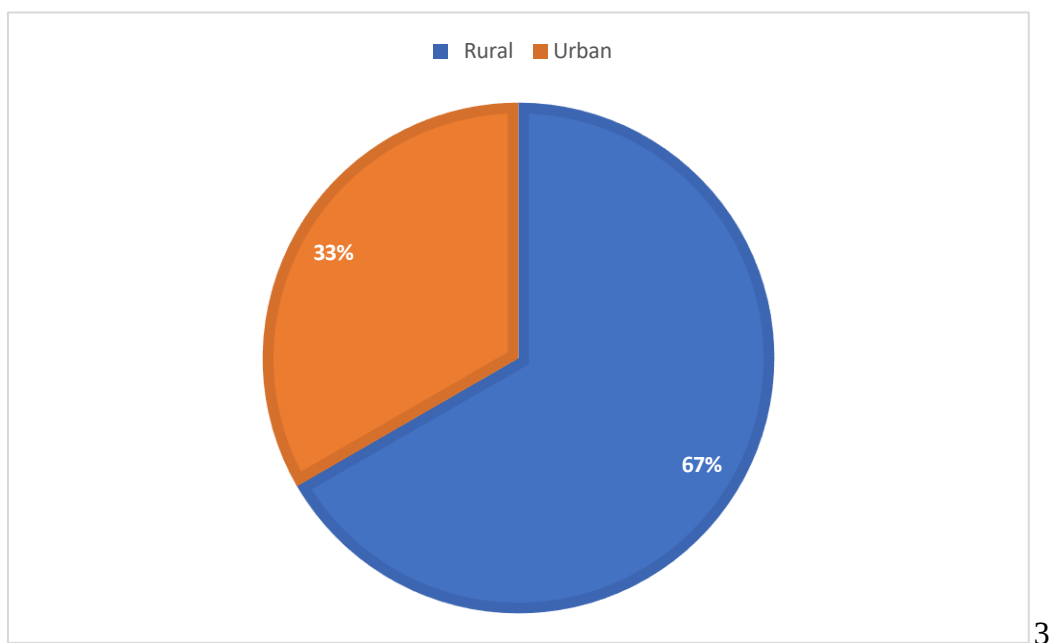


Fig 12: Location

This survey indicates that 67% of conjunctivitis patients reside in rural regions. 33% of conjunctivitis patients reside in urban environments.

5.4. Knowledge about conjunctivitis of respondents

Yes	90%
No	10%

Table o4: Knowledge

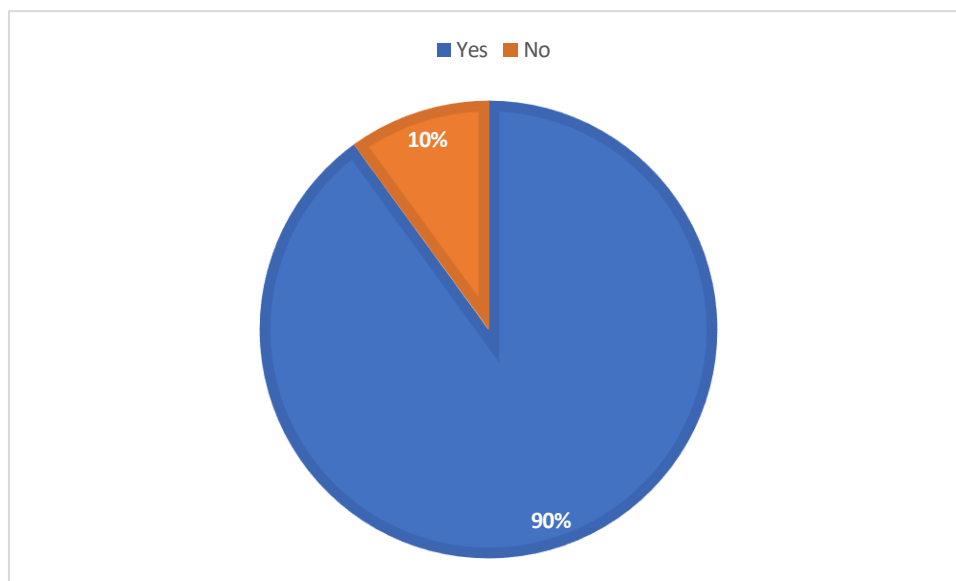


Fig 13: Knowledge

Conjunctivitis is understood by 90% of the population, according to my research. Ten percent of individuals are unaware of this.

