

# Prevalence of Bacterial Conjunctivitis and Allergic Conjunctivitis in Pakistan

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## ABSTRACT

**Objective:** To find the prevalence of bacterial conjunctivitis and allergic conjunctivitis in Pakistan.

**Study Design:** Prospective study

**Place and Duration of Study:** Department of Ophthalmology, People Medical College Hospital Nawabshah from 1<sup>st</sup> January 2019 to 30<sup>th</sup> June 2019.

**Methodology:** One hundred patients age between 8-15 years were enrolled depending upon their clinical symptoms of conjunctivitis. Each patient sample was then taken through conjunctival swab test and sent to laboratory for confirmation. Allergic conjunctivitis and bacterial conjunctivitis were identified with slit lamp examination, while Allergic conjunctivitis was confirmed through presence of the papillae in the upper portion of the tarsal conjunctiva correlating with the clinical symptoms of the patient.

**Results:** The mean age of the patients was 13.3±3.4 years. The allergic conjunctivitis was observed in 18.18% of total examined cases while 12.72% had bacterial conjunctivitis. The odds ratio between boys and girls with 95% Confidence interval showed no significant variance between allergic conjunctivitis and bacterial conjunctivitis patients. Within the bacterial conjunctivitis positive cases majority of the patients suffered from staphylococcus aureus followed by hemophilic influenzae.

**Conclusion:** Significant cases of allergic and bacterial conjunctivitis were found.

**Keywords:** Allergic conjunctivitis; Bacterial conjunctivitis; Children; Vision Impairment

## INTRODUCTION

Allergic conjunctivitis (AC) and bacterial conjunctivitis (BC) are increasing in their frequency with coming era. Many factors have been associated with the ascending burden of these conditions. These includes environmental factors, unhygienic habits.<sup>1,2</sup> Children as well as adults are victim of degraded environment. Although more of the children suffers from AC and BC as being prone due to extra influx during play times and school activities. Bacterial conjunctivitis has been reported to cause vision impairment while AC has not been associated with vision loss. However, it is still very important to completely manage or treat AC for healthy eye.

Saraçlar et al<sup>3</sup> have reported the estimated prevalence of AC as 4.6% while other study reported the prevalence as 10%.<sup>4</sup> The prevalence of BC on the other hand is reported as 4% in developing countries. BC has been majority link with unhygienic influx of the eye, where majority of the children rub their eye with dirty hands and fingers causing the bacteria to enter the epithelium.<sup>5-7</sup>

The frequency of AC and BC has been reported higher in rural settlers than in urbane life. Mongolian research also highlighted 9.3% living in urban areas were having AC while 12.9% of those living in villages were suffering from AC or BC. Nigerian research has also reported same findings.<sup>8-9</sup> Pakistani environment is suffering from severe decline in air index value resulting in higher pollutants.<sup>10</sup> The present study was meant to address this problem and identify the prevalence of AC and BC. This study will be helpful in better understanding of conjunctivitis and its magnitude in Pakistan which can assist in future improved health outcomes.

## MATERIALS AND METHODS

It was a prospective study design conducted at People Medical College Hospital Nawabshah from 1<sup>st</sup> January 2019 to 30<sup>th</sup> June 2019. The study was approved from Institutional Review Committee prior its initiation. Patients were included as study participants after their consent or the consent of their parent/guardian. Patients were included as research participants post their visit to OPD eye. The age of the patients was 8-15 years. A total of 100 patients within the above mentioned age were

enrolled depending upon their clinical symptoms of conjunctivitis including pink eye, itchy ness, pain in the corneal region, photophobia and watery eye. Each patient sample was then taken through conjunctival swab test and sent to laboratory for confirmation. AC and BC were identified with slit lamp examination. Bacterial growth and type was observed through the use of various antibiotics. While Allergic conjunctivitis were confirmed through presence of the papillae in the upper portion of the tarsal conjunctiva correlating with the clinical symptoms of the patient. The demographic information, gender, clinical symptoms, hygiene history was entered in the proforma. Data was analyzed through SPSS version 24.0 using Chi square test for analyzing frequency and percentages and odds ratio while mean and standard deviations for analyzing numerical data. P value <0.05 was taken as significant.

