Research Paper Medical Science

Quality of Life in Children with Cochlear Implants: Effect of Implant Age on Social Relationships

Anna Vinu Varghese | Research Scholar PG and Research Department of Rehabilitation Science Holy Cross College (Autonomous) Tiruchirappalli – 620 002.

Dr. A. Turin Martina | Researcch Supervisor and Associate Professor PG and Research Department of Rehabilitation Science Holy Cross College (Autonomous),

ABSTRACT

Studies in the past years have shown that cochlear implant is the most effective management for profound hearing loss. Quality of life in implantees has to be evaluated to state the efficacy of implantation. The aim of the study was to evaluate the effect of implant age on social relationships in children with cochlear implants. A Total of 60 parents whose children had cochlear implants participated in the study. The participants were divided into 2 Groups based on their implant age. A questionnaire assessing the nature of social relationships in children with cochlear implants was constructed and was administered to the target population after the pilot study. The results showed that the social relationships in children with cochlear implants improved as a function of implant age.

KEYWORDS | Quality of life in children with cochlear implants, Social relationships, Implant age

1. INTRODUCTION

The sense of hearing is a blessing and its ability is priceless. It empowers us and it allows us to work, socialize, interact, communicate and relax. It also keeps us safe and alert to the world around us. And undoubtedly, hearing is inevitable for the development of good and effective communication skills through which social relations are formed and strengthened.

Hearing impairment has an impact on many aspects of daily life such as, ability to communicate, indulge in social activities etc. In case of children, hearing is most vital because the ability to develop and use verbal language is closely related to the ability to process speech through hearing. The crucial role of hearing in spoken language development is established by the language delays observed among the children with bilateral hearing loss (Lach and Ling, 1970). If the hearing sensitivity is damaged or absent, individuals are denied the opportunity to sample important features of their surroundings, the sounds emitted by the nature and by themselves and in short, it affects the quality of life significantly.

If the hearing impairment is identified soon after birth and given proper rehabilitation, the individual can have a normal development of speech, language, social, intellectual and emotional development and thus can improve the quality of life. The rehabilitation process includes the fitting of a hearing aid and speech and language therapy. But most of the time, in the case of profound hearing impairment, the hearing aids fail to provide adequate input for the development of speech and language. When hearing aids are incapable of serving these purpose cochlear implants are introduced.

With cochlear implant surgery done immediately and with adequate language intervention given, the child can acquire normal or near normal speech and language skills and thus the quality of life can be improved.

In order to state the effectiveness of cochlear implants researchers use different outcome measures. One important type of outcome measure is the measurement of quality of life.

The term quality of life (QOL) references the general well-being of individuals and societies. Quality of life questionnaires allow a comprehensive insight into patients' daily life and activities and QOL measurements are an essential addition to speech perception tests to quantify the outcome after implantation.

2. AIM OF THE STUDY

To study the effect of implant age on social relationships in children with cochlear implants.

3. METHODS

a. Participants

The participants included in the current study were parents of 60 Malayalam speaking children within the age range of 0-10 years who underwent cochlear implantation. The subjects were selected based on their implant age and was divided into 2 groups depending on the implant age as follows:

- Group A - 0-2 years (n=30)
- Group B – 2 years and above (n=30)

→ **Inclusionary Criteria**

- Subjected to early identification prior to their chronological age of 6 months
- Amplification was provided for a minimum of 6 months' time period
- Undergoing regular intervention such as auditory verbal therapy.

→ **Exclusionary Criteria**

- Children with other known medical disabilities, cognitive impairment.
- Children who are bilaterally implanted.

The following table shows the details of participants included in the study.

Table 3.1 Demographic data of the participants

	No. of participants (n)	Mean Chronological Age (months)	Mean Implant Age (months)	Mode of Intervention

Group A	30	42.6	11.6	AVT – 76.6% SLT – 23.4%
Group B	30	59.6	27.9	AVT -66.6% SLT -33.3%

AVT - Auditory verbal therapy

SLT – Speech Language therapy

b. Procedure
The study proceeded in four phases.

→ Questionnaire construction
→ Pilot study of the questionnaire
→ Data collection
→ Statistical Analysis.

i. Questionnaire construction
A multiple choice questionnaire consisting of 10 questions, which reflect the nature of social relationships in children with cochlear implants was constructed in Malayalam language.

