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HEARING REHABILITATION IN CHILDREN (PART I): THE IMPORTANT ROLE OF PARENTS, GUARDIANS, AND CAREGIVERS

Dayane Domeneghini Didoné, Adriana Neves de Andrade, Piotr Henryk Skarzynski, and Milaine Dominici Sanfins

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This month's newsletter will discuss an important aspect, often neglected, in the long process of rehabilitating a child's hearing. In previous newsletters, we've covered the best methods for effectively making an accurate diagnosis, but once a hearing assessment has been made, **what advice should be given to parents and caregivers if the result points to an impairment? What role do family and caregivers have in helping to restore a child's hearing?**

In answering these questions, this bulletin focuses on the importance of family and caregivers in the hearing rehabilitation process. Several subsequent bulletins on hearing rehabilitation will also address the topic.

The first stage, hearing diagnosis, is often done as part of a neonatal hearing screening program. These programs are designed to assess children at an early age. Once confirmation has been made that there is some kind of hearing impairment, attention also needs to be directed towards parents, family members, and caregivers. An assessor needs to know how to inform them, clearly and objectively, about what the results of the audiological assessments mean. The professional will need to engage with them in a welcoming manner, comfort and reassure them, and at the same time provide good information on aspects of hearing and language development.

We first recommend that our readers access a 2023 bulletin: Newborn Hearing Screening: the importance of guidance for family members (by Ribeiro, Skarzynski, and Sanfins). That article sets out the milestones of auditory and speech development, as well as ways of providing objective, accurate, and clear guidance to guardians.

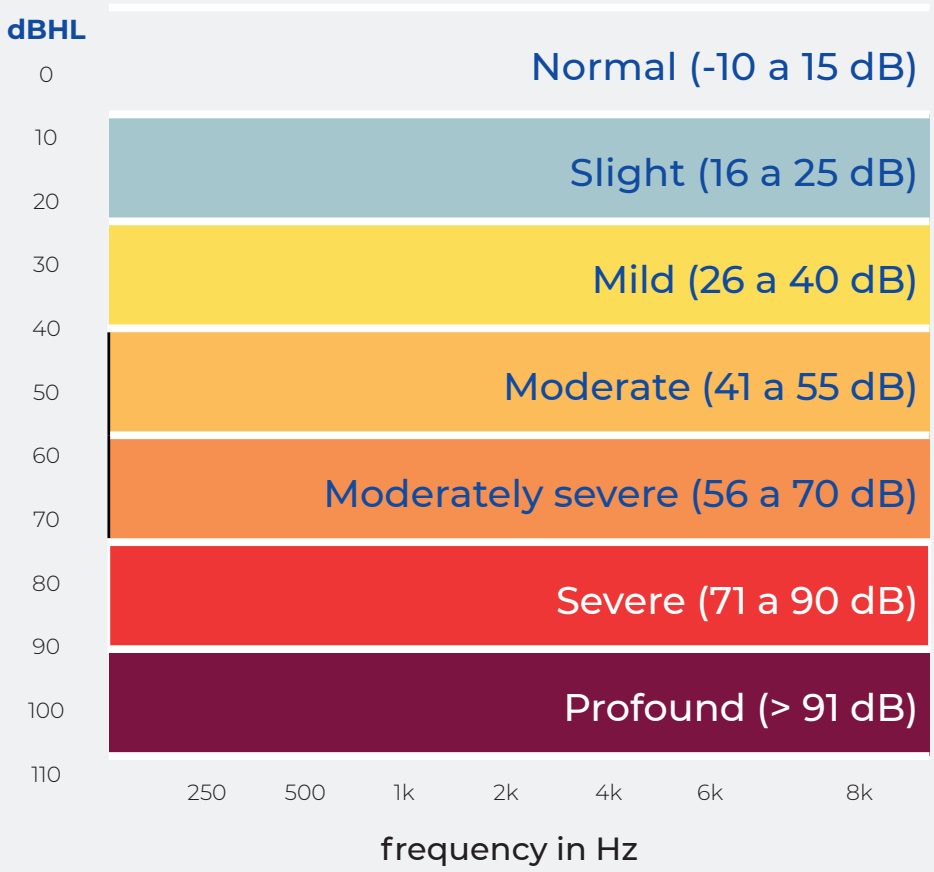
In 2022, Martin reported that although neonatal hearing screening programs are becoming better in providing an early diagnosis, there are still many aspects that need to be improved, particularly in terms of counseling and support for family members. Although diagnosis and intervention are making progress, there are still social factors that can be a hindrance. These include economic security, community and social factors, access to and quality of hearing health services, and the educational level of the caregivers.

