Volume 4, Issue 3, 2026

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

SEASONAL PATTERN AND OCULAR MANIFESTATION OF VIRAL OUTBREAKS DURING WHEAT HARVESTING SEASON IN RURAL PUNJAB, HAFIZABAD, PAKISTAN

[1]Kashmala Pervaiz, [2]Laiba Fatima, [3]Wajiha Mushtaq, [4]Areej Nazir

[1]Department of Ophthalmology and Vision Sciences, Optometrist, Saqib Bashir General Hospital Hafizabad

[2]Department of Ophthalmology and Vision Sciences, Optometrist, Saqib Bashir General Hospital Hafizabad

[3]Department of Ophthalmology and Vision sciences, Health Services Academy, ISB, Optometrist

[4]Department of Ophthalmology and Vision sciences, The University of Faisalabad, Optometrist

[1]kashmalabaig561@gmail.com, [2]Laibafatima974@gmail.com, [3]wajihamushtaq1886@gmail.com, [4]drareejnazir@gmail.com

DOI: https://doi.org/10.5281/zenodo.21672166

Keywords:
Conjunctivitis, Infections, Farmers, Viral, Allergic, Bacterial.

Article History
Received on 23 Feb, 2026
Accepted on 19 March, 2026
Published on 20 March, 2026

Abstract

Conjunctivitis is a common ocular infection that affects individuals worldwide. The present study is primarily driven by the well-established association between the increased incidence of conjunctivitis during the wheat harvesting season and contributing factors such as inadequate personal hygiene and prolonged exposure to sunlight. In addition, the lifestyle of farmers and rural residents, together with widespread poverty and low literacy levels, may contribute significantly to the higher prevalence of this condition within the affected population. Purpose: The present study was designed to evaluate the incidence of infectious and allergic conjunctival inflammation among the local population of Hafizabad District, Punjab, Pakistan.Methods: A community-based, observational descriptive study was carried out between March and May 2025, in rural Punjab, Pakistan, utilizing a quantitative research design. The examination process involved a detailed inspection of the eyes, starting with the anterior segment and followed by the posterior segment, using a slit-lamp and direct ophthalmoscope. The objective was to assess the presence of conjunctivitis. Data were systematically gathered on different types of conjunctivitis, including viral, allergic, and bacterial forms. Results: Our study discloses that 250 farmers (46%) demonstrated symptoms consistent with viral and bacterial conjunctivitis. Among them, 120 farmers (48%) were diagnosed with allergic conjunctivitis; moreover, 85 locals (34%) were diagnosed with viral conjunctivitis, while 30 villagers (12%) had bacterial conjunctivitis and 15 locals (6%) had none. As far as their healthcare-seeking exploits, 50 individuals (20%) go for consultation to an ophthalmologist/optometrist, while 106 farmers (42.4%) come down in favour of home remedies. Exceptionally, a consequential section 79 (31.6%) did not seek any form of medical attention, whereas only 15 mortals (6%) opted for pharmacy treatment. More respectively 10 individuals (4%) received the symptoms from friends, while another 12 individuals (4.8%) received it from family. A slightly higher number, 20 individuals (8%), obtained it from local sources. The vast majority, 208 individuals, representing 83.2%, were farmers. Conclusion: The widespread reliance on traditional preventive practices and the reluctance of farmers to seek professional medical care have been identified as important factors contributing to the high prevalence of allergic and viral conjunctivitis. Moreover,

Volume 4, Issue 3, 2026

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

prolonged working hours in agricultural fields, continuous exposure to sunlight, and poor hygiene in both living and working environments may further increase the risk of ocular infections and allergic eye diseases. The high burden of conjunctivitis and other ocular injuries highlights the urgent need to promote the use of protective eyewear and implement effective eye safety practices among agricultural workers. Given the socioeconomic challenges faced by farmers and rural communities, it is essential for the government to develop and strengthen public health awareness campaigns and support programs tailored to the specific needs of Pakistan's agricultural population.