A 3 point likert scale was used as the response scale, which includes,
2- the response is present always
1- the response is present sometimes
0-the response is completely absent.

ii. Pilot study
A pilot study of the questionnaire was carried out to check on the reliability and validity of the questionnaire. For this purpose the questionnaire was administered to 20 participants, 10 from each group. The results obtained were analyzed for reliability using Spearman-Brown Prophecy Formula using SPSS software version 16.0. The reliability coefficient obtained was 0.895 which means the test is highly reliable. As the test is highly reliable with coefficient greater than 0.81, it is valid also.

iii. Data Collection
The parents were informed about the purpose of the study, the interview questions and information regarding confidentiality. The questionnaire was administered by the researcher. For each participant, completion of the questionnaire lasted approximately for 10-15 minutes.

iv. Statistical Analysis
The two groups were compared to evaluate for any significant differences. Statistical procedures such as Mean, Standard deviation, p–value (using Mann Whitney U test) were calculated in SPSS software.

1. RESULTS AND DISCUSSION
The results are discussed under the following headings.
1) Overall comparison of performance between Group A and Group B
2) Comparison of the performance of the two groups in each question

1. Overall comparison of Performance between Group A and Group B
Table 4.1 Comparison of overall performance between Group A and Group B

	N	Mean	sd	p
Group A	30	18.233	1.33	0.001
Group B	30	20	0.00	

The mean value for group A is less than the mean value of group B which implies that the children with implant age less than 2 years performed poorer when compared to that of children with implant age greater than 2 years. Also the p value is 0.001 which shows that the difference is statistically significant.

1. Comparison of the performance of the two groups in each question.
The following table describes the performance of Group A and B on each question.

Table 4.2 Performance of each group on each question.

		n	mean	sd	p
SR1- Interaction with grandparents	Group A	30	2.0	0.0	1.000
	Group B	30	2.0	0.0	
SR2- level of interaction with others	Group A	30	1.8	0.4	0.010
	Group B	30	2.0	0.0	
SR3-improved relationship with siblings	Group A	30	2.0	0.0	1.000
	Group B	30	2.0	0.0	
SR4- sociability within the family	Group A	30	2.0	0.0	1.000
	Group B	30	2.0	0.0	
SR5- interest to engage in conversation	Group A	30	1.8	0.4	0.010
	Group B	30	2.0	0.0	
SR6- being talkative	Group A	30	1.7	0.5	0.001
	Group B	30	2.0	0.0	
SR7- Greeting others	Group A	30	1.3	0.5	0.000
	Group B	30	2.0	0.0	
SR8-Making friends easily	Group A	30	2.0	0.0	1.000
	Group B	30	2.0	0.0	
SR9- Difference in interaction with elders and peer group.	Group A	30	2.0	0.0	1.000
	Group B	30	2.0	0.0	
SR10- Being happy to play with peer group	Group A	30	2.0	0.0	1.000
	Group B	30	2.0	0.0	

In question numbers SR1, SR3, SR4, SR8, SR9 and SR10 the mean value is not varied. And the p value obtained is 1.00. That is there exist no significant difference between the groups in these skills like interaction with grandparents and siblings, sociability within the family, making friends easily and being happy to play with the peer group. But in question numbers SR2, SR5, SR6 and SR7 there is a significant difference between the means of the groups and the p value obtained here is less than 0.05. So in these questions, the two groups differ significantly. That is, the level of interaction with others, interest to engage in conversation, being talkative and greeting others are better in Group B when compared to Group A. This indirectly implies that communication skills are inevitable in social interaction.

This is supported by the study done by Wiley & Choo (2005) which found that as the duration of implant usage increases all children with cochlear implants broadened their communication skills and interaction inside the family.

Stacey and Summerfield (2006) have also reported improved social independence and socialization after implantation. Their large survey of more than 400 implanted children was based on parental and teacher reports.

Schorr and Fox, 2009 reported that children indicated significant improvement in QOL in terms of their improved ability to hear and to communicate, to handle social interaction, and in their ability to participate in extracurricular activities.

2. SUMMARY AND CONCLUSION
Hearing is a critical sense that is necessary for the development of communication skills and it is a critical factor which contributes to the quality of life of an individual. People who are deaf or hard of hearing will have poor communication skills and therefore their social relationships will be impaired. This will be evidently reflected in their quality of life.

The objectives of the present study was to study the social relationships in children with cochlear implants. A Total of 60 parents whose children were between the age range of 0-10 years, participated in the study. The participants were divided into two Groups based on their implant age. A questionnaire

consists of questions was administered through direct interview method.

The results showed that the social relationships related quality of life of children with cochlear implants varied depending on the duration of implant. The following conclusions can be drawn:

- The mean scores of Group B were higher when compared to the scores at of Group A.
- The social relationship scores were better in children whose implant age is greater than 2 years when compared to the children with implant age less than 2 years.
- The present study provides information on how the social relationship related quality of life of children with cochlear implants undergo change as the age and duration of implantation increases.

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