



## PARENTAL EXPECTATIONS ON COMMUNICATION ABILITIES, SOCIAL SKILLS AND ACADEMIC ACHIEVEMENTS FROM PEDIATRIC COCHLEAR IMPLANTATION.

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### ABSTRACT

**Background-** Hearing loss is one of the most common sensory disorders resulting in reduction in the hearing sensitivity due to any kind of underlying causes affecting the auditory system directly or indirectly. Cochlear implants constitute one of the most important treatment options for people with severe-to-profound hearing impairment, cochlear implants are known to have a significant positive effect on the psychosocial behavior and quality-of-life factors such as physical, mental, and emotional health and self-esteem. **Objectives-** compare the parental expectation along with socio-economic, financial assistances and age of implantation. **Method and materials-** The present study included 80 parents whose children were in the process of undergoing cochlear implantation under ADIP scheme and self-financing the implantation. The 'Parent Expectations Questionnaire for Cochlear Implants' was used for assessing the parental expectations from pediatric cochlear implantation. **Results-** The quantitative findings indicate that parents of children who are in the process of cochlear implantation had held relatively high expectations of their children's communicative, social, academic, wellbeing and future life outcomes from pediatric cochlear implantation. It was further found that there was no significant difference in terms of socio-economic status. Whereas the parents of children who have not been privileged to exploit the benefits of the ADIP scheme, have to contribute to the cost of implant, cost of maintenance, spares, repairs and post-operative rehabilitation. **Conclusion-** Cochlear implant provides numerous benefits in children. Parents of children who are in the process of cochlear implantation had held relatively high expectations of their children's communicative, social, academic, wellbeing and future life outcomes from pediatric cochlear implantation.

**KEYWORDS :** Cochlear Implant, ADIP Scheme, Parental Expectation, Communication Abilities.

### INTRODUCTION

Hearing loss is one of the most common sensory disorders resulting in reduction in the hearing sensitivity due to any kind of underlying causes affecting the auditory system directly or indirectly so that its sound conduction and/or transduction properties are impaired. According to Northern & Downs 2014, "A significant hearing loss in a child is any degree of hearing that reduces the intelligibility of speech to a degree inadequate for accurate interpretation or as to interfere with learning." Hearing loss in children is definitely a serious concern because, if hearing loss is undetected and untreated, it may cause delayed speech and language development, social and emotional problems, and ultimate academic failures. If hearing loss is undetected in children may lead to difficulties and social problems clear into adulthood. Therefore, it is unnecessary for a child to suffer these debilitating consequences.

Hence, the effects of hearing loss can be reduced by detecting hearing loss as early as possible, even as early as during the new born period with an effective treatment option. Therefore, it is the essential duty of audiologists to identify, evaluate and rehabilitate children with hearing loss as early as possible so as to minimize the effects of hearing loss in children (Northern & Downs, 2014). Cochlear implants constitute one of the most important treatment options for people with severe-to-profound hearing impairment. In the last two decades, there has been an increase in the number of children with severe-to-profound hearing impairment undergoing cochlear implantation worldwide (Bond et al., 2009). The increase can

be attributed to numerous benefits of the cochlear implantation in children, which may include overall improvement in auditory development (Robbins, Koch, Osberger, Phillips, & Rabin, 2004), improved speech production (Kubo, Iwaki, & Sasaki, 2008), greater speech intelligibility (Svirsky, Chin, & Jester, 2007), and improved reading skills (Vermeulen, Van Bon, Schreuder, Knooers, & Snik, 2007).

In addition, cochlear implants are known to have a significant positive effect on the psychosocial behaviour and quality-of-life factors such as physical, mental, and emotional health, self-esteem, relationships with family and friends, and school performance (Loy, Warner-Czyz, Tong, Tobey, & Roland, 2010).

### OBJECTIVES

Assessment and comparison of the

- (1) Parental expectations from pediatric cochlear implantation on communication abilities (CA), social skills (SS) and academic achievements (AA),
- (2) Socio-economic status,
- (3) Financial assistance,
- (4) Age of implantation of the child.

