

## Original Article

### Assessment of Prevalence of Allergic Conjunctivitis among School Children: An Observational Study

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#### ABSTRACT:

**Background:** The diagnosis of allergic diseases has increased in the last few decades and allergic conjunctivitis has emerged as a significant problem, which can cause severe ocular surface disease. **Aim of the study:** To study the prevalence of allergic conjunctivitis among school children. **Materials and methods:** The students were selected from the Primary and Junior High School in the local area. For collection of demographic history and medical history, a questionnaire was used. Distance and near visual acuities were measured with Snellen literate chart. Objective refraction was performed for subjects with VA  $\leq$  6/12. **Results:** A total of 200 students participated in the study. Out of 200 students, 80 students were found to be positive for allergic conjunctivitis. The prevalence of allergic conjunctivitis in age groups 5-8 years was 26 subjects, in age group 9-12 was 24 subjects, and in age-group 13-16 years was 30 subjects. The number of male subjects was 44 and female subjects was 36. **Conclusion:** From the results of the present study, we conclude that the prevalence of allergic conjunctivitis in the school going children is 40%.

**Keywords:** allergic conjunctivitis, allergies, children, school.

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#### INTRODUCTION:

The diagnosis of allergic diseases has increased in the last few decades and allergic conjunctivitis has emerged as a significant problem, which can cause severe ocular surface disease.<sup>1, 2</sup> Patients complain of itching, watering and redness. It can result in decreased quality of life, as patients with severe symptoms, if left untreated or treated poorly, may become school dropouts, unable to work outdoors and sometimes fail to sleep. The symptoms are aggravated by exposure to dry and windy climates. Clinically, it is apparent that AC patients have heightened sensitivity, tending to blink and squint more, contributing to frontal tension headaches. Rubbing of eyelids can contribute to dermatitis, with patients focusing more on the dermatitis than conjunctival symptoms.<sup>3, 4</sup> Pharmacological treatment mainly includes the prescription of topical ocular mast cell stabilizers or antihistamines and in more severe cases

corticosteroids, immunosuppressant drugs and immunotherapy. The evaluation of the patients with skin prick tests (SPTs) is usually overlooked. SPTs represent an immediate IgE mediated allergic reaction and may provide clear evidence for the diagnosis of every specific allergic manifestation.<sup>5, 6</sup> Hence, the present study was conducted to study the prevalence of allergic conjunctivitis among school children.

#### MATERIALS AND METHODS:

The present study was conducted during the time period of 2013 to 2014 and it included assessment of prevalence of allergic conjunctivitis among school children. The students were selected from the Primary and Junior High School in the local area. The study was approved from the school heads and parents with written and verbal consent. The students were educated on the protocol and procedure of

the study. For collection of demographic history and medical history, a questionnaire was used. Distance and near visual acuities were measured with Snellen literate chart. Objective refraction was performed for subjects with  $VA \leq 6/12$ . The examination of anterior and posterior segment of the eyes of each subject was done by an ophthalmologist using a slit-lamp biomicroscope. The diagnosis of allergic conjunctivitis was finalized if symptoms such as bilateral itchiness, burning sensation, tearing, or discharge were present. The presence of one of these symptoms finalized the diagnosis: papillae, redness, brownish limbal hyperpigmentation, visible limbal tranter spots and chemosis.

The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi-square and Student's t-test were used for checking the significance of the data. A p-value of 0.05 and lesser was defined to be statistical significant.

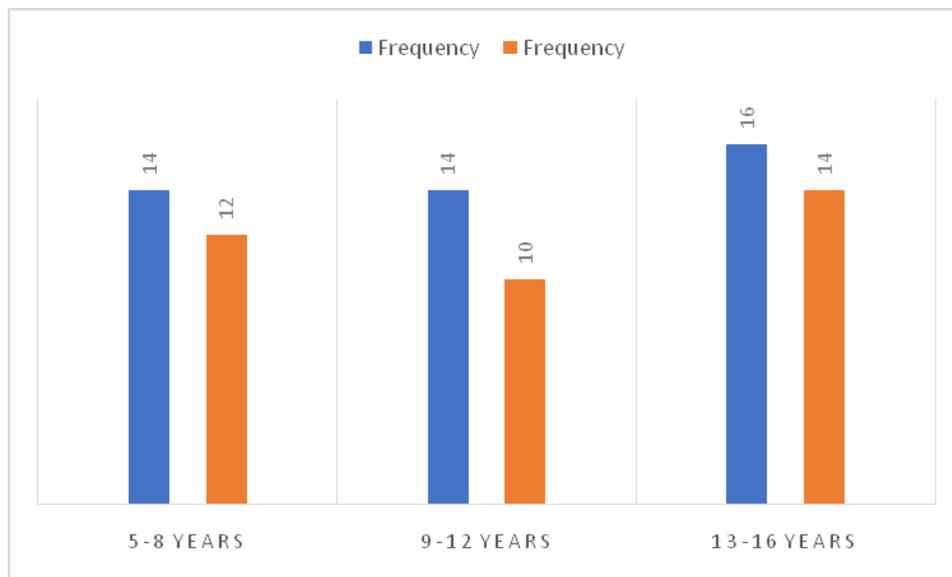
**RESULTS:**

A total of 200 students participated in the study. Out of 200 students, 80 students were found to be positive for allergic conjunctivitis. Table 1 shows the prevalence of allergic conjunctivitis by age and gender. The prevalence of allergic conjunctivitis in age groups 5-8 years was 26 subjects, in age group 9-12 was 24 subjects, and in age-group 13-16 years was 30 subjects. The number of male subjects was 44 and female subjects was 36. [Fig 1] Table 2 shows the frequency of different symptoms and signs of allergic conjunctivitis. Redness was seen in 12 subjects, itching was seen in 16 subjects, grittiness was seen in 14 subjects, tearing was seen in 11 subjects, photophobia was seen in 14 subjects, and mucinous drainage was seen in 13 subjects. [Fig 2]

