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Pediatric Hearing Aid Use: A Study Based on Data Logging Information

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Abstract : Introduction: Hearing loss (HL) is one of the most common disorders that presents at birth and in early childhood. Universal newborn hearing screening (UNHS) has been adopted based on the assumption that with early identification of HL, children will have access to optimal amplification and intervention at younger ages, therefore, taking advantage of the brain's maximal plasticity. One particular challenge for parents in the early years is achieving consistent hearing aid (HA) use which is critical to the child's development and constitutes the first step in the rehabilitation process. This study examined the consistency of hearing aid use in young children based on data logging information documented during audiology sessions in the first three years after hearing aid fitting. Methodology: The first 100 children who were diagnosed with bilateral HL before 72 months of age since 2003 to 2015 in a pediatric audiology clinic and who had at least two hearing aid follow-up sessions with available data logging information were included in the study. Data from each audiology session (age of child at the session, average hours of use per day (for each ear) in the first three years after HA fitting) were collected. Clinical characteristics (degree of hearing loss, age of HA fitting) were also documented to further understanding of factors that impact HA use. Results: Preliminary analysis of the results of the first 20 children shows that all of them (100%) have at least one data logging session recorded in the clinical audiology system (Noah). Of the 20 children, 17(85%) have three data logging events recorded in the first three years after HA fitting. Based on the statistical analysis of the first 20 cases, the median hours of use in the first follow-up session after the hearing aid fitting in the right ear is 3.9 hours with an interquartile range (IQR) of 10.2h. For the left ear the median is 4.4 and the IQR is 9.7h. In the first session 47% of the children use their hearing aids ≤5 hours, 12% use them between 5 to 10 hours and 22% use them ≥10 hours a day. However, these children showed increased use by the third follow-up session with a median (IQR) of 9.1 hours for the right ear and 2.5, and of 8.2 hours for left ear (IQR) IQR is 5.6 By the third follow-up session, 14% of children used hearing aids ≤5 hours, while 38% of children used them ≥10 hours. Based on the primary results, factors like age and level of HL significantly impact the hours of use. Conclusion: The use of data logging information to assess the actual hours of HA provides an opportunity to examine the: a) challenges of families of young children with HAs, b) factors that impact use in very young children. Data logging when used collaboratively with parents, can be a powerful tool to identify problems and to encourage and assist families in maximizing their child's hearing potential.

Keywords : hearing loss, hearing aid, data logging, hours of use
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