### METHODOLOGY

The present study aimed to assess and compare the parental expectations on communication abilities, social skills and academic achievements from pediatric cochlear implantation with respect to different variables such as financial assistance, socio-economic status and age of implantation,

**Participants and inclusion criteria**

The present study included 80 parents whose children were in the process of undergoing cochlear implantation under ADIP scheme and also who were self-financing the implantation. The participants recruited for the study were those who visit special schools, institutes, hospitals and private (re) habilitation centers.

**Tool**

The 'Parent Expectations Questionnaire for Cochlear Implants' (Zaidman-Zait & Most, 2005) was used for assessing the parental expectations from pediatric cochlear implantation. This questionnaire contains 31 questions on the 3 subscales of communication abilities (CA), social skills (SS), academic achievements (AA). The questionnaire was validated by five audiologists and speech language pathologists, experienced in the field of cochlear implants, for suitability in the Indian context. The original questions were retained for the purpose of this study.

**Procedure**

Informed consent was taken from the parents. The case history and demographic details were taken from each participant and their child. Only those subjects who fulfilled the inclusion criteria for the study were included. The participants were explained about the purpose of the study and how they were supposed to respond.

**1-To assess and compare the parental expectations from paediatric cochlear implantation on communication abilities (CA), social skills (SA) and academic achievements (AA).**

They were all assessed on the 3 subscales i.e. Communication Abilities (CA), Social Skills (SS) and Academic Achievements (AA) of the questionnaire.

**2-Comparison between the parental expectations from pediatric cochlear implantation based on socio-economic status**

The parents were divided into four groups based on their socio- economic status. Group I consisted of 26 parents, who fell under low socio- economic status group (LSG Group). Group II consisted of 28 parents, who fell under middle socio-economic status group (MSG Group). Group III consisted of 26 parents, who fell under high socio-economic status group (HSG Group).

**3-Comparison between the parental expectations from pediatric cochlear implantation based on financial assistance**

The parents were divided into two groups based on financial assistance. Group I consisted of 40 parents of children who were in the process of undergoing cochlear implantation with financial assistance under the ADIP scheme (ADIP Scheme Group). Group II consisted of 40 parents of children who were in the process of undergoing cochlear implantation with self-finance (Self-finance Group).

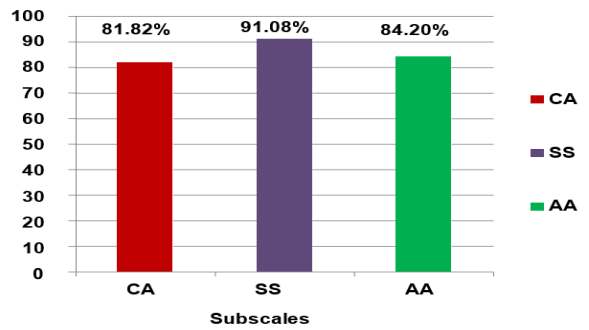
**4-Comparison between the parental expectations from pediatric cochlear implantation based on age of implantation of the child**

The parents were divided into 4 groups based on the ages of their children who were in the process of undergoing cochlear implantation (age of implantation). Group I consisted of 21 parents, whose children were in the age range between 1 year 1 month and 3 years (1-3 years Group), Group II consisted of 24 parents, whose children were in the age range between 3 years 1 month and 6 years (3-6 years Group), Group III consisted of 19 parents, whose children were in the age range between 6 years 1 month and 9 years (6-9 years Group), Group IV consisted of 16 parents, whose children were in the age range between 9 years 1 month and 12 years (9-12 years Group).