5.5. Duration of suffering conjunctivitis

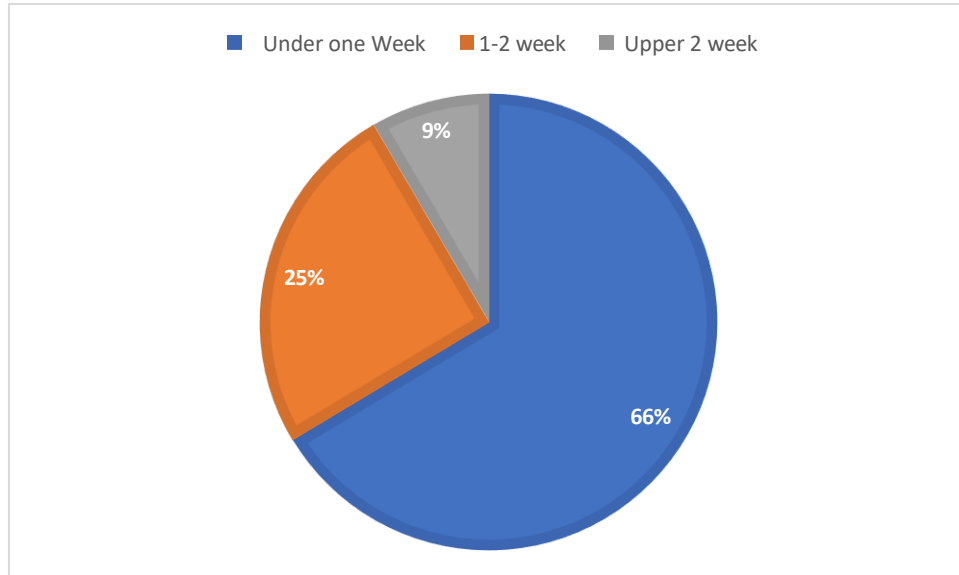


Fig 14: Duration

Here, it's reveals that within a week, 66% of individuals develop conjunctivitis. 1-2 weeks are the duration of distress for 25%. A mere nine percent have endured distress for a duration exceeding two weeks.

Duration	Patient response in percentage
Under one week	66%
1-2 week	25%
Upper 2 week	9%

Table 05: Duration of suffering conjunctivitis

5.6.Follow-up doctor

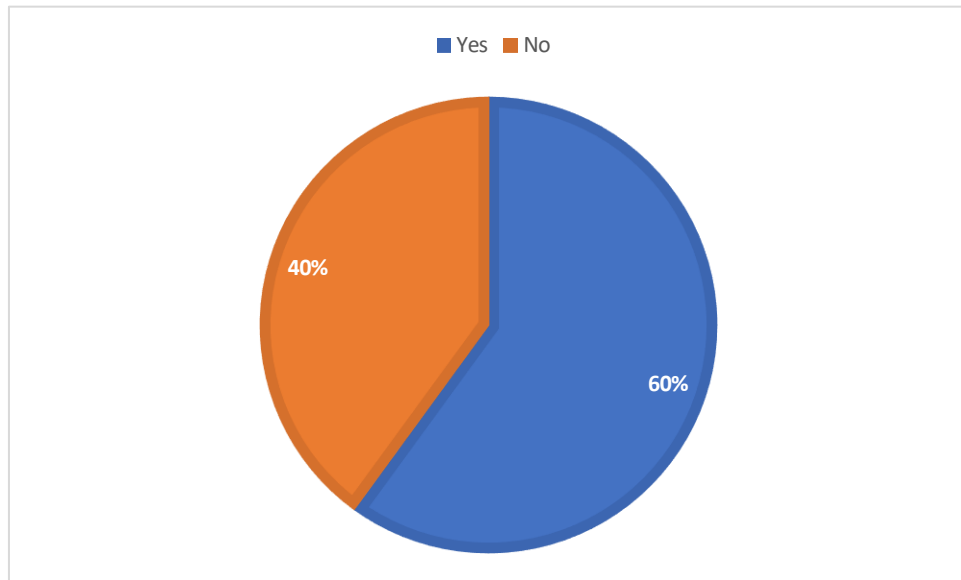


Fig 15: Regular follow-up doctor

About 60% of those who responded to this survey followed up with their physician regarding this illness, while 40% did not.

