

## Original Research

### To examine the relationship between socioeconomic status and the prevalence of ear diseases in children

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#### ABSTRACT:

**Aim:** To examine the relationship between socioeconomic status and the prevalence of ear diseases in children.

**Materials & methods:** The patients were randomly assigned to one of two different research groups. Children attending public schools were represented in the first group, denoted by letter A, while students attending private institutions were represented in group B. A straightforward questionnaire was used in the first round of screening that was carried out. The purpose of the ear exam was to determine if any pupils had any external or middle ear pathology that was already present. Hearing tests and/or tympanometry were performed on anybody who had a history of hearing or speech problems, or who had a finding during the examination that suggested there could be a problem with their hearing or speech. **Results:** It was discovered that a significant proportion of the children in group A were affected by CSOM, in contrast to the observation that just one out of every five hundred children in group B had the disease. The percentage of patients with severe otitis media in group A was 9.4%, whereas group B percentage was 2.8%. As compared to group B point prevalence of 2.8%, the point prevalence of the illness in group A (9.4%) was approximately four times higher. In group A, there were eight children (1.6% of the total) diagnosed with otomycosis, but in group A there was only one kid (0.2% of the total) diagnosed with this illness. **Conclusion:** The authors came to this conclusion as a consequence of the findings shown above. They found that there are a number of probable proposed theories that cause ear disorders, and one of them is poverty. Nonetheless, further study is necessary.

**Keywords:** socioeconomic status, ear diseases, children

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#### INTRODUCTION

As things stand in the present day, it has been claimed that hearing loss is on the rise all over the world, and it has now become the most common sensory deficiency among people. It has been estimated that 6.3% of the population in India has a hearing loss that ranges from moderate to severe.<sup>1,2</sup> The World Health Organization (WHO) estimates that approximately 6% of the world's population suffers from some kind of hearing impairment.<sup>1</sup> As hearing plays such a vital part in communication, this is a significant issue that needs to be addressed immediately, notwithstanding the age at which it manifests. But, it is especially dangerous for youngsters since it may impede the development of verbal skills, which in turn leads to

difficulty in communicating with others, a reduction in cognitive function, and difficulties in the process of learning. Early intervention that involves the use of a prosthesis is one of the most successful solutions to this problem. This treatment may enhance the child's quality of life in terms that are both audiological and non-audiological.<sup>2</sup> Although though the majority of these conditions are self-limiting, the improper care of them, along with the bad socioeconomic environment that exists in developing nations, leads to a variety of difficulties. For instance, the majority of secondary causes of hearing impairment in children are modifiable or avoidable in poor nations. This accounts for a significant share of the problem. Having a hearing impairment, even a moderate one, might make

it difficult to study in loud classrooms where people speak at a distance from one another. This, in turn, may have a substantial influence on the academic achievement as well as the general growth of the individual.<sup>3,4</sup> As a result, we made a comparison between children from lower socioeconomic position and children from better social strata regarding the prevalence of various ear illnesses as well as the types of diseases that were present.

## MATERIALS & METHODS

The current research was done at the department of ENT and Pediatrics of the institution and included all the paediatric patients. The patients were randomly assigned to one of two different research groups. Children attending public schools were represented in the first group, denoted by letter A, while students attending private institutions were represented in group B. Only youngsters with age group of 6–14 years were included while any kid whose parent was not willing for him or her to be a part of the research was eliminated. A straightforward questionnaire was used in the first round of screening that was carried out. The child's parents were the ones who were supposed to complete this out. This consisted of a few questions with straightforward wording about the existence of any ear illness, discharge, discomfort, or hearing or speech issues. Both the institutional ethical committee and the parents or guardians of the children who participated in the study provided their approval on an ethical level, and written consent was obtained from the parents or guardians of the children after the entire research protocol was explained to them in writing. An ear examination was performed on every one of the youngsters whose parents gave their approval for them to take part in the research project. A group of ENT experts would make a scheduled visit to the school at the allotted time and examine sixty students in each screening session. The purpose of the ear exam was to determine if any pupils had any external or middle ear pathology that was already present. Hearing tests and/or tympanometry were performed on anybody who had a history of hearing or speech problems, or who had a finding during the examination that suggested there could be a problem with their hearing or speech. Every youngster who was discovered to be suffering from any kind of ear condition had a straightforward proforma filled out for

them. This form included a brief history of the sickness, the findings of the ear, as well as audiometric and tympanometric results, when applicable. Both groups were evaluated side by side with relation to a number of aetiologically significant criteria, and the results were compared. The per capita income of the family, education level, and occupation of the head of the family of students from both groups was obtained from their parents or guardians or from the school records, and then both the cases and the controls were categorised under different socioeconomic statuses separately with the assistance of the Kuppaswamy classification. The chi-square test was used to do the analysis on the data that was collected.

