GLASGOW CHILDREN BENEFIT INVENTORY IN HINDI (GCBI-H)

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Abstract: The present study aimed at adaptation of Glasgow children benefit inventory in Hindi (GCBI-H) and the effect of implant age on general functioning skills in children with cochlear implants. The participants were parents of seventy Hindi speaking children within the age range of 1 to 10 year who underwent cochlear implantation. Results reveals the positive correlation between two groups which indicates the variable increases or decrease in parallel, which means that when age increases than quality of life decreases. The general functioning related quality of life of children with cochlear implant varied depending on the duration of the implant. Finally the adapted version can be used with Hindi speaking children to know the information related on how the general functioning, a domain of quality of life undergo change as the age and duration of cochlear implant.

Index Terms: Glasgow inventory, Hindi, Cochlear implant, children and quality of life.

I. INTRODUCTION

Currently the people with deafness had limited benefit from hearing aids. The hearing device technology has grown in leaps and bounds making available the end umpteen number of choices to suit best for the person own hearing satisfaction. Hearing is the only sense whose functions can be largely restored through the cochlear implant. Reduced hearing acuity during infancy and early interferes with the development of speech and language skills, because it is likely child will not receive adequate auditory, linguistic and social stimulation required for speech and language learning, social and emotional development and general functioning will be also affected (NIH, 1993). Most of the time the case severe to profound hearing loss who have fail the hearing aids and no improvement in speech and language skills, in these type of case recommended for cochlear implant. With cochlear implantation done at critical stage with adequate speech and language skills than the child can achieve near to normal speech and language skills and improve the quality of life. Quality of Life (QOL) has been defined by the World Health Organization is a broad concept incorporating the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of the environment. Children’s speech and language development result in poor communication and quality of life for children’s and their families (Clegg, Hollis, Maw Hood and Rutter, 2005). Pediatric cochlear implantation was first approved in the united state in 1990, since that time, Cochlear implantation has been demonstrated to improve the speech perception, oral language acquisition, oral communication and speech production, reading ability and academic achievement. To examine the results of health-related quality-of-life questionnaire scores from deaf children who were undergone cochlear implant (CI) and to
compare their responses with those of normal-hearing population of similar age and to compare the parents responses. Little data are available on the QOL in parents with children with cochlear implant especially in Indian context. Thus the present study was taken. The present study aimed at adaptation of Glasgow children benefit inventory in Hindi and the effect of implant age on general functioning in children with cochlear implants. The objectives of the present study were 1. To adaptation Glasgow children’s benefit inventory questionnaire in Hindi. 2. To evaluate and correlation the quality of life of parents of children with cochlear implant before and after critical age period. 3. To compare general functioning skills related to QOL between the groups and 4. To evaluates how each domain (emotional, physical health, learning, vitality) affected in cochlear implants.

1.1 GLASGOW BENEFIT INVENTORY (GBI)

It is a generic patient-recorded outcome measure that was reported by Robinson et al. (1996) is designed for use only once post-intervention, as a measure of change related to a specific surgical or medical intervention. The questionnaire, which can be completed by interview or self-completed by patients or parents, consists of 24 questions answered using a five-point rating scale, addressing change in health status post any intervention. Most health-related quality-of-life measures make an assessment at a single point in time. Comparing results before and after an intervention is often difficult, because the difference measured is usually small comparison with the variation between individuals.

II. METHOD

2.1 PARTICIPANTS

Total of 70 Hindi speaking parents of cochlear implant children, with the age range of 0 to 10 years and above were recruited for the study. All children’s had congenital hearing loss ranging from severe to profound hearing loss, who underwent cochlear implantation. The children’s were selected based on their implant age (onset of implantation) and was divided into 2 groups which depending on the implant age as follows:

Group - 1: 0-5 years (n =35) before critical period
Group - 2 10 years and above (n =35) after critical period

All testing was performed as a part of routine clinical evaluation and the participants were selected from Speech & and hearing centre or hospital.