Northern and Downs (2002) suggest that children with slight hearing loss (thresholds of 16 to 25 dBHL) can hear vowels, but will have difficulty hearing voiceless consonants. Children with mild hearing loss (26 to 30 dBHL) can hear only the loudest phonemes, while children with moderate hearing loss (31 to 50 dBHL) fail to hear most speech sounds at a normal conversational level. Children with severe hearing loss (51 to 70 dBHL) do not hear any speech sounds at a normal conversational level, and children with profound hearing loss (thresholds greater than 71 dBHL) are unable to comprehend speech at all.

Although there are different recommendations for classifying hearing loss in children, the WHO suggests using Clark's (1981) normative values, which consider the four-tone average of 500, 1000, 2000, and 4000 Hz, similar to the classification suggested for adults. To facilitate comparison, the norms according to Northern and Downs (2002) and Clark (1981) are presented side by side in the accompanying table.

Clark, 1981

Hearing classification for individuals up to 7 years of age (Clark, 1981)



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Northern and Downs, 2005

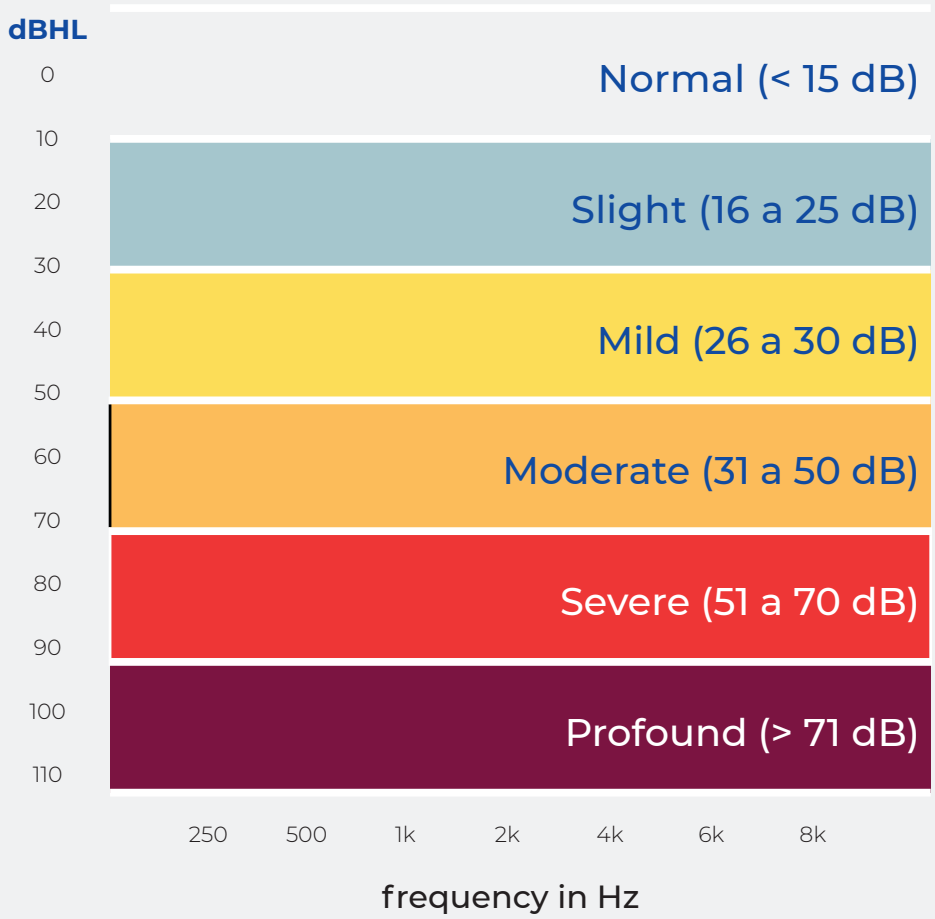

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Figure 1: Normative values for classifying hearing loss as suggested by Clark (1981) and Northern and Downs (2002). Table developed by the authors.

If a child has a hearing loss during their development, it will prevent synaptogenesis, slow the maturation of central hearing pathways, and increase loss of synapses, directly affecting central auditory function. In turn, this can negatively impact on the ability to communicate and the quality of social interactions. If the hearing environment is a challenging one, the child may not be able to correctly identify acoustic signals, and this may result in poor interactions with classmates. Pre-school children with hearing loss also have more difficulty in paying attention, which will impair long-term interactions. It is therefore important to ensure a favourable acoustic environment so that all children can clearly receive acoustic information and develop their hearing skills to the fullest.