## RESULTS

Throughout the course of the research, a total of one thousand schoolchildren were examined. Research was done on the youngsters to determine the prevalence and kind of ear illness. The prevalence of the etiologic variables in the patients is shown in Table 1. It was discovered that a significant proportion of the children in group A were affected by CSOM, in contrast to the observation that just one out of every five hundred children in group B had the disease. After the completion of the study, the p value that was obtained was 0.005, indicating that there is a difference between the two groups that is very significant. The frequency of the individuals suffering from persistent middle ear infection is shown in Table 2. The frequency of patients suffering with secretory otitis media is reported in Table 3. The percentage of patients with severe otitis media in group A was 9.4%, whereas group B percentage was 2.8%. As compared to group B point prevalence of 2.8%, the point prevalence of the illness in group A (9.4%) was approximately four times higher. According to the statistics, children in group A have a considerably higher risk of contracting this illness ( $p < 0.005$ ). The incidence of otomycosis in patients is shown in Table 4, which may be seen below. In group A, there were eight children (1.6% of the total) diagnosed with otomycosis, but in group B there was only one kid (0.2% of the total) diagnosed with this illness. Since the p value was assessed to be 0.005, it was determined that there was a statistically significant difference between the two groups.

**Table 1: Prevalence of etiologic factors in the patients**

Parameter	Group A	Group B
Mean age	8.36±1.22	9.17±1.74
Family monthly income (Rs)	4000	35000
number of family member	7.98	3.88
Rooms per family person at home	3.14	6.89
Bath/weeks by child	3.66	10.02

**Table 2: Prevalence of chronic otitis media in the patients**

	Unilateral	Bilateral	Total cases	Point prevalence	P value
Group A	33	17	50	10%	0.001
Group B	1	0	1	0.2%	

**Table 3: Prevalence of secretory otitis media in the patients**

	Unilateral	Bilateral	Total cases	Point prevalence	P value
<b>Group A</b>	29	18	47	9.4%	0.004
<b>Group B</b>	10	4	14	2.80%	

**Table 4: Prevalence of otomycolosis in patients**

	Unilateral	Bilateral	Total cases	Point prevalence	P value
<b>Group A</b>	5	3	8	1.60%	0.004
<b>Group B</b>	1	0	1	0.20%	

## DISCUSSION

Otitis medium with effusion refers to the presence of a fluid that is not purulent inside the cleft of the middle ear. The fluid could be thick or clear, but it should never be purulent.<sup>5</sup> It is one of the many factors that might lead to youngsters developing hearing loss. Otitis may result in significant functional limits if it is not properly treated, including a loss of hearing that is permanent as well as difficulties in the development of speech and language. A person's social class status is an important factor in determining their risk of becoming sick and dying from a wide variety of chronic and infectious diseases. According to the findings of a recent research, one's health tends to improve as one moves up in social class, but it tends to worsen as one moves down in social class.<sup>6-8</sup> As a result, we made a comparison between children from lower socioeconomic position and children from better social strata regarding the prevalence of various ear illnesses as well as the types of diseases that were present.

In the current investigation, the results acquired in our study are based on the screening of kids in the age range of five to twelve years old who attended either a private or public institution of education. Because of this, the severity of ear disorders was evaluated based on exams done on a random sample of the community rather than on those who sought medical attention. According to the findings of the research, the incidence of middle ear infections (both purulent and serous) is more common in children from families with a lower socioeconomic position than in those from families with a higher socioeconomic status. Otolaryngologic observations and impedance audiometry were used in order to arrive at a diagnosis for each of these diseases. In the University of Nigeria Teaching Hospital in Enugu, Paediatric and Otorhinolaryngology clinics, Czechowicz J. A. conducted an examination to determine the prevalence of ear-related issues among children who presented themselves for treatment. They used the Paediatric and Otorhinolaryngology Clinics at the University of Nigeria Teaching Hospital Enugu to carry out a cross-sectional research. Throughout the time period under consideration for this investigation, 3,221 children were observed. 248 of these youngsters, or 8.2%, had symptoms that were associated with their ears. Based on the findings, they came to the conclusion that ear-related disorders were rather widespread among the