2.2 PROCEDURE

To develop the inventory which consists of a multiple choice questionnaire consisting of 24 questions with four domains (Emotional, Physical health, Learning and Vitality), from Glasgow children’s benefit inventory which reflect the general functioning in children with cochlear implants was adapted from English to Hindi language. The adapted questionnaire was administered on all the participants and scores were recorded in a form for further analysis. The approximate duration taken to complete the test was approximately for 10-15 minutes.
2.3 ANALYSIS

Statistical analysis was done by using SPSS 2.0 version; independent paired t test, spearman correlation was carried out to know mean and SD, correlation between the groups and significant difference among groups.

3. RESULTS and DISCUSSION

The results of the present study are explained according to the objectives;

3.1 To adaptation Glasgow children’s benefit inventory questionnaire in Hindi.

The questionnaire was successfully translated and adapted into Hindi language and used on seventy Hindi speaking parents of cochlear implanted children within the age range of 0 to 10 years. The obtained data was stored for further analysis. This inventory was administered using interview method. It consists of four domains with twenty four items, which comprehensively assessed, emotional, physical health, learning and vitality aspects of parents of children with cochlear implant with five response levels, ‘much better’, ‘a little better’, ‘no changes’, ‘a little worse’ and ‘much worse’. The inventory can be completed within 10 minutes and requires no special training. Prior consent is taken from the participant, they were asked to fill consent form. Then the clinician instructed participant regarding inventory and rating.

3.2 To evaluate and correlate the quality of life of parents of children with cochlear implant before and after critical age period

The overall comparison of performance between parents of groups A & B was done by using statistical evaluation to know the mean, standard deviation and P value where the results showed the mean (4.223) value for group A is less than the mean (9.392) value of Group B which implies that the children with implant age less than 5 years performed better when compared to that of children with implant age greater than 5 years. Also the p value is statistically significant (0.000), which shows that there is remarkable effects of implant age exist on the outcome of cochlear implantation. The data was given in table 1 & graphical representation was given in graph 1.

<table>
<thead>
<tr>
<th>General functioning skills related quality of life</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>35</td>
<td>4.2243</td>
<td>1.3320</td>
<td>0.0000</td>
</tr>
<tr>
<td>Group B</td>
<td>35</td>
<td>9.3929</td>
<td>3.2138</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Shows the results of overall comparison between parents of group A and group B
The present study findings support the studies done by Carlson & Matthew (2017) where authors stated that results vary from person to person and the factors that can affect the outcomes of cochlear implantation include the age when hearing was lost and length of time between hearing loss and cochlear implantation. For children, the best results occur with implantation at a young age. Research also indicates that young children who have cochlear-implant surgery develop better hearing and speech than similar children with hearing aids. Harrison et al. (2005) observed distinct age of implant cut offs, and concluded that critical periods are important during development as present study results also agree that before critical period performed better. Wu JL, et al, (2003) studied the comparison of performance at 12 and 24 months post-connection, subject performed significantly better at 24 than 12 months in awareness level (p<0.05). In spondee, vowel and consonants test (p<0.05). In phrases sentence test, the mean score improved over time with device use but the difference was not significant (P = 0.066 and 0.067, respectively). Progress (improvement in speech perception) at 12 and 24 months had moderate negative correlation with age at implantation in spondee, vowel, phrase, and sentence test (P<0.05), but no correlation with age in consonant (P =0.20) and tone test (P =0.20).

3.3 To compare general functioning skills related to QOL between the groups.

The quality of life was obtained through parent’s interview for both groups of participation. The mean and standard deviation across the both before and after critical period groups are shows the overall comparison of performance between parents of groups A & B was done by using statistical evaluation to know the mean, standard deviation and t. test value where the results showed the mean (34.8571) value for group A is more than the mean (18.5429) value of Group B which implies that the children with implant age less than 5 years performed better when compared to that of children with implant age greater than 5 years. Also the t test (16.3149) value for group B more than the t test (10.8429) value of group A. the data was tabulated in table 2 and graphical representation showed in graph 2.
<table>
<thead>
<tr>
<th>General functioning skills related quality of life</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>‘t’ test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>35</td>
<td>34.8571</td>
<td>6.2692</td>
<td>10.8429</td>
</tr>
<tr>
<td>Group B</td>
<td>35</td>
<td>18.5429</td>
<td>6.3122</td>
<td>16.3149</td>
</tr>
</tbody>
</table>

Table 2: shows the results of overall comparison between parents of group A and group B.

