

## **ABSTRACT:**

Hearing properly is an important part of learning speech and language. When a hearing loss exists, a child does not get the full benefit of language learning experiences. If a hearing loss goes unnoticed, delay in speech and language learning can occur. For this reason, early detection of hearing loss is very important. Auditory neuropathy is a hearing disorder in which sound enters the inner ear normally but the transmission of signals from the inner ear to the brain is impaired. Most of the time, it gets unnoticed and undiagnosed, during neonatal hearing screening and assessment. It can affect people of all ages, from infancy through adulthood. The number of people affected by auditory neuropathy is not known, its prevalence rate varies from researcher to researcher as per number of cases & lack of data related to specific disorder. People with auditory neuropathy may have normal hearing, or hearing loss ranging from mild to severe; they always have poor speech-perception abilities. Several factors have been linked to auditory neuropathy in children. However, a clear cause and effect relationship has not been proven. Some children who have been diagnosed with auditory neuropathy experienced certain health problems as newborns, or during or shortly before birth. These problems include Jaundice, premature birth, low birth weight, and an inadequate supply of oxygen to the unborn baby. In addition, some drugs that have been used to treat medical complications in pregnant women or newborns may damage the inner hair cells in the baby's ears, causing auditory neuropathy. Auditory neuropathy runs in some families, which suggests that genetic factors may be involved in some cases. Some people with auditory neuropathy have neurological disorders that also cause problems outside of the hearing system. Examples of such disorders are Charcot-Marie-Tooth syndrome and Friedreich's ataxia.

The aim of the present study was to rule out the clinical and audiological profile of the children with auditory neuropathy spectrum disorder (ANSD), its related etiologies and prevalence rate. The study was carried out in 730 sensori neural hearing loss children (SNHL). Subjects were in the age range of 0-12yrs. These subjects were divided into four groups i.e. 0-3 yrs, 3-6 yrs, 6-9 yrs, 9-12 yrs. Audiological test battery was administered on these children.

Data of audiological test, prevalence rate and related etiologies was analyzed using descriptive statistics, Pearson product moment correlation and t-test. Obtained results showed out of 730 children, (5%, n = 39) children diagnosed as ANSD. Out of 39 ANSD children, (84.6, n = 33) children showed related medical etiologies. Almost all the 39 children showed significant audiological characteristics of ANSD.

Furthermore on the basis of audiological test, Pure tone audiometry (PTA) showed that, for right ear, children with ANSD did not obtain significantly higher scores than children with SNHL on pure tone audiometry right ear average (PTAR\_AVG). Additionally, more detailed analysis revealed that, children with ANSD obtained significantly lower scores than children with SNHL on PTAR\_250HZ, PTAR\_500HZ, PTAR\_4KHZ. Furthermore, for left ear, children with ANSD obtained significantly lower scores than children with SNHL on pure tone audiometry average left ear (PTAL\_AVG). Additionally, more detailed analyses revealed that, children with ANSD obtained significantly lower scores than children with SNHL on PTAL\_250HZ, PTAL\_500HZ, PTAL\_1KHZ, PTAL\_2KHZ, PTAL\_4KHZ. The obtained results for distortion product otoacoustic emissions (DPOAE), for both ears, children with ANSD obtained significant scores than children with SNHL on all frequencies of distortion product, noise floor, and signal to noise.