youngsters that presented themselves at the UNTH Enugu. On the other hand, otitis media was the kind of ear infection that was identified with the greatest frequency in youngsters.<sup>9</sup> Chinawa et al. investigated the prevalence of congenital heart disease in the paediatric population that was seen at UNTH in Enugu, Nigeria. The characteristics of these irregularities, as well as the results, were taken into account. They did this by conducting a retrospective analysis of discharged cases, during which they reviewed the cases of all children who had attended children outpatient clinics at the University of Nigeria Teaching Hospital (UNTH), Enugu, over the course of five years. The cardiology clinic was included in this review. Throughout the course of the research project, the researchers found that a total of 31,795 young patients visited the hospital's outpatient clinics for children. Seventy-one (71) of these individuals suffered from heart problems. The prevalence of heart disease in the general population is 0.22%. Cyanosis, shortness of breath, and failure to thrive were the most often occurring symptoms. The solitary ventricular septal defect (VSD) was the most prevalent kind of congenital heart defect, followed by tetralogy of Fallot as the second most frequent. They reached their conclusion based on the findings, which were that 0.22% of the infants who visited UNTH in Enugu State had congenital cardiac abnormalities, and the most prevalent kind that they saw was those with VSD.<sup>10</sup> De Souza Dantas MB et al studied the pattern of presentation among patients with otitis externa in the specialist otolaryngology clinic in National Ear Care Center Kaduna. Additionally, they evaluated the choice of drug treatment for otitis externa in the specialist otolaryngology clinic in National Ear Care Center Kaduna. These studies were conducted to determine the prevalence of otitis externa in the specialist otolaryngology clinic. Given the data, they determined that otitis externa accounts for minor proportion of cases observed in their clinic.<sup>11</sup> The clinical profile and pattern of presentation of complicated congenital cardiac abnormalities in infants who were treated at a tertiary hospital in Enugu State were analysed by Chinawa et al. During the course of the study, the researchers examined more than thirty thousand children who visited the outpatient clinic of the hospital. Of these children, 65 had cardiac diseases, and of these 16 children, 16 were found to have congenital complex cardiac

abnormalities of various types, giving the prevalence of 0.05%. They reached their conclusion based on the findings, which were that 0.05% of the children who appeared to the cardiology clinic of a teaching hospital in the state of Enugu were affected by congenital complicated cardiac abnormalities.<sup>12</sup>

### CONCLUSION

The authors came to this conclusion as a consequence of the findings shown above. They found that there are a number of probable proposed theories that cause ear disorders, and one of them is poverty.

### REFERENCES

1. Adhikari P. Chronic suppurative otitis media in school children of Kathmandu valley. *Int Arch Otorhinolaryngol.* 2002; 11:175-8.
2. Jacob A, Rupa V, Job A, Joseph A. Hearing impairment and otitis media in a rural primary school in South India. *Int. J. Pediatr. Otorhinolaryngol.* 1997; 39:133-8.
3. Dhoble MA, Bhise SM. Study of ENT Problems in School Children with Special Reference to Otitis Media and its Bacteriology. *Indian Journal of Applied Research* 2013; 3(4):374-6.
4. Shaheen MM, Raquib A, Ahmad SM. Prevalence and associated socio-demographic factors of chronic suppurative otitis media among rural primary school children of Bangladesh. *Int. J. Pediatr. Otorhinolaryngol.* 2012; 76(8):1201-4.
5. Maharjan M, Bhandari S, Singh I, Mishra SC. Prevalence of otitis media in school going children in Eastern Nepal. *Kathmandu University Medical Journal* 2006; 4(16):479-82.
6. Minja BM, Macheemba A. Prevalence of otitis media, hearing impairment and cerumen impaction among schoolchildren in rural and urban Dar es Salaam, Tanzania. *Int. J. Pediatr. Otorhinolaryngol.* 1996; 37:29– 34.
7. Elango S, Purohit GN, Hashim M, Hilmi R. Hearing loss and ear disorders in Malaysian school children. *Int. J. Pediatr. Otorhinolaryngol.* 1991; 22(1):75–80.
8. Chadha SK, Agarwal AK, Gulati A and Garg A. A comparative evaluation of ear diseases in children of higher versus lower socioeconomic status. *J Laryngol Otol.* 2006; 120(1):16-9.
9. Czechowicz J.A., Messner A.H., Alarcon-Matutti E., Alarcon J., Quinones-Calderon G., Montano S., Zunt J.R. Hearing impairment and poverty: The epidemiology of ear disease in Peruvian schoolchildren. *Otolaryngol. Head Neck Surg.* 2010; **142**:272–277.
10. Chinawa JM, Eze JC, Obi I, Arodiwe I, Ujunwa F, Daberechi AK, Obu HA. Synopsis of congenital cardiac disease among children attending University of Nigeria Teaching Hospital Ituku Ozalla, Enugu. *BMC Res Notes.* 2013 Nov 19;6:475.
11. De Souza Dantas M.B., dos Anjos C.A.L., Camboim E.D., de Carvalho Ramos Pimentel M. Results of a neonatal hearing screening program in Maceio. *Braz. J. Otorhinolaryngol.* 2009; **75**:58–63.
12. Chinawa JM, Obu HA, Eke CB, Eze JC. Pattern and clinical profile of children with complex cardiac anomaly at University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu State, Nigeria. *Niger J Clin Pract.* 2013;16(4):462-7