INTRODUCTION:

Punjab, owing to its fertile agricultural land, has traditionally been the primary contributor to Pakistan's agricultural production and is widely recognized as the country's breadbasket, with wheat and rice serving as its principal crops. During the wheat harvesting season, which generally extends from late March to May, rural communities experience a marked increase in the occurrence of allergic conditions and ocular infections. Inadequate personal hygiene practices, together with prolonged exposure to direct sunlight, have been recognized as key factors contributing to the higher prevalence of allergic conjunctivitis and other eye infections among the local population. These environmental and behavioural risk factors create favourable conditions for eye irritation and infection. Furthermore, the lack of adequate preventive strategies—such as wearing protective eyewear, maintaining regular eye hygiene, and seeking timely medical attention can worsen these conditions, potentially leading to chronic or recurring eye problems over time. Eye setups often confront a spike in patients presenting symptoms like bloodshot, itchy, irritated and lachrymose eye during wheat harvesting season. The intention of this study is to provide scientific evidence the seasonal patterns of these viral outbreaks and the affiliated ocular manifestation to allow early diagnosis, shield, precaution, neutralization and focused support.

Conjunctivitis can arise from a variety of etiological agents, including viruses, bacteria, chlamydia, and other microbial pathogens. Among these, allergic conjunctivitis is recognized as one of the most prevalent forms, particularly in regions with high exposure to environmental allergens. Conjunctival allergens like wheat flour dust, wheat pollens can trigger an immune response in the subject leading to the inflammation. Allergy conjunctivitis is responsible for occurrence of infection among forty eight percent of cases. Symptomatic terms may involve red, itchy, watery eye, eyelid inflammation and lid edema and puffiness. These indications may extend for at least one to two weeks. The conjunctiva may develop hypersensitivity reactions to a range of environmental allergens, including airborne pollens, pet dander, dust mites, mold spores, and other particulate matter, leading to an exacerbation of allergic responses. Allergic conjunctivitis is broadly categorized into several clinical subtypes: seasonal allergic conjunctivitis (SAC), perennial allergic conjunctivitis (PAC), vernal keratoconjunctivitis (VKC), and atopic keratoconjunctivitis (AKC). Management of acute conjunctival inflammation associated with these conditions typically involves the administration of anti-allergic agents, with antihistamines and mast cell stabilizers demonstrating significant efficacy in reducing symptoms and preventing recurrence.

However, if the use of anti-allergic drops fails to cure the symptoms of allergic conjunctivitis in severe and extreme situations, then the use of non-steroid anti-inflammatory

(NASID) and corticosteroid agents have the potential to be found effective. Viral conjunctivitis is caused by viral pathogens like chlamydia trachomatis and staphylococcus aureus. Among two hundred and fifty subjects thirty four percent were diagnosed with viral conjunctivitis having symptoms like photophobia, tearing, and discomfort. It has been found that almost twelve percentage of general population has been affected by bacterial conjunctivitis. Bacterial conjunctivitis is caused by bacterial pathogens like staphylococcus aurous, streptococcus pneumonia and haemophilic. The overarching symptoms of bacterial conjunctivitis include chemosis,

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

mucopurulent ocular discharge and pain. However, the incidental symptoms of bacterial conjunctivitis include mild fever, crusting and foreign body sensation both Gram-positive (54.3%) and Gram-negative (45.7%) bacteria have been implicated in the etiology of bacterial conjunctivitis, with a slightly higher prevalence of Gram-positive pathogens. Several studies have reported that more than half of bacterial conjunctivitis cases tend to be self-limiting, often resolving spontaneously within approximately one week. Nevertheless, the use of appropriately prescribed topical antibiotics can significantly expedite recovery and reduce the risk of complications or secondary infections.

Methods:

A descriptive cross-sectional study was performed to determine how habitual conjunctivitis is of Hafizabad, Punjab, Pakistan. The study was conducted between March and May 2025 and sampled across the Saqib Bashir General Hospital in Hafizabad, which 208 farmers were chosen. Moreover, this method yielded a total sample size of 208 farmers. A total of 250 contenders were ultimately involved by adding a 10% margin for anticipated prejudice. Initially, the sampling process consisted of these steps: there were 208 farmers from the village. One bunch was randomly selected, and each bunch incorporated of 34 farmers: 6× 34= 204. To account for potential bias, 5% was added to increase the sample size to 204, which was then rounded to 208. A non-liability convenience sampling procedure was used. Random patient selection was followed by daily OPD in the hospital. Ethical approval was acquired proceeding to examining the farmers. Anterior eye segment examinations were conducted with a slit-lamp and an ophthalmoscope to detect conjunctivitis. This was followed by a thorough assessment of the posterior segment. Collected data included: prevalence of allergic, viral, and bacterial conjunctivitis, Healthcare-seeking preferences. Allergic conjunctivitis was diagnosed based on the appearance of symptoms such as burning, itching, clear or ropy mucinous discharge, tearing, and photophobia. Additionally, at least two ocular signs: Papillae, Chemosis, Brownish hyperpigmentation, or Trantas spots at the limbus were required for the diagnosis. After data collection, 4analysis was performed using SPSS version 30.0.

