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**Parental Awareness Regarding Multidisciplinary Rehabilitation
Approach for Children with Cochlear Implants**



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Parental Awareness Regarding Multidisciplinary Rehabilitation Approach for Children with Cochlear Implants

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Abstract

Purpose: This study aimed to determine the level of parental awareness regarding the multidisciplinary rehabilitation approach for children with cochlear implants.

Methodology: A cross-sectional survey was conducted among parents of children with cochlear implants (N = 41) using a self-developed questionnaire. The tool underwent content validation by an expert panel (content validity index = 0.87) and reliability testing (Cronbach's $\alpha = 0.76$). Data were collected using non-probability convenience sampling from rehabilitation centers and online parent support groups. Descriptive statistics and cross-tabulations were analyzed using SPSS version 26.

Findings: Most parents (70.7%) reported awareness of the multidisciplinary rehabilitation approach. Awareness was highest for audiologists (24.3%) and speech-language pathologists (19.5%), while considerably lower awareness was observed for psychologists (7.3%), occupational therapists (12.1%), and special educators (4.8%). Overall, 80.5% of parents demonstrated a high level of awareness, whereas 19.5% exhibited moderate awareness. Higher parental education levels were associated with greater awareness of multidisciplinary rehabilitation services.

Unique Contribution to Theory, Policy, and Practice: Although the majority of parents demonstrated general awareness of multidisciplinary rehabilitation for children with cochlear implants, knowledge gaps remain regarding the roles of non-medical professionals, particularly psychologists, occupational therapists, and special educators. The study contributes to the literature by highlighting disparities in parental understanding of multidisciplinary care. Practically, structured parent education programs and integrated counseling within cochlear implant services are recommended to enhance holistic rehabilitation outcomes and improve long-term child development.

Keywords: Cochlear Implant, Multidisciplinary Rehabilitation, Parental Awareness, Pediatric Hearing Loss, Speech-Language Pathology.

Introduction

Hearing impairment is a major global public health concern with significant implications for communication, education, psychosocial functioning, and quality of life. The World Health Organization estimates that over 430 million individuals worldwide live with disabling hearing loss, with a substantial proportion residing in low- and middle-income countries (World Health Organization, 2021). In children, untreated or inadequately managed hearing loss can lead to long-term deficits in speech, language, academic achievement, and social participation (Moeller, 2000; Yoshinaga-Itano et al., 1998).

Cochlear implants (CIs) have revolutionized the management of severe to profound sensorineural hearing loss by providing direct electrical stimulation to the auditory nerve, enabling access to sound when conventional amplification is insufficient (Niparko et al., 2010). Early cochlear implantation, particularly during critical periods of auditory and language development, has been associated with improved speech perception, language acquisition, and educational outcomes (Geers et al., 2003; Sharma & Dorman, 2006). However, cochlear implantation alone does not guarantee optimal functional outcomes; sustained rehabilitation and family engagement remain essential components of success (Zaidman-Zait, 2007).

Post-implant rehabilitation for children with cochlear implants requires a multidisciplinary approach, typically involving audiologists, speech-language pathologists, otolaryngologists, psychologists, occupational therapists, and special educators (Archbold & O'Donoghue, 2009; Fitzpatrick et al., 2008). Each professional contributes uniquely to the child's auditory, linguistic, cognitive, emotional, and educational development. Audiologists manage device programming and auditory access, speech-language pathologists facilitate speech and language development, psychologists address behavioral and emotional challenges, occupational therapists manage sensory integration difficulties, and special educators support inclusive and individualized educational planning (Antia et al., 2009; Punch & Hyde, 2011).

Parental participation is one of the key factors that determines the effectiveness of rehabilitation in pediatric cochlear implantation. Parents act as key facilitators of therapy carryover, device use, and educational support (Moeller et al., 2013). Parental understanding of the multidisciplinary rehabilitation process plays a crucial role in influencing adherence to follow-up appointments, utilization of therapeutic services, and the timely recognition of developmental issues (Archbold et al., 2014). A lack of awareness among parents may lead to poor utilization of critical services, delayed interventions, and suboptimal developmental outcomes (Zaidman-Zait & Most, 2005).

In Pakistan, there has been an increasing availability of cochlear implantation services in recent years; however, systematic parent education regarding multidisciplinary rehabilitation processes remains limited (Khan et al., 2019). Cultural factors, parental educational levels, and

inequities in service access may also influence awareness and utilization (Olusanya et al., 2014). Despite the increasing number of pediatric cochlear implant recipients in the region, there is a lack of empirical evidence examining parental awareness of multidisciplinary rehabilitation processes.

Thus, the purpose of this study was to evaluate parental awareness of the multidisciplinary rehabilitation process for children with cochlear implants.

Methods

Study Design and Reporting Framework

A cross-sectional survey design was employed, reported in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines for observational studies.

Study Setting and Duration

The study was conducted between February and May 2024 at rehabilitation centers, hearing clinics, and therapeutic facilities in the twin cities of Pakistan (Islamabad and Rawalpindi). Additional data were collected through verified online parent support groups for children with cochlear implants.

Participants and Sampling

Parents of children with cochlear implants were recruited using a non-probability convenience sampling technique.

Inclusion criteria

- Parent or primary caregiver of a child aged 1–15 years
- Child with unilateral or bilateral cochlear implant
- Minimum 6 months post-implantation

Exclusion criteria

- Children with additional neurodevelopmental comorbidities (e.g., autism spectrum disorder, cerebral palsy, intellectual disability)

A total of 41 parents met the eligibility criteria and consented to participate.