If hearing loss is detected, the first step towards good hearing and language development is to make sure clear hearing information is available through the use of hearing aids or implants, since, as we have said, the development of neural connections depends on hearing stimulation. With early intervention, such children can develop language skills equivalent to those of their normal peers, an ability made possible by the high plasticity of a child's auditory system during early development. As the child ages, their brain processing continues to improve from exposure to favourable acoustic and linguistic environments, enabling them to expand their ability to understand sounds and build their communication skills.

Language depends on a combination of factors that can either assist or hinder development.

What are the factors that affect the development of speech and language in a child with hearing loss?

- Age at which hearing loss is identified
- Type, degree, and configuration of hearing loss
- Length of hearing loss
- Consistency of hearing aid use
- Comorbidities
- Level of cognitive and motor skills
- Socio-emotional development
- Parental stress
- Family support and involvement
- Hearing rehabilitation focused on the child, their family, and caregivers
- Importantly, the intervention should not focus only on the parents.

Early detection of hearing loss is helpful, but access to hearing rehabilitation programs is not always fast and effective, meaning that many children may receive hearing habilitation/rehabilitation too late, and this may cause delays in the development of speech and language.

The effective use of hearing aids or implants does not, by itself, guarantee full hearing and language development. Other factors such as degree of hearing loss, length of sensory deprivation, and family involvement are crucial.

The family's understanding of the difficulties brought about for each degree of hearing loss is essential so that they can give long-term support to the child's hearing rehabilitation.

The effectiveness of hearing enablement/rehabilitation depends on the participation of professionals with a broad knowledge in the area of hearing and language. They also need to broaden the intervention to the whole family, since they are the ones who spend most time with the child. In everyday situations, caregivers are the key facilitators of the hearing and language development of children.

In focusing on the family, some family-centred intervention strategies, such as those described by Noll et al. (2021), are helpful. Among these are: the active participation of managers in the planning of intervention sessions; observation and practice of the auditory and linguistic strategies used by the phonoaudiologist; and constant discussion with the professional. If parents and caregivers can practise hearing strategies, this will ensure the child can learn and reproduce them in everyday life situations, and this will allow better linguistic interactions with the child and help develop oral language.

In linguistically stimulating a child with hearing loss, there are two important factors to keep in mind: the quantity and the quality of acoustic information. Quantity refers to the number of interactions with a child, while quality relates to the richness of vocabulary, the complexity of sentences, and the use of novel words. Good interactions between parents and the child with hearing loss should include an abundance of dialogue – an extended to and fro in speech – and much visual contact. Caregivers need to be receptive and respond to the child's needs. Suitable interactions should include questions, repetitions, and word or phrase modeling. The use of facial expressions and gestures is also encouraged as these help develop communication skills.

In terms of the quality of stimulation, some research has been done looking into the correlation between the language development of children with hearing loss and the level of schooling of their parents. Some authors have found that a basic level of parental schooling leads to poor language development of the child, while others have found no variations in speech and language development no matter what the educational level of the parents. As for the socio-economic environment, this factor has indeed been found to have a strong effect on the child's level of communication, even in those with normal hearing.

Other factors that impact on the quality of family life should also be considered, including high levels of parental stress. There is a saying that when a child is born a mother and father are also born, and this reflects the daily challenges faced when raising a child.

When hearing loss is added to the normal demands of child rearing, another big concern arises – unraveling the foreign world of hearing care and its arcane procedures.

For parents and carers, clear and precise guidance is essential to sustain the parent-child bond, and this will in turn improve the quality of the child's language.

> **In the phonoaudiological clinic we see that some families are quick to become involved in the process of hearing rehabilitation, looking on it positively. Others are content to leave it to the Hearing Health Service and hand over all responsibility to the phonoaudiologist. Research has shown that children with broad family participation obtain better results in later hearing and language assessments. For good language development, factors such as frequency, constancy, and perseverance of carers are paramount.**

The success of the remediation process depends on many factors, among which is a close partnership between the phonoaudiologist and the child's parents or guardians. The phonoaudiologist needs to be attentive and understand the anguish and anxiety of parents who are first facing the hearing loss of their child. Many parents are apt to go into denial, instead reorganizing the family and just letting the child develop as it will.

Counselling of a child with hearing loss and its family should be done constantly and include information on the impact of hearing loss on a child's development, different language and communication modalities, strategies for dealing with hearing difficulties, and the expectations of those performing the treatment. Phonoaudiological therapy should have as its goal informing and involving parents so that they can act appropriately in every daily situation, remembering that the child always needs a rich communication environment. Appropriate responses will improve the effectiveness of assistive devices, help the child adhere to phonoaudiological therapy, and in the end lead to better development of oral language.

Our next newsletter will elaborate on these issues. We invite you to join us on this journey of hearing rehabilitation. Please note all our materials are available for reading and download at https://csim.pl/en/report-card-bulletin/

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