Results:

Between March and May 2025, a cohort of 250 farmers underwent ophthalmic examination by an optometrist to assess the prevalence of conjunctivitis. This study was conducted at Saqib Bashir General Hospital, Hafizabad, Punjab, Pakistan. The results demonstrated that allergic conjunctivitis was the most common diagnosis, affecting 120 participants (48%). Viral conjunctivitis was identified in 85 individuals (34%), while bacterial conjunctivitis was diagnosed in 30 participants (12%). Additionally, 15 farmers (6%) presented with mild mixed symptoms indicative of multiple conjunctivitis types. In light of existing literature documenting a higher incidence of allergic conjunctivitis among pediatric and adolescent populations, these findings suggest that similar environmental or occupational factors may contribute to the elevated prevalence of allergic conjunctivitis observed in the older farming demographic.

The current prevalence of conjunctivitis among farmers highlights the critical need for optometric services within healthcare settings. Multiple studies have emphasized the importance of wearing eye protection to reduce the incidence of ocular diseases. Consistent use of protective equipment such as eye shields, safety glasses, and other eye protectors has been shown to significantly decrease the risk of ocular injuries and the development of conjunctivitis among farmers. Our study shows that the severity of symptoms intensify with the exposure of sunlight. The subject experience mild symptoms in the first six hours (11%), these symptoms become intense in the next six hours (30%) and severe in the next 12 (54%) hours the subject feel intense pain, itching, watering, photophobia and all the associated symptoms and run for the cure. Out of two hundred and fifty subjects the highest 106(42.4%) ratio relayed on traditional home remedies about 50(20%) of farmers went to ophthalmic setups, 15(6%) went to the pharmacies and 79(31.6%) had done nothing in the first week.

Allergic conjunctivitis has been identified as one of the predominant ocular infections during the

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

wheat harvesting season. Among the total diagnosed cases of conjunctivitis (n=235, 94%), the largest proportion of farmers, 120 individuals (48%), presented with symptoms consistent with allergic conjunctivitis. This condition is commonly attributed to exposure to allergens such as wheat flour dust, wheat pollen, and dust mites.

Bacterial conjunctivitis, on the other hand, is typically caused by bacterial pathogens including Staphylococcus aureus, Streptococcus pneumonia, and Haemophilic influenza. Both Gram-positive and Gram-negative bacteria have been implicated in the high prevalence of bacterial conjunctivitis observed in this population. Additionally, a small number of fungal isolates, specifically Candida albicans, have been reported in samples positive for adenovirus, which accounted for 85 cases (34%) of conjunctivitis.

A common trend of using traditional home remedies has been found among the subject of this study. As far as the tendency of seeking medical help 50(20%) patients preferred to get examined by ophthalmologist/optometrist. While 15(6%) of patients went to the local pharmacies to get lubricants .Not seeking any treatment has been found in 79(31.6%) of patients. this is most probably due to a trend found previling among the subjects about considering the ophthalmic consultations and ocular treatments of no use. Some Karachi bases studies have bought forward the fact that bacterial cultures grown from most of the ocular infections and conjunctiva were found anti biotic resistance. This is most probably due to the inappropriate and inadequate self- medication of various antibiotics by the population under study.

Table 1: ***Epidemiological Profile of Conjunctivitis Among farmers During March to May 2025***

Conjunctivitis	Frequency	Percentage
ALLERGIC	120	48%
VIRAL	85	34%
BACTERIAL	30	12%
NONE	15	6%
TOTAL	250	100%

Table 2: ***Frequency of eye treatments among the farmers***

Treatments	Frequency	Percentage
Traditional home remedies	106	42.4%
Ophthalmologist/Optometrist	50	20%
Pharmacy	15	6%
None	79	31.6%

