



## QUALITY OF LIFE IN CHILDREN WITH COCHLEAR IMPLANTS: EFFECT OF IMPLANT AGE ON SELF RELIANCE

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### ABSTRACT

Studies in the past years have shown that cochlear implant is the most effective management for profound hearing loss. Quality of life in children with cochlear implants has to be evaluated to state the efficacy of implantation. The aim of the study was to evaluate the effect of implant age on self reliance 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 consisting of 10 questions assessing the self reliance in children with cochlear implants was constructed and was administered to the target population after the pilot study. The results showed that, overall there is a significant difference in terms of self reliance in children with cochlear implants with improvement in implant age. The main situations which contribute to the difference are, "handling a new situation" and "making new friends". In other situations, where self reliance is the domain, there exists no significant difference between the groups. The findings of the current study correlate with the previous work done by researchers.

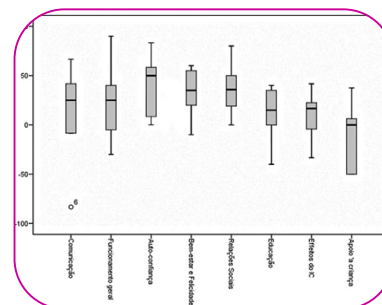
**KEYWORDS:** Quality of life in children with cochlear implants, Self reliance, Implant age.

### INTRODUCTION

Life is made meaningful by what we experience through our senses. The sense of hearing is a blessing from God and its ability is priceless. It empowers us and it allows us to work, socialize, interact, communicate and relax. Hearing plays a key role in our awareness and it 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. If the hearing sensitivity is damaged or absent, individuals with the loss 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 speech and language development and 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.

Cochlear implant is the most wonderful invention of the 20th century. Since the mid-1980s, cochlear implants have been increasingly used in the management of childhood deafness and implantation has gradually gained wider clinical acceptance. 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.

Considering the general consensus suggesting these devices’ effectiveness, researchers have begun investigating the broader effects of cochlear implant use on children’s social and emotional development. 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. The measurement of cochlear implant related quality of life states an important instrument to provide information about the outcome of technical improvements, different treatment and rehabilitation strategies in future.

**AIM OF THE STUDY**

To study the effects of implant age on self-reliance in children with cochlear implants.

**METHODS**

The study was divided into four phases which are as follows.

- Phase I : Selection of subjects
- Phase II : Constructing the Questionnaire
- Phase III: Pilot Study
- Phase IV: Data Collection and Statistical Analysis

**Phase I : Selection of subjects**

The participants included in the current study were parents of 60 Tamil speaking children within the age range of 0-8 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)

**Inclusion Criteria**

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

**Exclusion Criteria**

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

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

**Table 2.1 Demographic data of the participants**

	No. of participants (n)	Mean Chronological Age (months)	Mean Implant Age (months)
Group A	30	42.6	11.6
Group B	30	59.6	27.9

**Phase II. Questionnaire construction**

A multiple-choice questionnaire consisting of 10 questions, which reflect self-reliance in children with cochlear implants was constructed in Tamil 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.

**Phase III. 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.

**Phase IV. Data Collection and Statistical Analysis**

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.

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.

**RESULTS AND DISCUSSION**

Overall comparison of Performance between Group A and Group B

**Table 3.1. Comparison of performance by Group A and group B in Self Reliance**

Self Reliance	n	Mean	SD	t	p
<2	30	45.00	1.70	-16.091	0.000
Above 2	30	50	0		

The mean score obtained by Group A is 45 with standard deviation of 1.70 while the mean of group B is 50 with standard deviation of 0.

The independent t-value obtained was -16.091 and the p-value obtained is 0.00 which shows that, there is a statistically significant difference exist between the groups.

The following tables describes the performance of parents on each question in this section.

**Table 3.2 Comparison of performance by Group A and group B in questions S1, S2, S3, S4, S5, S8, S9.**

Questions S1,S2,S3,S4,S5, S8,S9	Group A		Group B		Total	
	n	%	n	%	n	%
Always	30	100	30	100	60	100
Total	30	100	30	100	60	100

In questions S1, S2 ,S3, S4, S5, S8 and S9 included the following concepts. Age adequate independence, confidence level, ability to do his/her things without adult supervision, being involved activities and games in school, Expression of ideas, opinions and activity level. 100% of the participants responded with the rating ‘always’ and so there exist no significant difference between the two groups. Both the groups responded in these questions equally.

**Table 3.3 Comparison of performance by Group A and group B in question S6.**

Question S6	Below 2		>2		Total	
	n	%	n	%	n	%
Sometimes	14	46.67	0	0	14	23.33
Always	16	53.33	30	100	46	76.67
Total	30	100	30	100	60	100

In the question S6, which indicated the ability to handle a new situation, 46.67% of the participants in group A responded with the rating ‘sometimes’ and 53.33% responded with the rating ‘always’. In group B, 100% of the participants responded with the rating ‘always’.

Fisher’s exact test is used here and the p-value is 0.00 which indicates that, there is significant difference between the groups.

**Table 3.4 Comparison of performance by Group A and group B in question S7**

S7	Group A		Group B		Total	
	n	%	n	%	n	%
Sometimes	21	70	0	0	21	35
Always	9	30	30	100	39	65
Total	30	100	30	100	60	100

In question S7, which indicated making new friends 70 % of the participants in group A responded with the rating ‘sometimes’ and 30% responded with the rating ‘always’. In group B,100% of the participants responded with the rating ‘always’.

Fisher’s exact test is used here and the p-value is 0.00 which indicates that, there is significant difference between the groups.

**Table 3.5 Comparison of performance by Group A and group B in question S10**

S10	Group A		Group B		Total	
	n	%	n	%	n	%
Sometimes	2	6.67	0	0	2	3.33
Always	28	93.33	30	100	58	96.67
Total	30	100	30	100	60	100

In question S10, which indicated the ability to carry out the duties given with responsibility, 6.67% of the participants in group A responded with the rating ‘sometimes’ and 93.33% responded with the rating ‘always’. In group B, 100% of the participants responded with the rating ‘always’.

Fisher’s exact test is used and the p-value is 0.246 which indicates that, there is no significant difference between the groups.

The findings are in accordance with the study conducted by DesJardin, (2004). However, in this study the comparison was made between two groups of mothers with young children with hearing aids and mothers of children with a cochlear implant. Maternal ratings of children with hearing aids showed lower self-efficacy and involvement in early intervention compared to cochlear implant children.

Sach and Whynes (2005) reported that parents (31%) felt that their children's confidence and independence increased. Parents also perceived that increases in confidence facilitated fuller integration into social groups.

Nicholas & Geers, (2003) reported that, their children developed greater confidence, were more independent, and greatly developed their spoken language. Moreover, parents stated that their children did not need greater parental support than prior to implantation and the support parents were now giving was

more productive. With parental reports of significant changes in confidence, the majority of children were considered as independent as most children of the same age, being able to amuse themselves.

Findings of Warren and Hasenstab (1986) and Calderon (1988) are also supporting the current study.

## CONCLUSION

The following conclusions can be drawn:

- The mean scores of Group B were higher when compared to the scores of Group A.
- The self reliance 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.
- This study could identify the self reliance skills in which parents and therapists should focus on to improve the quality of life.
- The present study provides information on how the self-reliance related quality of life of children with cochlear implants undergo change as the age and duration of implantation increases.

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