Regular follow up doctor	Participants response in percentage
Yes	60%
No	40%

Table 06: Follow-up doctor

5.7.Sensitive to sunlight of conjunctivitis patient

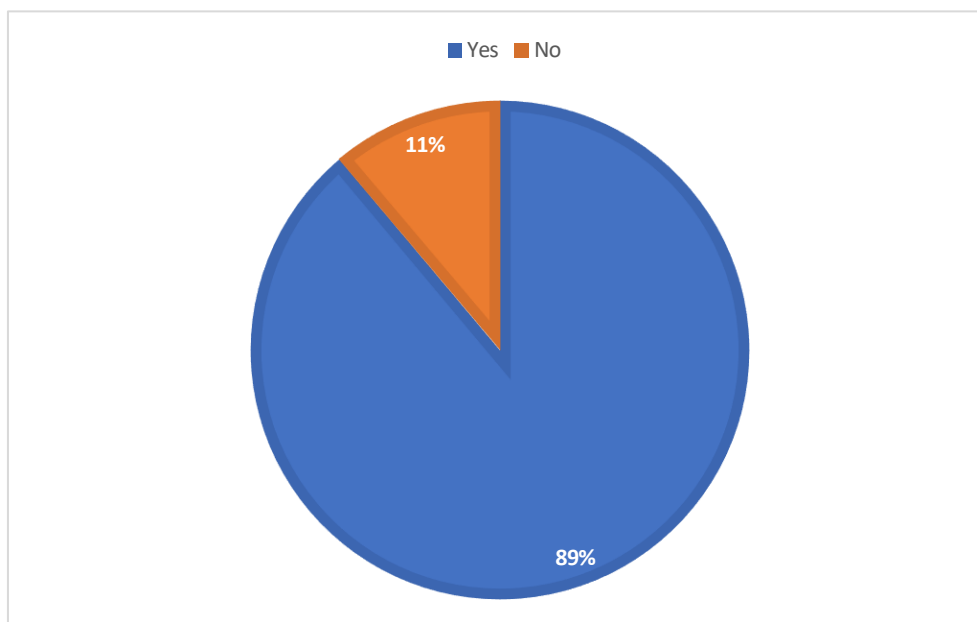


Fig 16: Sensitive to sunlight

According to 89% of participants in this survey, the illness is radiation-sensitive. and 11% assert that there is no sensitivity to sunlight.

Sensitive to sunlight	Patient response in parentage
Yes	89%
No	11%

Table 07: Sensitive to light

5.8. Vision problem of patients

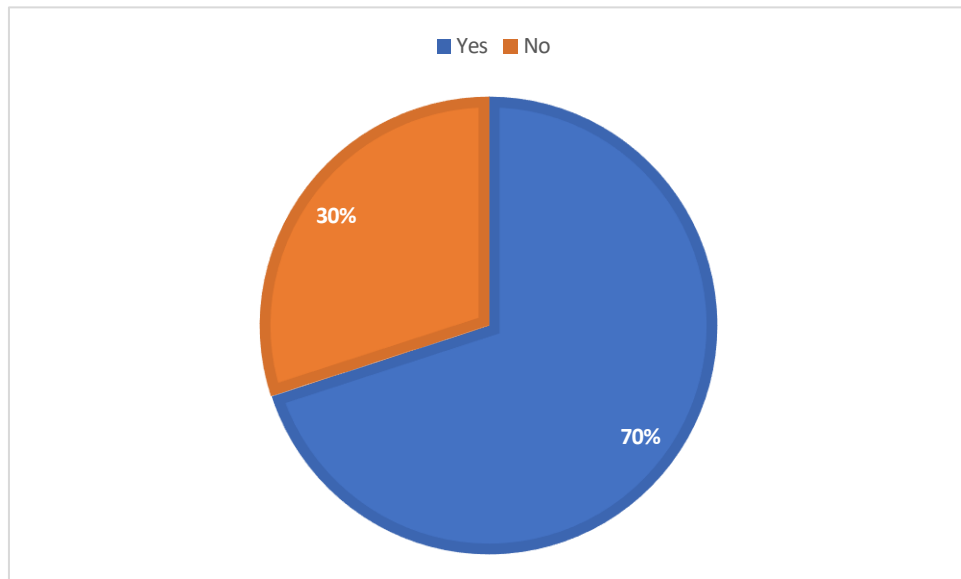


Fig 17: Vision problem

Here it was found that 70% of the population had vision difficulties. 30% of individuals do not experience this issue.

