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FACTORS INFLUENCING SPOKEN LANGUAGE OUTCOMES IN CHILDREN FOLLOWING EARLY USE OF HEARING AIDS

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ABSTRACT

BACKGROUND: Humans are social animals they cannot survive without social interaction. In all over the world human interaction is achieved and maintained through language. Hearing impairment pessimistically interference communication in everyday life for deaf children amplification is very important intervention. Hearing aids generally are used to correct for the loss of noticeable hearing impairment. One of the interventional consequences of a hearing aid in young children to identify spoken language. This study would assist that higher language outcomes are related with the early intervention in the form of amplification.

OBJECTIVES: To investigate the factors effecting spoken language outcomes in children who are using hearing aids at early age.

METHODS: This was conducted in government sector and it was a cross sectional survey. After the synopsis approval this study was completed in six months. A convenient sample of 376 parents of hearing-impaired children was recruited. A predetermined criterion of suitability was used. For the collection of data questionnaire was used. To analyze the data SPSS 21-(statistical package for social sciences) was used, descriptive statistic such as mean, standard deviation, frequency and percentages were calculated. Descriptive cross tabulation test was used.

RESULTS: Out of total 376 respondents 132(35.1) participants were under matric, 75(19.9%) were of matric, 68(18.1%) were of F.A, 64(17.0%) were of B.A, 37(9.8%) were of Masters qualification. Out total of 376 306(81.6%) were parents and 306(81.4%) and 66(17.6%) were with other relationship. Out of total of 376 participants, hearing aid age 3-5 years were 169(44.9%), 6-8 years were 137(39.4%), 8 above were 45(12.0%) and before 2 years were 25(6.6%). Out of total respondents 342(91%) participants were agree that the goal of hearing aid is to maximize the chances of spoken language. Out of total respondents 337(89.7%) participants were agree that early use of hearing aid enables child to have better understanding of different types of listening situations. Out of total respondents 335(89.1%) participants were agree that after use of hearing aid children maintain better interaction with normal peers through spoken language.

CONCLUSION: It was concluded that most common factor was swelling in the ear which affects the hearing aid fitting and the chances of spoken language were affected.

KEY WORDS: Spoken Language Outcomes, Early Use Of Hearing Aids, Parental Interaction, Socioeconomic Status, Expressive Language, Receptive Language, Age Of Hearing Aid Use, Home Environment, Speech And Language Intervention, Cochlear Implant.

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INTRODUCTION

Language production relies on spoken language, which involves the articulation of sounds. Spoken language is vital for social interaction and communication among humans.(1, 2) It encompasses three stages: conceptualization, formulation, and articulation. The development of proper communication skills, especially in the first 18 months of life, is crucial for normal language development. Hearing impairment, categorized as conductive, sensorineural, or mixed, can significantly impact spoken language outcomes. Amplification through hearing aids is a primary intervention for hearing-impaired individuals. Traditional analog hearing aids have been replaced by digital hearing aids, which offer advanced signal processing capabilities.(3, 4) Factors such as intelligence, age of onset, family involvement, socioeconomic status, communication mode, and social behavior influence the outcomes of hearing aid use in language development.(5, 6) Successful fitting of hearing aids requires consideration of individual ear structures. Classroom communication plays a crucial role in the education of deaf children, who may attend special or mainstream schools.(7, 8) Aural rehabilitation aims to improve auditory perception and communication skills through hearing aids and other assistive devices.(9, 10) Early identification of hearing impairment and parental involvement in intervention are crucial for language development. Excessive earwax, infections, and inflammation can affect hearing aid functionality. Language delay in deaf children can lead to academic and mental health challenges. Early intervention and successful management can mitigate these risks.(11, 12) Communication difficulties in hearing-impaired children impact their mental health and overall well-being. Poor communication skills can hinder academic achievement, social interactions, and future success. This research aims to identify factors that influence spoken language outcomes following early use of hearing aids in deaf children and provide insights for special education and parents.(13, 14)