Volume 4, Issue 3, 2026

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

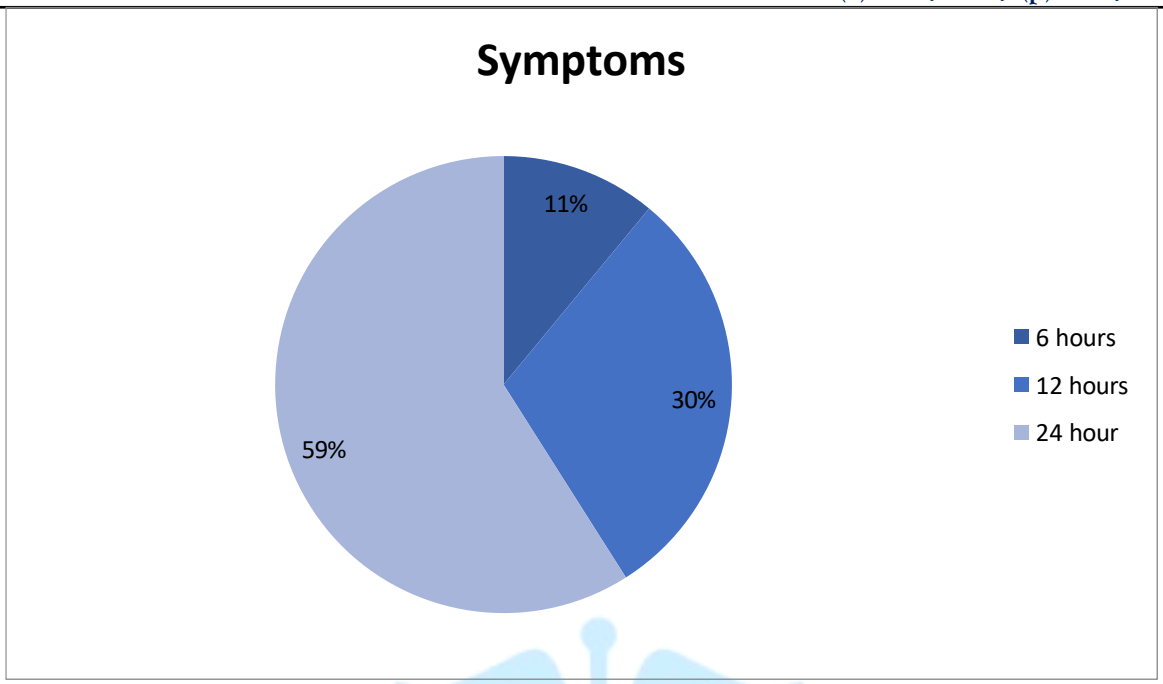


Figure 1: Percentage representation of symptom severity with time

Discussion:

This study finds a strong seasonal congruence between the wheat harvesting season and ocular outbreaks in central Punjab, Pakistan. The symptoms mainly integrate with viral, bacterial1 and allergic conjunctivitis, respectively. The high relative risk ocular injuries bring out the need for monitoring standard eye safety practices. The reported frequency of conjunctivitis (bacterial, viral, allergic), ocular injuries, and other eye infections among different people decreased significantly by 190 cases with the constant use of eye

Protection. These high prevalence rates emphasize the importance of 1universal eye safety and precautionary measures. Female patients were more likely to wear protective eyewear (65%), such as shields and sunglasses, in contrast to male patients (56%). Among regular eye protector users, only 15% experienced conjunctivitis, and 40% had foreign-body issues; moreover, non-protector users faced rates of 70% respectively, and fewer sought an ophthalmologist. These results line up with our recent findings among farmers, where only 20% used glasses and 42.4% employed traditional home remedies.

Further research has shown that 70% of non-protective users have ocular injuries, compared to just 30% among regular eye protective users. Moreover, 40% of these users sustained from conjunctivitis and 11% reported foreign-body incidents, prompting consultations with ophthalmologists. Our study portrays similar trends: 83.2% of the farmers abandoned any type of eye protection, with exposure roughly six, four, and two hours daily, respectively. Among patients, 63.1% diagnosed with foreign-body incidents and 38% fully developed conjunctivitis.

Former research authenticated 48% of allergic conjunctival cases and 34% cases of viral conjunctivitis among patients. This aligns with our perceived 83.2% conjunctivitis prevalence among farmers. Furthermore, our study found a 34% viral conjunctivitis rate stands as compared to another study reporting 90% cases. Given its contagious nature, 8% of farmers diagnosed with viral conjunctivitis in our study were advised to isolate until full recovery and observe preventive measures besides symptomatic treatment.

In our sample,12% of farmers endured from bacterial conjunctivitis. A Karachi-based study delineated an 18.3% of bacterial conjunctivitis in an urban population, with adenovirus responsible for 75% cases, herpes simplex virus for 2.3% and chlamydia trachomatis for 1%.