Vision problem	Patient respondents
Yes	70%
No	30%

Table 08: Vision Problem

5.9. Taking Regular Medication

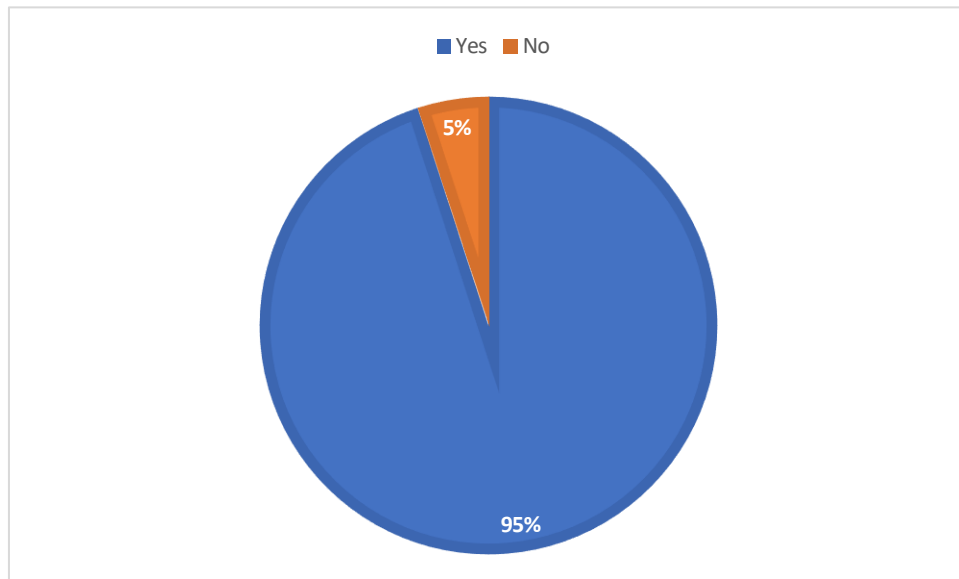


Fig 18: Medication

95% of respondents to this survey reported taking medication. 5% of the population did not take any medication. Simply perform two to three water washes.

Taking regular medication	Response in parentage
Yes	95%
No	5%

Table 09: Medication

5.10. Types of drugs used for conjunctivitis

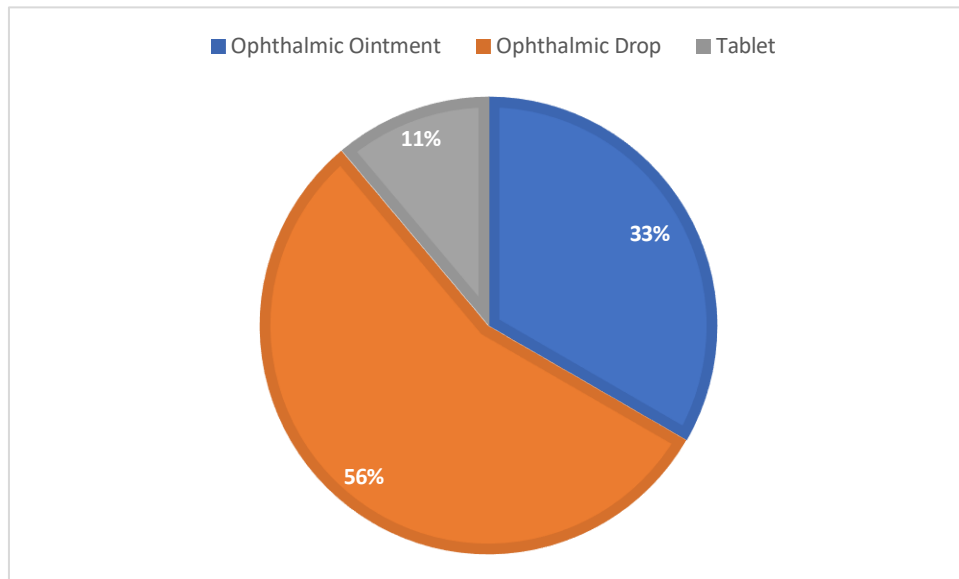


Fig 19: Types of drugs

56% of respondents to this survey were using ophthalmic drop medications. 33 percent utilized ophthalmic ointment. Eleven percent consumed the tablet.

Types of drugs used for conjunctivitis	Participant's response in parentage
Ophthalmic drop	56%
Ophthalmic ointment	33%
Tablet	11%