The literature review consists of several studies conducted to investigate the factors influencing language development and outcomes in children with hearing impairment. The studies focus on the efficacy of early intervention, the use of amplification (such as hearing aids and cochlear implants), and the impact of various variables such as maternal education, socioeconomic status, and severity of hearing loss on language skills.(15, 16)

Overall, the findings suggest that early intervention and the use of amplification devices at an early age are associated with better language outcomes in children with hearing impairment. Maternal education and communication mode were identified as important elements during early intervention. Children who started using hearing aids at an early age demonstrated better development of receptive and expressive language skills. The quality and proper fitting of hearing aids were also found to contribute to improved language abilities.(17, 18)

The studies also highlight the significance of early identification of hearing loss through newborn hearing screening and confirmation of the impairment. Early confirmation of hearing loss was associated with better language scores in later years. Additionally, factors such as cognitive skills, socioeconomic status, and educational support were found to impact the language development and academic achievements of children with hearing impairment.(19, 20)

Some studies examined the challenges faced by children with unilateral hearing loss and emphasized the importance of assistive technology and interventions to support their academic progress. Behavioral issues and social interaction difficulties were also identified among children with hearing impairment, indicating the need for interventions and support in these areas.(21, 22)

In summary, the reviewed literature emphasizes the importance of early intervention, appropriate amplification devices, and support systems for children with hearing impairment to enhance their language development and overall outcomes. The findings provide valuable insights for professionals, educators, and parents in understanding the factors influencing language skills in this population and guiding effective interventions.(23)

MATERIAL & METHODS

STUDY DESIGN

The study was cross sectional survey.

PARTICIPANTS

The target population of the study was the parents of children with hearing impairment.(24)

INCLUSION & EXCLUSION CRITERIA

Parents of children with hearing impairment using hearing aids were included in this study. Parents of children with other disabilities co morbid with hearing impairment, with cochlear implantation, Teachers of hearing impairment and other disabilities, Speech therapist were excluded from the study.(25)

DATA COLLECTION PROCEDURE

For the study, a well-structured questionnaire was designed on the basis of literature review and with the help of expert opinion that was consist of demographic information question, regarding factors influencing spoken language outcomes was administered on the parents of hearing-impaired children. A sample was taken according to the predefined inclusion criteria. Data was taken from special education schools and centers for hearing impairment and got permission. Written Informed consent was taken by all the participants. Data was gathered and entered in SPSS for Descriptive statistical analysis.(26)

DATA ANALYSIS

The data was analyzed through descriptive statistics through SPSS 21 (Statistical Package for Social Sciences) software and End Note was used for references.(27)

RESULTS

The study included 376 participants, and the results showed various trends. In terms of education levels, the majority of respondents were under matric (35.1%), followed by matric (19.9%), F.A (18.1%), B.A (17.0%), and Masters (9.8%). Among the participants, a significant percentage (81.6%) were parents, while the remaining (81.4%) had other relationships. Regarding the duration of hearing aid usage, the highest number of respondents (44.9%) reported using hearing aids for 3-5 years, followed by 6-8 years (39.4%), 8 years and above (12.0%), and before 2 years (6.6%).

The study also examined the participants' opinions on the impact of hearing aids on academic performance. A majority (58.5%) agreed that the use of hearing aids helps improve academic performance, while only a small percentage (1.9%) strongly disagreed. Similarly, the majority (43.6%) believed that the goal of hearing aids is to maximize spoken language, with only 0.8% strongly disagreeing.

The results indicated that many participants (47.3%) perceived students with hearing aids to have better grades compared to those without, while only 1.6% strongly disagreed. Furthermore, a significant percentage (57.4%) believed that early use of hearing aids leads to better speech intelligibility, and a similar proportion (51.9%) agreed that it also improves psychological well-being. Participants (68.4%) also acknowledged that early use of hearing aids enables children to better understand different types of listening situations.