## RESULTS

The mean age of the patients was 13.3±3.4 years. The allergic conjunctivitis was observed in 18.18% of total examined cases while 12.72% had bacterial conjunctivitis. Within the age groups 8-10 years had a significant frequency distribution variance in AC and BC. A highest prevalence of AC was presented in 14-15 years while highest prevalence of BC was present in 11-13 years patients (Table 1).

The odds ratio between boys and girls with 95% Confidence interval showed no significant variance between AC and BC patients. The p value was 0.16 (Table 2).

Table 1: Comparison of age in allergic and bacterial conjunctivitis

Age (years)	Allergic Conjunctivitis		Bacterial Conjunctivitis		P value
	Cases Examined (n=55)	Positive	Cases Examined (n=45)	Positive	
8-10	23	2 (8.69%)	20	1 (5%)	0.04
11-13	20	4 (20%)	10	3 (30%)	0.39
14-15	12	4 (33.33%)	15	3 (20%)	0.45
Total	55	10 (18.18%)	45	7 (12.72%)	0.049

Within the BC positive cases majority of the patients suffered from staphylococcus aureus followed by hemophilic influenzae.

Rest of the bacterial types were found with almost similar frequency (Fig. 1).

Table 2: Odds ratio between boys and girls with AC and BC

Gender	Allergic Conjunctivitis (n=10)	Odds Ratio 95% CI	Bacterial Conjunctivitis (n=7)	Odds Ratio 95% CI
Boys	6	1.32	5	1.33
Girls	4	1.91	2	1.98

P=0.16

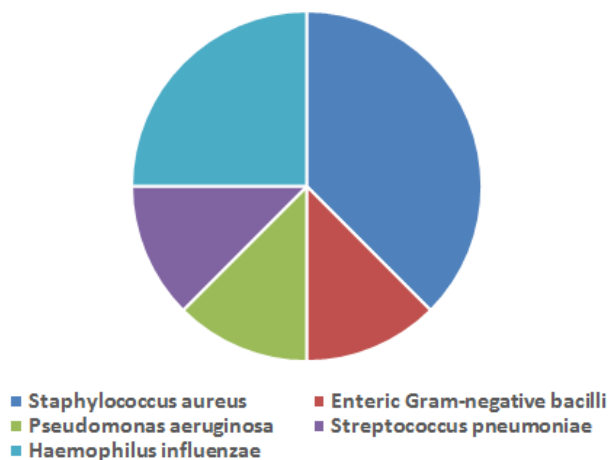


Fig 1: Frequency of bacterial type in culture

## DISCUSSION

Allergic conjunctivitis is also widely prevalent among children especially in children who were the residents of poor income countries in which air quality index is also not satisfactory. This condition did not get much attention not only at national but also not international health initiative programs. Pakistan is currently facing adverse environmental challenges and climate change problems due to urbanization and dense population. Allergic conjunctivitis is many times linked with associated history of asthma or other allergic conditions.<sup>8,10</sup>

Frequency of allergic conjunctivitis in present study might be high due to air pollution and poor air quality index. It is also prevalent among those children who had higher increased exposure time. However, attention should be paid to prevent its long term complications including steroid induced glaucoma. Prevalence of AC was also high among boys as they spend more time outside.<sup>8-10</sup> On the other hand, bacterial conjunctivitis was also predominant in present study group. *S. aureus* is appeared to be the most common bacteria that was present in all ages. Resistant strains were also found which was similar to the results of Essa Abdullah et al. they were also found resistance strains of BC.<sup>11-19</sup>

Present study highlights that allergic conjunctivitis and bacterial conjunctivitis both were highly prevalent among school going children and its prevalence was higher in higher age group children.

## CONCLUSION

Bacterial and allergic conjunctivitis is highly prevalent among children. Possible explanation of this fact is that, air pollution could be the main cause and also they had greater exposure time

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