**RESULTS**

**1-To assess and compare the parental expectations from paediatric cochlear implantation on communication abilities (CA), social skills (SA) and academic achievements (AA).**

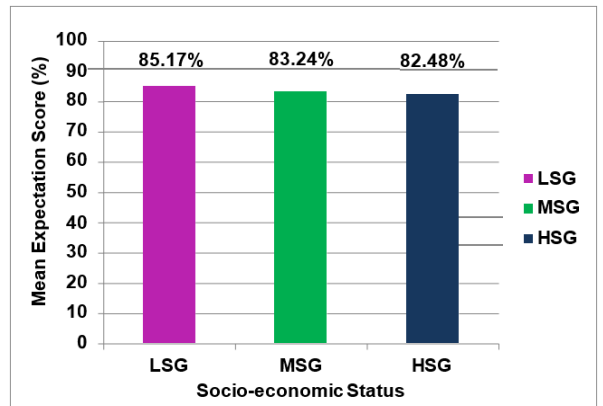
The mean percentage and standard deviation values of expectations of parents on subscales such as communication abilities (CA), social skills (SS) and academic achievements (AA) were also calculated. The overall mean percentage score of parental expectations from paediatric cochlear implantation was found to be 83.62% (SD 6.17). The mean percentage score of parental expectations from paediatric cochlear implantation on subscales such as communication abilities, social skills and academic achievements were found to be 81.82% (SD 6.40), 91.08% (SD 0.28) and 84.20% (SD 9.26) respectively (Graph 1). The mean percent expectation scores were falling in the range between 81% and 100%. Hence, it can be concluded that the parents had high expectations for all subscales i.e. communication abilities, social skills and academic achievements from paediatric cochlear implantation.



**Graph 1:** Mean percentage parental expectation scores from paediatric cochlear implantation on the three subscales of communication abilities (CA), social skills (SS) and academic achievements (AA)

**2-Comparison between the parental expectations from paediatric cochlear implantation based on socio-economic status**

Graph 2 show mean percentage parental expectation scores of LSG, MSG and HSG. The mean expectation scores were 85.17% (SD5.83), 83.24% (SD5.32) and 82.48% (SD7.19) for LSG, MSG and HSG groups respectively. All three groups had high level of expectations from paediatric cochlear implantation. The subjects belonging to LSG obtained a slightly higher expectation score followed by subjects of MSG and HSG.



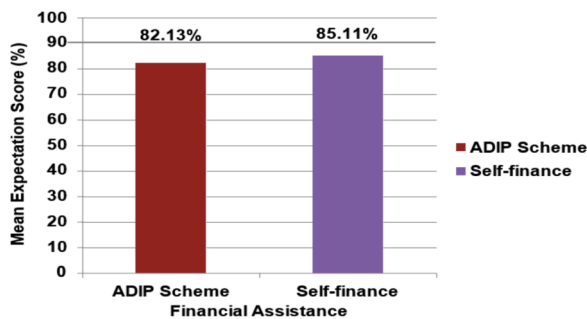
**Graph 2:** Mean percentage parental expectation scores based on socio-economic status

One-way ANOVA was used to find out significant difference of mean parental expectation scores between and within the groups. The results revealed that there was no statistically

significant difference between and within the groups in terms of mean parental expectation scores with p value of .271 (i.e.,  $p > 0.05$ ). Hence, there is no significant difference between the mean parental expectation scores based on socio-economic status is accepted between LSG and MSG, LSG and HSG, and MSG and HSG.

**3-Comparison between the parental expectations from paediatric cochlear implantation based on financial assistance**

Graph 3 show mean percentage parental expectation scores of ADIP Group and Self-finance Group. The mean expectation scores were 82.13% (SD 6.56) and 85.11% (SD 5.43) for ADIP Group and Self-finance Group respectively. Both the groups had high expectation levels from paediatric cochlear implantation. The subjects in Self-finance Group obtained a slightly higher expectation score than that of the subjects in the ADIP Group.

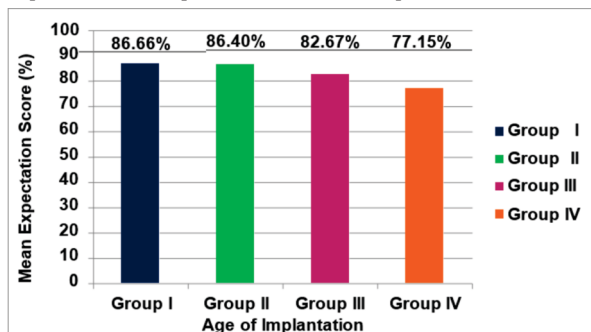


**Graph 3:** Mean percentage parental expectation scores based on financial assistance

The data were subjected to independent sample t-test to find out significant difference of mean parental expectation scores between the two groups. The results revealed that there was a statistically significant difference between the groups in terms of mean parental expectation scores with p value of .030 (i.e.  $p < 0.05$ ). test results revealed that there is no significant difference between the mean parental expectation scores based on financial assistance.