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

These findings are validated by another study known as cases 238 of infectious conjunctivitis and 220 cases of bacterial conjunctivitis, primarily targeting teenagers. More research has disclosed that in children, the frequency of different eye diseases was 41.4% for conjunctivitis 17% for viral keratoconjunctivitis, 30% for nasolacrimal duct blockage, 8% for hypermetropia and 6% for myopia. The least incidence of allergic conjunctivitis in older patients observed in our study aligns with this study. Furthermore, other investigations report allergic conjunctivitis rates of 42.4% and 40% in children's, confirming high prevalence rates in pediatric population.

Conclusion:

Viral conjunctivitis is distinctly general among farmers in central Punjab, Pakistan. A complication embedded in the long hours they go through working in the fields and their dependency on conventional unhygienic methods to protect their eyes from severe sunlight. This concern is aggravated by their reluctance to look for medical help or consult with eye-care professionals' optometrist or ophthalmologists, even though free treatment is available at medical prerequisite across the country. Therefore, only symptomatic consolation is pursued rather than appropriate management of eye infections and conjunctivitis.

To address this, animating proper use of protective eyewear and supporting hygienic eye-care practices are requisite steps toward positive behavioral change among these farmers.

Appointed the socioeconomic summons they face and the financial burden of eye infections, it is climacteric to appliance a state-supported medical relief initiative. Such a system would make sure that eye injuries, infections and cases of conjunctivitis among framers and locals are frequently reported, recorded and managed.

REFERENCES:

1. Li, J., Yang, Y., Lin, C., Li, W., Yang, Y., Zhang, Y. et al. (2014). Etiology of acute conjunctivitis due to coxsackievirus A24 variant, human adenovirus, herpes simplex virus, and Chlamydia in Beijing, China. Japanese Journal of Infectious Diseases, 67(5): 349-355. doi: https://doi.org/10.7883/yoken.67.349.
2. Sambursky RP, Fram N, Cohen EJ. (2007). The prevalence of adenoviral conjunctivitis at the wills eye hospital emergency room. Optometry, 78(5):236– 239. doi: https://doi.org/10.1016/j.optm.2006.11.012.
3. Jhanji, V., Chan, T. C., Li, E. Y., Agarwal, K., Vajpayee, R. B. (2015). Adenoviral keratoconjunctivitis. Survey of Ophthalmology, 60(5): 435-44
3. doi: https://doi.org/10.1016/j.survophthal.2015.04.001.
4. Visscher, K. L., Hutnik, C. M. L., Thomas, M. (2009). Evidence-based treatment of acute infective conjunctivitis: Breaking the cycle of antibiotic prescribing. Canadian Family Physician, 55(11):1071-1075.
5. Castillo, J., Verboven, Y., Stroman, D., Kodjikian, L. (2011). The role of topical moxifloxacin, a new antibacterial in Europe, in the treatment of bacterial conjunctivitis.Clinical Drug Investigation, 31(8):543-57. DOI: 10.2165/11589020-000000000-00000.
6. Chung C, Cohen E, Smith J. (2002). Bacterial conjunctivitis. Clinical Evidence, 7:574–579.
7. Donahue, S. P., Khoury, J. M., Kozvalski, R. P. (1996). Common ocular infections. Drugs, 52(4): 526-540. doi: https://doi.org/10.2165/00003495-199652040-00006
8. Frank F. Bodor, MD, FAAP. (1998). Diagnosis and management of acute conjunctivitis. Seminars in Pediatric Infectious Diseases, 9 (1): 27-30. doi: https://doi.org/10.1016/S1045-1870(98)80047-2
9. Cavuoto, K. M., Zutshi, D., Miller, D., Karp, C., Feuer, W. J. (2006). Update on Bacterial Conjunctivitis in South Florida. Investigative Ophthalmology & Visual Science, 47(13): 1907-1907.
10. Lietman, P. S., Gigliotti, F., Hendley, J. O., Morgan, J., Michaels, R., Dickens, M., Lohr, J. (1984). Efficacy of topical antibiotic therapy in acute conjunctivitis in children. The Journal

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

of pediatrics, 104(4): 623-626. doi: https://doi.org/10.1016/S0022-3476(84)80566-1