Table 10: Types of drugs used for conjunctivitis

5.11. Conjunctivitis effects on Lifestyle

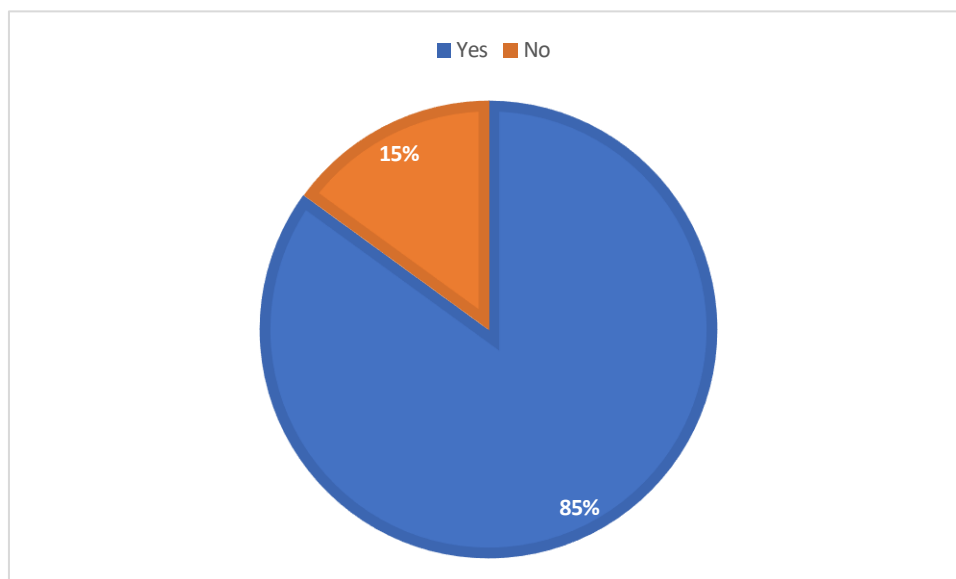


Fig 20: Lifestyle

According to 85% of respondents to this survey, conjunctivitis impacts lifestyle. 15% stated that it has no impact on their way of life.

Conjunctivitis effects on Lifestyle	Participant's response in (%)
Yes	85
No	15

Table 11: Conjunctivitis effect on conjunctivitis

5.12. Which brand of ciprofloxacin Do you have used?

Beuflox (Incepta)	20%
Aprodex (Aristo)	40%
Ciproxy D (Opsonin)	25%
None of above	15%

Table 12: Brand Name of ciprofloxacin

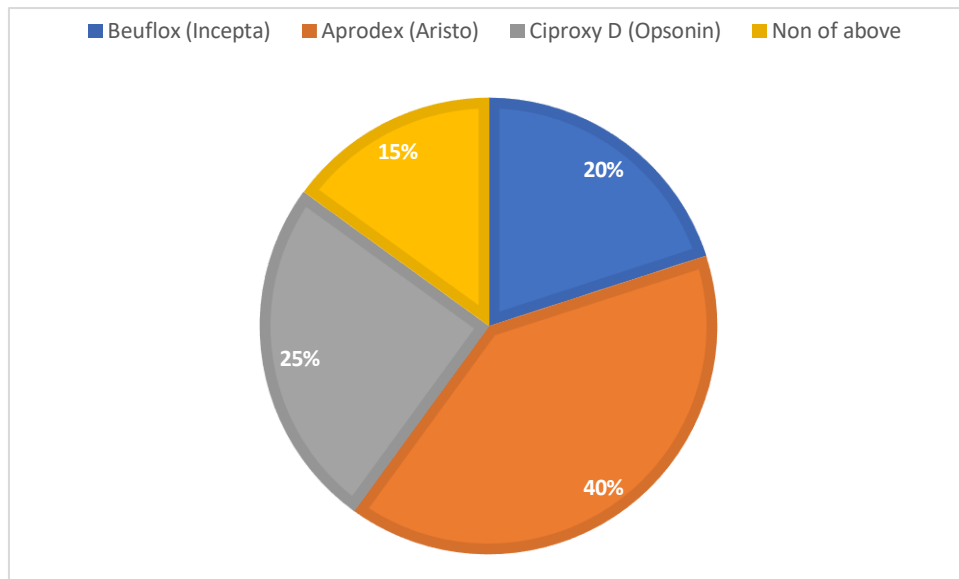


Fig 21: Brand Name of ciprofloxacin

Approximately 40% of patients have utilized Aprodex, 20% have utilized Beuflox, 25% have utilized Ciproxy D, and 15% have not utilized any of the medications on this list, according to this survey.

Conclusion

Conjunctivitis, also known as "pink eye," is a constriction or infection of the conjunctiva, the transparent membrane covering the eyeball and eyelid. In the context of conjunctival inflammation, the minuscule blood vessels exhibit increased visibility. Constantly, millions of Bangladeshis are infected with conjunctivitis, a contagious illness that can spread swiftly between people. At the National Institute of Ophthalmology & Hospital, physical research was undertaken to ascertain the present severity of conjunctivitis and to develop treatment strategies for the condition.

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