**4-Comparison between the parental expectations from paediatric cochlear implantation based on age of implantation of the child**

Graph 4 show mean percentage parental expectation scores of 1-3 years Group, 3-6 years Group, 6-9 years Group and 9-12 years Group. The mean expectation scores were 86.66% (4.80), 86.40% (5.58), 82.67% (6.24) and 77.15% (2.56) for 1-3 years Group, 3-6 years Group, 6-9 years Group and 9-12 years Group respectively. Groups I, II and III had high level of expectations from paediatric cochlear implantation. The subjects of Group I obtained a higher expectation score followed by that of Group II, Group III and Group IV. On the other hand, Group IV (9-12 years) obtained medium level of expectations from paediatric cochlear implantation.



**Graph 4:** Mean percentage parental expectation scores based on their child's age of implantation.

The data were subjected to one-way ANOVA to find out significant difference of mean parental expectation scores between and within the groups. One-way ANOVA results of parental expectation scores based on their child's age of implantation. The results revealed that there was a no statistically significant difference ( $p < 0.05$ ) between the mean parental expectation scores of

Hence, there is no significant difference between the mean parental expectation scores based on age of implantation is rejected between Group I and Group III, Group I and Group IV, Group II and Group III, Group II and Group IV and between Group III and Group IV, and is accepted between Group I and Group II.

**DISCUSSION**

Cochlear implant provides numerous benefits in children, which may include overall improvement in auditory development (Robbins et al., 2004), improved speech production and greater speech intelligibility (Svirsky et al., 2007), and improved reading skills (Vermeulen et al., 2007). The quantitative findings indicate that parents of children who are in the process of cochlear implantation had held relatively high expectations of their children's communicative, social, academic, wellbeing and future life outcomes from paediatric cochlear implantation (Christiansen & Leigh, 2002; Zaidman-Zait & Most, 2005). These findings are in accordance with the findings of previous studies (Christiansen & Leigh, 2002; Weisel et al., 2007;). It was further found that there was no significant difference in terms of socio-economic status. The findings are in accordance with the findings reported by Kumar (2008). Whereas the parents of children who have not been privileged to exploit the benefits of the ADIP scheme, have to contribute to the cost of implant, cost of maintenance, spares, repairs and post-operative rehabilitation. Hence, they might have had more expectations from cochlear implantation.

A similar argument was made by Chundu et al., (2012) that parents' expectation levels differed because, unlike other developed countries; the parents contribute to part of the cost of their child's implant and pay for all the cost of maintenance, spares, and repairs. The parents of children in the young age group demonstrated higher expectation levels than parents of the children in the older age group, in the present study. This could be attributed to the reason that the parents might have received pre-implant counseling regarding advantages of making use of critical period of their children, and realistic expectations and limitations of late cochlear implantation. There are well established evidences that cochlear implantation in the early age i.e. during critical period, will result in overall improvement of children with severe-to-profound hearing loss (Svirsky et al., 2007; Dettman, Pinder, Briggs, Dowell, & Leigh, 2007; Kral & Sharma, 2012). Thus, on an average, most of the parents of children who are in the process of undergoing cochlear implantation had high expectations from pediatric cochlear implantation.

**Future directions**

The study can be carried out on a large sample size. Expectations on other domains can be researched, e.g. change in future life, rehabilitation demands.

Research can be conducted for comparing the parental expectations before cochlear implantation and post-implantation with follow-up periods, e.g. 6 months post-implant, 12 months post-implant, 18 months post-implant, etc. Research can be conducted for comparing the parental expectations before cochlear implantation and their satisfactions from their child's cochlear implantation, with follow-up periods, e.g. 6 months post-implant, 12 months post-implant, 18 months post-implant, etc.

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