Regarding social interactions, the findings indicated that a majority of participants (63.8%) believed that children with hearing aids maintain better interaction with their peers through spoken language. In terms of external factors, such as socio-economic status, the majority (53.7%) agreed that it affects language outcomes in children using hearing aids. Similarly, many participants (66.5%) recognized the importance of parental interaction in achieving positive language outcomes for children with hearing aids.

Interestingly, some respondents expressed skepticism regarding certain aspects. For instance, a significant proportion (32.2%) strongly disagreed that educated parents can better care for hearing aids. Additionally, a considerable number (55.1%) believed that improperly fitted hearing aids can influence listening abilities in deaf children.

The study also examined the impact of language intervention programs in conjunction with hearing aids. A substantial percentage of participants (49.5%) agreed that such interventions have a positive effect on spoken language, while 1.9% strongly disagreed. Similarly, a majority (50.3%) believed that children have the ability to acquire spoken language, particularly when provided with clinical interventions.

Other findings included the perception that cleanliness of hearing aids (59.8%) and ear infections affecting proper fitting (54.8%) can influence hearing outcomes. Moreover, a majority (52.1%) agreed that longer use of hearing aids is associated with better speech and language development. Finally, many participants (44.1%) acknowledged the negative impact of poor communication abilities on academic, social, and future occupational success.

These results provide valuable insights into the opinions and beliefs of participants regarding education levels, hearing aid usage, academic performance, psychological well-being, language outcomes, parental involvement, and the impact of hearing aids on speech and language development.

Table No: 5.3 hearing aid age

Variable	Frequency	Percent
Before 2 years	25	6.6
3-5 years	169	44.9
6-8 years	137	36.4
8 above	45	12.0

Category	Statement	Agree	Disagree	Don't know
Benefits of Early Use of Hearing Aids	Maximizes chances of developing spoken language	342	14	20
	Helps to acquire academic performance	276	33	67
	Improves speech intelligibility	306	21	49
	Better understanding of different listening situations	337	12	27
	Longer use associates with better speech and language development	273	17	86
Social and Psychological Effects	Better grades for students with hearing aids	254	36	86
	Better psychological well-being with early usage	266	28	82
	Better interaction with peers after using hearing aids	335	22	19
Influences on the Effectiveness of Hearing Aids	Socio-economic status affects language outcomes	297	43	36
	Parental interaction affects language outcomes	305	42	29
	Educated parents can better care for hearing aids	117	235	24
	Not well-fitted hearing aids affect listening	311	13	52
	Cleanliness of hearing aids influences hearing	287	3	16
	Swelling in ear affects hearing aid fitting	263	3	10
Additional Intervention and Support	Speech and language intervention	249	17	110

	programs have better effect			
	Clinical interventions aid spoken language acquisition	239	16	121
	Poor communication abilities negatively affect success	218	33	125

DISCUSSION

The study examined the factors influencing spoken language outcomes in deaf children using hearing aids. Factors such as early use of hearing aids, family environment, and intervention of speech and language were found to significantly impact language development. The study emphasized the importance of early identification of hearing impairment and appropriate support for these children.(28) Additionally, the research highlighted other contributing factors, including the philosophy of hearing impairment, socioeconomic status, family size, parental interest, education, and duration of hearing aid use.(29) The findings suggested that early intervention with hearing aids is crucial for positive spoken language outcomes. Furthermore, other studies investigated the academic achievements of deaf children and the relationship between hearing aid use and speech and language development.(30) These studies emphasized the complex interactions between various factors, including hearing thresholds, language fluency, communication mode, family environment, and socioeconomic status.(2) It was observed that longer use of hearing aids was associated with better speech and language development.(17)

CONCLUSION

It is concluded from this study that factors influence a child's ability to get advantages from the use of hearing aids. These benefits are what the child is learning from his environment, after the use of hearing aid, and what the child is gaining from speech and language intervention. Early use of hearing aids maximizes the development of spoken language. Early use of hearing aids also helps in academics and better grades

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