Instrument Development and Validation

A self-developed parental awareness questionnaire was constructed following an extensive literature review on multidisciplinary rehabilitation in pediatric cochlear implantation. The tool consisted of 12 dichotomous (Yes/No) items assessing parental awareness of professional roles within the multidisciplinary team.

Content validity was established through evaluation by nine speech-language pathology experts with a minimum of three years of academic experience. Items were rated on a four-point relevance scale. The Scale Content Validity Index (S-CVI/Ave) was 0.87, indicating excellent content validity.

Reliability Testing

Pilot testing was conducted with 15 parents, and internal consistency reliability was assessed using Cronbach's alpha, yielding a value of 0.76, which is considered acceptable for newly developed tools.

Data Collection Procedure

Participants provided informed consent prior to completing the questionnaire. Data were collected through both paper-based forms and Google Forms. Confidentiality and anonymity were maintained throughout the study.

Statistical Analysis

Data were analyzed using SPSS version 26.

- Descriptive statistics (frequencies and percentages) were calculated
- Awareness levels were categorized as moderate or high
- Cross-tabulation was performed to explore associations between parental education level and awareness

Results

Psychometric Properties of the Awareness Tool

Table 1. Psychometric properties of the parental awareness questionnaire

Property	Value
Number of items	12
Content validity index (S-CVI/Ave)	0.87
Cronbach's alpha	0.76

A total of 41 parents participated. Most respondents were mothers (65.9%), and the majority of children with cochlear implants were aged 5–10 years (58.5%). Most parents had attained Bachelor's (41.5%) or Master's (39.0%) level education.

Table 2. Sociodemographic characteristics of participants (N = 41)

Variables	Category	n (%)
Child age	1–5 years	4 (9.8)
	5–10 years	24 (58.5)
	10–15 years	10 (24.4)
	>15 years	3 (7.3)
Child gender	Male	21 (51.2)
	Female	20 (48.8)
Parents gender	Male	14 (34.1)
	Female	27 (65.9)
Parents education	Primary–Secondary	7 (17.1)
	Bachelor's	17 (41.5)
	Master's	16 (39.0)
	Doctorate	1 (2.4)

Parental Awareness of Multidisciplinary Rehabilitation

Overall, 70.7% of parents reported familiarity with the multidisciplinary rehabilitation approach. Awareness was highest for audiologists (24.3%) and speech-language pathologists (19.5%), while awareness of psychologists, occupational therapists, and special educators was comparatively low.

Table 3. Parental awareness regarding multidisciplinary rehabilitation roles (N = 41)

Domain	Yes (n, (%))	No (n, (%))
Awareness of multidisciplinary team	29 (70.7)	12(29.3)
Role of audiologist	10 (24.3)	31 (75.7)
Role of slp	8 (19.5)	33 (80.5)
Role of psychologist	3 (7.3)	38 (92.7)
Role of occupational therapist	5 (12.1)	36 (87.9)
Role of special educators	2 (4.8)	39 (95.2)
High overall awareness	33 (80.5)	
Moderate awareness	8 (19.5)	

Higher parental education levels were associated with greater awareness, with nearly all parents holding Master's or Doctorate degrees demonstrating high awareness.

Discussion

This study explored parental awareness of multidisciplinary rehabilitation for children with cochlear implants and found that while general awareness was high, knowledge regarding the roles

of non-medical professionals was limited. These findings are consistent with international literature emphasizing that cochlear implantation outcomes are strongly influenced by family understanding and engagement with multidisciplinary care (Archbold et al., 2014; Moeller et al., 2013).

Consistent with previous studies, parents demonstrated the greatest awareness of audiologists and speech-language pathologists, likely due to frequent clinical interaction for device mapping and speech therapy (Fitzpatrick et al., 2008; Niparko et al., 2010). Similar trends have been reported in studies conducted in South Asia and the Middle East, where audiology-focused follow-up dominates post-implant care (Al-Shammari & Almulhim, 2017; Sorokin, 2013).

Conversely, awareness of psychologists, occupational therapists, and special educators was notably low. This gap is concerning, as behavioral regulation, sensory integration, and inclusive educational planning are critical determinants of long-term functional outcomes in children with cochlear implants (Antia et al., 2009; Punch & Hyde, 2010). International evidence suggests that unmet psychosocial and educational needs may hinder language development and academic participation despite successful implantation (Zaidman-Zait, 2007).

Higher parental education emerged as a facilitator of awareness, suggesting that health literacy plays a central role in service utilization. This finding is consistent with previous studies demonstrating that parental education positively influences rehabilitation adherence and therapy outcomes (DesJardin, 2006; Archbold et al., 2014). In low- and middle-income countries such as Pakistan, structured parental counseling is often limited, reinforcing the need for integrated family-centered rehabilitation models (Khan et al., 2019; Olusanya et al., 2014).

Conclusion

The study concludes that although most parents of children with cochlear implants demonstrate general awareness of multidisciplinary rehabilitation, substantial gaps persist regarding the roles of psychologists, occupational therapists, and special educators. These findings highlight the need for structured parental education programs, interdisciplinary counseling, and policy-driven integration of rehabilitation services within cochlear implant programs.

Implications for Practice

Cochlear implant centers should implement standardized parent orientation sessions. Multidisciplinary professionals should be introduced early in the rehabilitation process. Awareness campaigns should target non-medical rehabilitation roles. Policy frameworks should promote family-centered and interdisciplinary care.

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