11. Sheikh, A., Hurwitz, B. (2005). Topical antibiotics for acute bacterial conjunctivitis: Cochrane systematic review and meta-analysis update. British Journal of General Practice, 55(521): 962-964.
12. Singh, K., Bielory, L. (2007) Ocular allergy: a national epidemiologic study. Journal of Allergy and Clinical Immunology,119(1):154. doi:10.1016/j.jaci.2006.11.538
13. Datta, G. (2020). Contaminated pond water may cause chronic allergic conjunctivitis in rural area–a case report. Science, Technology and Development, 9(11): 62-65.
14. Singh, K., Bielory, L. (2007). Epidemiology of ocular allergy symptoms in regional parts of the United Isaacson, P., Wright, D. H. (1984). Extranodal malignant lymphoma arising from mucosa- associated lymphoid tissue. Cancer, 53(11): 2515-2524. DOI: https://doi.org/10.1002/1097-0142(19840601)53:113.0.CO;2-C
15. Bielory, L., Frohman, L. P. (1992). Allergic and immunologic disorders of the eye. Journal of Allergy and Clinical Immunology, 89(1): 1-15. doi: https://doi.org/10.1016/S0091-6749(05)80033-8. Conjuntivitis among farmers of Vehari DOI: https://doi.org/10.52229/pbmj.v4i1.69 PBMJ Vol 4 Issue 1 Jan-Jun 2021 Abideen Z et al., 57
16. Leonardi, A., Motterle, L., Bortolotti, M. (2008). Allergy and the eye. Clinical & Experimental Immunology, 153, 17-21. doi: https://doi.org/10.1111/j.1365-2249.2008.03716.x
17. Wong, A. H., Barg, S. S., Leung, A. K. (2009). Seasonal and perennial conjunctivitis. Recent Pat Inflamm Allergy Drug Discov, 3:118–127. doi: https://doi.org/10.1016/S0091-6749(05)80033-8.
18. Friedlaender, M. H. (2011). Ocular allergy. Current Opinion in Allergy and Clinical Immunology, 11(5), 477-482. doi: 10.1097/ACI.0b013e32834a9652.
19. Stokes, T. C., Feinberg, G. (1993). Rapid onset of action of levocabastine eye-drops in histamine-induced conjunctivitis. Clinical & Experimental Allergy, 23(9): 791-794. doi: https://doi.org/10.1111/j.1365-2222.1993.tb00368.x
20. Donshik, P. C., Pearlman, D., Pinnas, J., Raizman, M. B., Tauber, J., Tinkelman, D., Walters, T. R. (2000). Efficacy and safety of ketorolac tromethamine 0.5% and levocabastine 0.05%: a multicenter comparison in patients with seasonal allergic conjunctivitis. Advances in Therapy, 17(2): 94-102. doi: https://doi.org/10.1007/BF02854842.
21. Kari, O., Saari, K. M. (2010). Updates in the treatment of ocular allergies. Journal of Asthma and Allergy, 3:149-158. doi: 10.2147/JAA.S13705
22. Spector, S. L., Raizman, M. B. (1994). Conjunctivitis medicamentosa. Journal of Allergy and Clinical Immunology, 94(1): 134-136. doi: https://doi.org/10.1016/0091-6749(94)90081-7.
23. Dell, S. J., Shulman, D. G., Lowry, G. M., Howes, J., Loteprednol Allergic Conjunctivitis Study Group. (1997). A controlled evaluation of the efficacy and safety of loteprednol etabonate in the prophylactic treatment of seasonal allergic conjunctivitis. American Journal of Ophthalmology, 123(6): 791-797. doi: https://doi.org/10.1016/S0002-9394(14)71128-6.
24. Dell, S. J., Lowry, G. M., Northcutt, J. A., Howes, J., Novack, G. D., & Hart, K. (1998). A randomized, double-masked, placebocontrolled parallel study of 0.2% loteprednol etabonate in patients with seasonal allergic conjunctivitis. Journal of Allergy and Clinical Immunology, 102(2): 251-255.
25. doi: https://doi.org/10.1016/S0091-6749(98)70094-6. Fan, D. S., Christopher, B. O., Chiu, T. Y., Wong, C. Y., Ng, J. S., Pang, C. P., Lam, D. S. (2003). Ocular-hypertensive and antiinflammatory response to rimexolone therapy in children. Archives of Ophthalmology, 121(12): 1716-1721. doi:

