

# Investigation of Factors Affecting the Prevalence of Sinusitis in Children Referred to Abu Ali Sina Balkhi Educational Hospital

Dr. Muhammad Sidiq Osmani

ENT, Lecturer in Medical Faculty, Balkh University, AFGHANISTAN.

Corresponding Author: dr.sidiq@gmail.com



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## ABSTRACT

Sinusitis is one of the most common medical problems in children, caused by inflammation and infection in the nasal sinuses. This disease can have a significant impact on the growth and health of children. Investigating the factors affecting the prevalence of sinusitis in children is necessary in order to take appropriate preventive and therapeutic measures. In this regard, the present study aimed to investigate the factors affecting the prevalence of sinusitis among children referred to Abu Ali Sina Educational Hospital in Balkhi. **Materials and Methods:** This study includes the design of a prospective descriptive study, data were collected using patients' files, then by analyzing the data, the causes of the prevalence of sinusitis in children referred to Abu Ali Sina Balkhi Educational Hospital will be identified and the results will be presented in the form of a scientific article. The findings showed that the prevalence of sinusitis was higher among children admitted to Abu Ali Sina Educational Hospital in Balkhi and viral infections (influenza 20%, adenovirus 24% and Ronovirus 40%) were reported. The majority of patients had symptoms such as nasal congestion and discharge, a feeling of congestion in the ears, headache, and fever. In the majority of patients, their growth and development disorders have also been observed.

**Keywords-** Infection, Sinusitis, Headache, Fever, Growth and developmental disorders, Children.

## I. INTRODUCTION

Sinusitis is inflammation of the sinuses around the nose, a common childhood and adolescent disease that is associated with acute and chronic problems and can cause serious complications. Both the atomic and maxillary sinuses were born, but only the atomic sinuses are supported. The sphenoid sinus appears at the age of 5, while the frontal sinus begins to evolve from the age of 7-8 and is complete until adolescence. The outlet of the sinuses is narrow (1-3 mm), which drains the secretions into the osteomyatal unit in the middle meatus (Mohammadpour et al., 2017).

Sinuses are cavities in the forehead, nose, and face that protect the skull and eyes from impact. Inside these cavities, air flows, and naturally there is a mucus called mucus in them, which keeps the sinuses moist and prevents them from drying out (Mohammadi and Abedini, 1381). When these sinuses are closed under various factors, the environment is provided for the accumulation

of viruses, bacteria and the formation of infections. Acute sinusitis is one of the most common symptoms of antibiotics in children (Shaikh, etal, 2023).

However, the drainage of this mucus outward through the nose is closed, which causes swelling of the sinus, pressure on the nerves of the eyes and head, and causes severe pain. Imagine how unpleasant and unbearable this pain can be for your child ((Baradaranfar & Mahmoudi, 2001).

Chronic rhino sinusitis is a syndrome characterized by persistent inflammation of the nasal mucosa and Paranasal sinuses. In children this causes symptoms of pain, pressure and cough (Quintanilla, et al., 2018).

From another perspective, Sinusitis is a common disease in children and adults; however, many mothers do not realize it because it has symptoms similar to a cold, and they do not take action for its treatment (Sheikhi et al., 2006).

However, the main difference between them is that in sinusitis, various causes such as the common cold cause infection in the sinuses (Farhoudi, 2002). This infection may be superficial and resolve after a few weeks with very simple treatments. However, due to lack of treatment, persistence of the conditions for the growth of infection, or underlying problems of the child, this problem may worsen and turn into chronic sinusitis in children (Daneshvar, 2003).

#### **Who are more exposed to sinusitis?**

Infection in the sinuses can happen to anyone. However, the likelihood of developing sinusitis is higher in individuals with the following conditions:

- Allergies or nasal polyps
- Deviated nasal septum
- Asthma
- Individuals with an abnormal nasal structure
- Smoking (can increase the frequency of sinus infections)
- Cystic fibrosis
- Dental infection
- Change in altitude (flying or diving)
- Exposure to fungal agents causing sinus infections
- Weakened immune system (Macdonald, et al., 2009).

## **II. RESEARCH BACKGROUND**

Safari and Mohebi (2009) investigated the frequency of sinusitis in children under 12 years of age with asthma in Hamadan, Iran. In this prospective cross-sectional study, 60 asthmatic patients under 12 years of age (47 boys and 13 girls) based on clinical symptoms (headache, cough, discharge from the back of the pharynx, pus from the nose) and sinus x-ray were investigated and the prevalence of sinusitis was investigated. Patients were divided into two groups with and without sinusitis. They were compared in terms of age, sex, and type of asthma severity. The type of sinus involved and the obvious clinical symptom were identified in the sinusitis group. The results showed that there was no difference in the prevalence of sinusitis in boys and girls. The mean age of children with sinusitis was 7 years and in the group without sinusitis was 6.6 years. The most commonly involved sinus was the maxillary. The most common clinical symptom was cough (Safari & Mohebi, 2009).