ANOVA reveals there is a significant difference noted between groups and within the groups. From this data it can be concluded the correlation between two groups will be positive (0.729). A positive correlation indicates the extent to which those variables increase or decrease in parallel, it means when age increases than quality of life decreases. Paired sample t test was done to compare QOL between before and after critical period which reveals there is a significant difference before and after the critical period. The spearman correlation revealed the correlation between two groups was positive (0.729), which indicates the extent to which those variables increase or decrease in parallel, it means when age increases than quality of life decreases.

The present study findings support the study of Betty Loy et. a l (2010), CI users in both age groups scored similarly to their normal-hearing peers and their parents. Younger CI users scored their family domain lower compared with their normal-hearing peers. Teen CI users scored the school domain lower compared with their parents. Among CI participants, earlier implantation and longer CI use resulted in higher quality-of-life scores, finally authors concluded that Children with CIs experience quality of life similar to that of normal-hearing peers. Parents are reliable reporters on the status of their child's overall quality of life.
3.4 To evaluate how each domain (Emotional, Physical health, Learning, and Vitality) affect in cochlear implants.

All the four domains were compared before and after the critical period results showed that better improvement was noticed before critical period. The data was incorporated in table 3. And the same was depicted in the graph 3.

<table>
<thead>
<tr>
<th>Domains</th>
<th>Mean(&lt;5years)</th>
<th>SD (&lt;5years)</th>
<th>Mean (&gt;5years)</th>
<th>SD (&gt; 5years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotion</td>
<td>12.6571</td>
<td>2.0284</td>
<td>7.200</td>
<td>3.1417</td>
</tr>
<tr>
<td>Physical health</td>
<td>8.5429</td>
<td>3.8571</td>
<td>1.9903</td>
<td>1.5557</td>
</tr>
<tr>
<td>Learning</td>
<td>9.6857</td>
<td>2.2462</td>
<td>5.0571</td>
<td>3.2079</td>
</tr>
<tr>
<td>Vitality</td>
<td>4.2571</td>
<td>1.3360</td>
<td>2.2286</td>
<td>1.2387</td>
</tr>
</tbody>
</table>

The above graph reveals higher scores before critical period when compared to after critical period which indicates the cochlear implantation before the critical period will give better development in all domains than compare to after critical period, this helps in the child’s speech and language development. The present study showed higher emotional skills than other domains this is in support with Dunn et al (1999) study findings which revealed the importance of both language skills and emotional understanding as a significant factors in social development later on childhood. The perception of emotion in the vocal expression of the others is considered vital to the accurate understanding of emotional massages.
IV. CONCLUSION

The present study aimed to adapt GCBI-H and know the effect of the performance of the cochlear implanted children before and after the surgery. The results showed that the general functioning related quality of life of children with cochlear implants varied depending on the duration of implant. The present study concluded that the 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. Information on how the general functioning, a domain of quality of life undergo change as the age and duration of cochlear implantation increases was drawn from the present study. Finally the authors stated that implant age has a greater impact on General functioning related QOL in children with cochlear implants. This data can be used to carry out further studies in Quality of Life (QOL) in children with cochlear implant: effects of implant age on general functioning.

V. LIMITATIONS

The small size of the present sample limits interpretations of this study’s findings. In particular, with regard to age at implantation, a larger or more homogeneous sample would facilitate measurement of this background variable’s predictive ability for future benefits or problems. The small sample size of the present study raises the likelihood of Type I error because mistaken rejection of the null hypothesis is a concern in studies with small samples. An additional limitation of this study was its cross-sectional nature that evaluated the quality of life for children at only one time interval. It would be very beneficial to assess the quality of life longitudinally, following these children at several intervals over the course of development, to better elucidate the interactions between the unique experiences of children with cochlear implants and the typical developmental issues facing all children as they mature and reach adolescence.

VI. FUTURE RESEARCH

The present study can be carried out the effects of age on speech identification score and speech recognition score. A similar study can be carried out in the hearing impaired children as well as adults using different QOL of scales, and can be carried out also in progressive developmental disorder children with different scales.

VII. ACKNOWLEDGEMENTS

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