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Educational performance of pediatric cochlear implant recipients in mainstream classes

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Summary

Objectives: The present study documents the school performance of 20 pediatric cochlear implant recipients who attended mainstream classes and compares their educational performance with their normally hearing peers.
Methodology: All 20 school-aged children who underwent cochlear implantation at the Universiti Kebangsaan Malaysia cochlear implant programme participated in this study. Three measures were employed to assess the school performance. First, using the SIFTER teacher-rating scale, the second measure was the child's examination results, and the third was the child's standing compared to his/her peers in language subject, mathematics, and the overall academic performance during the end of semester examinations.
Results: The SIFTER rating scale indicated that only 11.8% of the children were identified as not educationally at risk, 17.6% passed four of the SIFTER subtests, whereas the other 71.6% failed in at least two of the subtests on SIFTER. The highest pass rate was obtained in behavior subtest (76.5%), followed by classroom participation (70.6%), attention (58.8%), academic (47.1%), and communication (11.8%). On the educational performance, the cochlear implant recipients performed significantly better in mathematics (mean scores 62.67%; S.D. 22.24) than in language (mean scores 49.96%, S.D. 25.88) ($p < 0.01$). In the overall examination performance, 25.00% had above average performance (>75th percentile), 18.75% had average performance (25–75th percentile), and another 56.25% performed at below average (<25th percentile).
Conclusion: Children with cochlear implant were rated poorly in the SIFTER communication subtest. It is possible that language deficit presents an educational challenge in these children. The educational performance of children with cochlear implants in mainstream classes varies. Although 43.75% of them thrive well in a

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full-time mainstream setting, a significant percentage of them (56.25%) performed at below the average level. These findings reemphasize that although a cochlear implant has successfully provided deaf children with a good hearing potential, the majority of its recipients still require additional educational supports in order to function well in the mainstream educational setting.

1. Introduction

This study examined the educational performance of pediatric cochlear implant recipients in full-time mainstream placement and to compare their performance with that of their normally hearing peers in the same school. This documentation is important because cochlear implant programme is relatively new in this country and most children are implanted relatively late, between the ages of 3—4 years. This implies that they have about 3—4 years to acquire adequate spoken language skills, which are necessary before starting a formal primary education at the age of 7 years old. It is hope the results of this study will provide a guide for professionals dealing with the rehabilitation of cochlear implant children in designing appropriate intervention strategies to reduce language delay and help these children to achieve optimum academic performance.

There is a strong link between speech perception, speech production, and the development of language [1,2]. In addition to that, a solid foundation in language is a vital key to the development of literacy skills [3], which is an important determinant of educational performance in mainstream classes. Therefore, it is not surprising that the hearing impaired children in the mainstream settings exhibit academic setback in comparison to their normally hearing peers [4,5]. However, recent reports show that cochlear implants are able to at least narrow the gap in academic performance between the hearing impaired and their hearing peers [6,7].

The cochlear implant technology has been proven to increase the auditory capacity of children with profound hearing loss, which in turn provides them with a better chance to acquire spoken language [8—10]. Many of these children achieve high scores in speech perception, speech intelligibility, and speech production [9,11,12]. Several studies have even shown that children who received early implantation had reading grade levels comparable to their normal hearing peers [7,13,14]. These high level of achievements in speech-language development and reading skills provide the opportunity for children with cochlear implants to attend mainstream education [7,15,16]. The performance of children with a cochlear implant depends on various factors. Some of the determining factors include intrinsic factors to the child such as cognitive level [13,17,18] and the presence of additional handicap; family size [13]; socioeconomic status [19]; and the audiological, clinical, and educational management [19].

Although research findings advocate early implantation to ensure maximum benefits in speech-language and literacy for children with hearing loss, this is not always possible especially in less developed countries due to various reasons. In Malaysia, for example, the limited number of trained personnel in managing speech-language and hearing problems coupled with the lack of neonatal hearing screening programmes resulted in late detection of hearing loss in children. Besides, until recently children who required a cochlear implant, had to solicit their own funding to finance the cost of cochlear implantation, resulting in many patients having to wait about 1—2 years to secure enough funds. These problems are expected to improve with the continuing increment of the audiology and speech pathology graduates, leading to subsequent expansion of speech and hearing services. Apart from that it is now possible for cochlear implant candidates to obtain funding from the government.

The Universiti Kebangsaan Malaysia (UKM) cochlear implant programme was initiated in December 1995. The team is made-up of a multidisciplinary group, which includes Ear, Nose, and Throat surgeons, audiologists, speech pathologists, a deaf education specialist, and clinical psychologists. Intensive post-implant auditory and speech training is provided to all pediatric cochlear implant recipients and covers a duration of 3 years. They are seen weekly during the first year and fortnightly during the second and third year of habilitation by their speech-language pathologist. Post-implant habilitation is provided by speech-language pathologists at cochlear implant clinics as well as by appointed speech-language pathologists throughout Malaysia. The primary goals of the habilitation are to help children to develop optimal listening and speech skills through cochlear implants and to equip parents with the skills and confidence to become the child's advocate, particularly with regard to language learning. To optimize speech learning parents are encouraged to enroll their cochlear implant