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

10.1001/archopht.121.12.1716 26. Pflugfelder, S. C., Maskin, S. L., Anderson, B., Chodosh, J., Holland, E. J., De Paiva, C. S., Vogel, R. (2004). A randomized, doublemasked, placebo-controlled, multicenter comparison of loteprednol etabonate ophthalmic suspension, 0.5%, and placebo for treatment of keratoconjunctivitis sicca in patients with delayed tear clearance. American Journal of Ophthalmology, 138(3): 444-457. doi:https://doi.org/10.1016/j.ajo.2004.04.052

27. Ali, A., Erenstein, O. (2017). Assessing farmer use of climate change adaptation practices and impacts on food security and poverty in Pakistan. Climate Risk Management, 16: 183-194. 29. Lakho, K. A., Jadoon, M. Z., Mahar, P. S. (2012). Pattern of Ocular Problems in School going Children of District Lasbela, Balochistan. Pakistan Journal of Ophthalmology,

28.doi: https://doi.org/10.36351/pjo.v28i4.395 . Majeed, A., Naeem, Z., Khan, D. A., Ayaz, A. (2005). Epidemic adenoviral conjunctivitis report of an outbreak in a military garison and recommendations for its management Conjuntivitis among farmers

29: https://doi.org/10.52229/pbmj.v4i1.69 PBMJ Vol 4 Issue 1 Jan-Jun 2021 Abideen Z et al., 58 and prevention. Journal-Pakistan medical association, 55(7):273-275. Liang, Q., Lu, X., Wang, M., Tian, L., Labbé, A., Hu, A. (2016). Study of infectious conjunctivitis among children in rural areas of Qinghai province. Science China Life Sciences, 59(6): 548-554.

30:doi:https://doi.org/10.1007/s11427-016- 5058-x. Baig, R., Ali, A. W., Ali, T., Ali, A., Shah, M. N., Sarfaraz, A., Ahmad, K. (2010). Prevalence of allergic conjunctivitis in school children of Karachi. Journal of the Pakistan Medical Association, 60(5):371-373. . Malu, K. N. (2014). Allergic conjunctivitis in Jos-Nigeria. Nigerian medical journal: Journal of the Nigeria Medical Association, 55(2):166-170. doi: 10.4103/0300- 1652.129664. Woodland, R. M., Darougar, S., Thaker, U., Cornell, L., Siddique, M., Wania, J., Shah, M. (1992). Causes of conjunctivitis and keratoconjunctivitis in Karachi, Pakistan. Transactions of the Royal Society of Tropical Medicine and Hygiene, 86(3): 317-320. DOI: 10.1016/0035-9203(92)90328-. Wazzan, K. A. A., Almas, K., Qahtani, M. Q. A., Shethri, S. E. A., Khan, N. (2001). Prevalence of ocular injuries, conjunctivitis and use of eye protection among dental personnel in Riyadh, Saudi Arabia. International dental journal, 51(2): 89-94.

31.https://doi.org/10.1002/j.1875-595X.2001.tb00828.x.Roberts-Harry, T. J., Cass, A. E., Jagger, J. D. (1991). Ocular injury and infection in dental practice. A survey and a review of the literature. British Dental Journal, 170(1): 20- 22.

32.doi: https://doi.org/10.1038/sj.bdj.4807396. Azuamah, Y.C., Esenwah, E.C., Ahuama, O.C., Ikoro, N.C., Iwuagwu, F.C., Dozie, I.N.S. (2018). External eye infections and personal hygiene practices among patients attending optometry teaching clinic federal university of technology, owerri. Journal of the Nigerian Optometric Association, 20(2): 53 – 61. Sethi, S., Sethi, M. J., Saeed, N., Kundi, N. K. (2008). Pattern of common eye diseases in children attending outpatient eye department Khyber Teaching Hospital. Pakistan Journal of Ophthalmology, 24(4):166-171.

33. doi: https://doi.org/10.36351/pjo.v24i4.675 Fatima, K., Shahid, E., Shaikh, A. (2015). Frequency of Common Eye Diseases in Pediatric Outpatient Department of A Tertiary Care Hospital. Pakistan Journal of Ophthalmology, 31(3): 154-157 Kumah, D. B., Lartey, S. Y., Yemanyi, F., Boateng, E. G., Awuah, E. (2015). Prevalence of allergic conjunctivitis among basic school children in the Kumasi Metropolis (Ghana): a community-based crosssectional study. BMC Ophthalmology, 15:69. doi: 10.1186/s12886-015-0053-8.