Mohammad Pourmir et al. In 2017, investigated the prevalence of allergic disorders in chronic sinusitis in children referred to the Infectious Treatment, Immunology and Allergy Health Center of Amirkola Children's Hospital in Iran. This cross-sectional study was performed on children aged 3-14 years who referred to the Infectious Health and Immunology Center of Amirkola Children's Hospital during 2011-2012 with signs and symptoms of chronic sinusitis. The sample size was 120 people and sampling was done by simple random sampling. The subjects were divided into three groups

based on their age (A: 1-4 years, B: 5-9 years, and C: 10-14 years). Data were collected by a questionnaire and analyzed by SPSS 20 software. The frequency of children with chronic sinusitis was determined in each age group, which group A had a frequency of 31 people, group B had a frequency of 67 people, and group C had a frequency of 22 people, respectively. All patients were 79 boys and 41 girls. The prevalence of allergic dermatitis was 30%, asthma was 17.5%, and the prevalence of atopic dermatitis was 0%. The results showed that the frequency of chronic sinusitis was higher in the age group of 5-9 males and autumn. Also, among allergic disorders, allergic rhinitis had the highest prevalence and the second place was related to asthma (Mohammad Pourmir et al., 2017).

Leung et al. (2020) investigated acute bacterial sinusitis in children. Data were collected in library form and the results showed that Amoxicillin (Amoxicillin-lavulante) can be administered at a standard dose of 145 mg/kg per day. For people with severe ABS or sinusitis or antibiotic resistance, high-dose pharmacological Amoxicillin is a good choice (Leung, et al., 2020).

DeMuri et al. (2019) conducted a study titled "Clinical and Viral Characteristics of Acute Sinusitis in Children." This descriptive-applied study included children with sinus disease. The findings showed that children aged 48 to 96 months were followed longitudinally for one year. Novel viruses were identified in 29% of sinusitis cases and a significant relationship was found with the observed patterns (DeMuri, et al., 2019).

Senbil et al. (2008) conducted a study titled "Sinusitis in Children and Adolescents with Chronic Headache." The aim of this study was to determine the frequency of misdiagnosis of sinus headache in migraine and other primary headache types in children and adolescents. The study sample consisted of 310 patients who were prospectively evaluated. Data collection for each patient included history of previously diagnosed sinusitis due to headache, and additional sinusitis complaints (such as fever, cough, nasal discharge) at the time of sinusitis diagnosis, and improvement of headache following treatment of sinusitis. The findings showed that approximately 40% of patients with migraine and 60% of patients with tension-type headache had been misdiagnosed as "sinus headache" (Senbil, et al., 2008).

## **III. MATERIALS AND METHODS**

This study includes the design of a prospective descriptive study, data were collected using patients' files, then by analyzing the data, the causes of the prevalence of sinusitis in children referred to Abu Ali Sina Balkhi Educational Hospital will be identified and the results will be presented in the form of a scientific article. The statistical population of this study consists of (50) children referred to Abu Ali Sina Balkhi Educational Hospital who were referred during 2023.

#### IV. RESULTS

**Table 1: factors of the prevalence of sinusitis in children referred to Abu Ali seminary hospital in Sinai, Balkhi**

Variables		Frequency	Percentage
age (in years)	1-5	12	24%
	5-10	38	76%
Viral infections	Flu	18	36%
	Adenovirus	12	24%
	Renovirus	20	40%
Seasonal allergy	YES	20	40%
	NO	30	60%
Season	Spring	10	20%
	Summer	8	16%
	Treasury	12	24%
	winter	20	40%
Immunodeficiency	YES	30	60%
	NO	20	20%

#### V. FINDINGS

Table (1) shows the factors of the prevalence of sinusitis in the patients referred to the Abu Ali Sinai Balkhi educational hospital. The study found that among the 50 children, 12 (24%) were between the ages of 1-5 years and 38 (76%) were between the ages of 5-10 years. Viral infections were identified in children as follows: influenza (18 children, 36%), adenovirus (12 children, 24%), and rhinovirus (20 children, 40%). Among the children, 20 had seasonal allergies and 30 did not. Sinusitis was more prevalent in the winter months, and immune deficiency played a significant role in children (60%).

#### VI. CONCLUSION

Sinusitis is a common infection of the paranasal sinuses that involves the mucous membrane lining these cavities (Barbosa, etal, 2018). In children, sinusitis is one of the most common medical problems, manifesting itself with various symptoms such as nasal congestion, mucus discharge, sinus pain, and headache. Although sinusitis in children usually heals on its own, in some cases it can lead to serious complications such as secondary infections, brain abscesses, and impaired child growth and development. For this reason, early diagnosis and proper treatment of this disease is very important.

The aim of this study was to investigate the factors affecting the prevalence of sinusitis among children referred to Abu Ali Sina Balkhi Educational Hospital. Materials and Methods: This study includes the design of a prospective descriptive study, data were

collected using patients' files, then by analyzing the data, the causes of the prevalence of sinusitis in children referred to Abu Ali Sina Balkhi Educational Hospital will be identified and the results will be presented in the form of a scientific article. The findings of the study showed that among (50) people, (12) people were between the ages of 1-5 years and (38) people were between the ages of 5-10 years, which is 24% and 76% based on percentages, respectively. Viral infections among children with sinusitis were obtained (influenza 18 (36%), adenovirus (12 cases, 24%), and renovirus (20 cases), respectively, and among them, 20 patients were allergic to seasonal allergies and 30 were not. Sinusitis is more prevalent in winter and immunodeficiency played an important role among children (60%).

According to the studies, the prevalence of sinusitis is higher among children hospitalized in Abu Ali Sina Balkhi Educational Hospital, and viral infections (influenza 20%, adenovirus 24%, and Ronovirus 40%) have been reported. The majority of patients had symptoms such as nasal congestion and discharge, a feeling of congestion in the ears, headache, and fever. In the majority of patients, their growth and development disorders have also been observed.

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