**Table 1: Prevalence of allergic conjunctivitis by age and gender**

| Age groups   | Frequency |           |           |
|--------------|-----------|-----------|-----------|
|              | Males     | Females   | Total     |
| 5-8          | 14        | 12        | 26        |
| 9-12         | 14        | 10        | 24        |
| 13-16        | 16        | 14        | 30        |
| <b>Total</b> | <b>44</b> | <b>36</b> | <b>80</b> |

**Figure 1: Prevalence of allergic conjunctivitis by age and gender**



**Table 2: Frequency of different symptoms and signs of allergic conjunctivitis**

| Symptoms          | Frequency |
|-------------------|-----------|
| Redness           | 12        |
| Itching           | 16        |
| Grittiness        | 14        |
| Tearing           | 11        |
| Photophobia       | 14        |
| Mucinous drainage | 13        |

**DISCUSSION:**

A total of 200 students participated in the study. Out of 200 students, 80 students were found to be positive for allergic conjunctivitis. The prevalence of allergic conjunctivitis in age groups 5-8 years was 26 subjects, in age group 9-12 was 24 subjects, and in age-group 13-16 years was 30 subjects. Redness was seen in 12 subjects, itching was seen in 16 subjects, grittiness was seen in 14 subjects, tearing was seen in 11 subjects, photophobia was seen in 14 subjects, and mucinous drainage was seen in 13 subjects. The results found to be statistically non-significant. Baig R et al determined the prevalence of allergic conjunctivitis in children in selected schools. Children in the selected schools underwent vision assessment and a slit lamp examination by an ophthalmologist. The main objective was to detect allergic conjunctivitis which was ascertained by the presence of papillae in the upper tarsal conjunctiva, redness of the eyes, and presence or history of itching and burning. A total of 818 children aged 5-19 years were examined. Of these, 19.2% had allergic conjunctivitis. There was a significant association between increasing age and allergic conjunctivitis. Boys had a higher burden of allergic conjunctivitis than girls; however this difference was not statistically significant. There is a very high prevalence of allergic conjunctivitis in children in the selected schools.<sup>7</sup>Feng Y et al investigated the prevalence and features of ocular allergy (OA) and comorbidities among school children in Shanghai, China. This was a population-based cross-sectional study. Each participant completed an ISAAC-based questionnaire. The prevalence of OA symptoms, allergic rhinitis (AR) asthma, atopic dermatitis (AD), and sensitization to mites, pollen, and food was analyzed. A total of 724 and 942 completed questionnaires from the 7-9-year-old (young group) and the 12-14-year-old (teen group) groups were analyzed, respectively. The overall prevalence of OA symptoms was 28%. However, more young students (10.6%) reported mild to severe daily life interference caused by OA than the teens (5.7%). The young group had higher prevalence of diagnosed allergic conjunctivitis (10.2%). The overall prevalence of AR symptom, diagnosed asthma, and diagnosed AD was 40.4%, 11.6%, and 16.7%, respectively. Young children had higher prevalence of diagnosed AR and AD than the teens. There were gender associated differences in the prevalence of AR and asthma among young children, but not among the teens. The comorbidities associated with OA was also analyzed. Sensitization to mites, food, and pollen was associated with higher prevalence of allergic conditions. OA together with other allergic conditions affected a significant number of children in Shanghai.<sup>8</sup> Nahhas M et al estimated the prevalence of atopic eczema, allergic rhinitis and asthma in primary school children in Madinah, Saudi Arabia. We conducted a two-stage cross-sectional survey of school children in Madinah. Children were recruited from 38 randomly selected schools. Questionnaires were sent to the parents of

all 6,139 6-8 year old children in these schools. These parental-completed questionnaires incorporated questions from the International Study of Asthma and Allergies in Childhood (ISAAC), which had previously been validated for use in Arab populations. We undertook descriptive analyses, using the Generalized Estimating Equation (GEE) to calculate 95% confidence intervals. The overall response rate was 85.9% (n=5,188), 84.6% for girls and 86.2% for boys, respectively. Overall, parents reported symptoms suggestive of a history of eczema in 10.3% (95%CI 9.4, 11.4), rhinitis in 24.2% (95%CI 22.3, 26.2) and asthma in 23.6% (95%CI 21.3, 26.0) of children. Overall, 41.7% (95%CI 39.1, 44.4) of children had symptoms suggestive of at least one allergic disorder, with a substantial minority manifesting symptoms indicative of co-morbid allergic disease. Comparison of these symptom-based prevalence estimates with reports of clinician-diagnosed disease suggested that the majority of children with eczema and asthma had been diagnosed, but only a minority (17.4%) of children had been diagnosed with rhinitis. International comparisons indicated that children in Madinah have amongst the highest prevalence of allergic problems in the world. Symptoms indicative of allergic disease are very common in primary school-aged children in Madinah, Saudi Arabia, with figures comparable to the highest risk regions in the world.<sup>9</sup>

**CONCLUSION:**

From the results of the present study, we conclude that the prevalence of allergic conjunctivitis in the study population is 40%.

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