

# Post-operative Rehabilitation of Hearing-Impaired Children Under the Perspective of Multi-subject Synergy: Cracking the Dilemma and Constructing Mechanisms

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## Abstract:

With the popularization of cochlear implants, language rehabilitation for children with hearing impairment is still in a difficult situation. This paper finds that there are three major problems in the post-operative rehabilitation of children with hearing impairment: half of the families are dissatisfied with the effect of language rehabilitation, and the economic pressure, insufficient cooperation of the family and the lack of resources are significant; the family empowerment is limited by the parents' energy, skills and psychological counseling gaps; and on the social level, 70% of the children were socially ostracized and 30% of the families had weak knowledge of integrated education. The study proposes a "three-step pyramid" model to solve the problem of missing the golden recovery period for children with hearing impairment.

## Keywords:

Hearing-impaired children  
Postoperative rehabilitation  
Developmental pathway  
Practical difficulties.

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## 1. Introduction

According to the data released by the China Disabled Persons' Federation (CDPF), as of 2020, there are about 27.8 million people with hearing disabilities in China, accounting for 1.67% of the total population of the country, and about 30% of the country's disabled people. Among them, there are about 4.6 million children with hearing disabilities aged 0-14 years old, and the number is increasing by 20,000–30,000 per year. Hearing disability is the second largest type of disability in China, besides physical disability, and has

a profound impact on an individual's language function, cognitive development, and quality of life<sup>[1]</sup>.

With the support of national policies and the development of hearing technology such as cochlear implants, more and more hearing-impaired children can receive cochlear implantation surgery, but hearing-impaired children are often faced with the problem of lagging language development in post-surgical rehabilitation. At present, there are only about 19,000 hearing-impaired children in China who can receive

professional language rehabilitation training, accounting for only 0.41% of the number of hearing-impaired children, and less than 50% of the hearing-impaired children can enter general education schools after the training, which is far from meeting the actual demand, resulting in many hearing-impaired children missing the golden rehabilitation time of the “optimal language acquisition period.” As a result, many hearing-impaired children miss the golden time for rehabilitation during the “optimal language acquisition period”<sup>[2]</sup>.

Based on this, this research report takes postoperative rehabilitation of hearing-impaired children as the research object, and through questionnaires and on-site interviews, analyzes in-depth the reality of the dilemma of postoperative rehabilitation of hearing-impaired children and tries to explore the path to solve the problem, intending to promote the restoration of the hearing and speech ability of hearing-impaired children, improving cognitive function and motor ability, as well as enhancing self-confidence and social ability.

## 2. Research on the realistic dilemma of postoperative rehabilitation of hearing-impaired children

A total of 550 questionnaires were distributed and 516 were recovered, with a recovery rate of 93.8%, of which 432 were valid questionnaires, with a validity rate of 83.7%<sup>[3]</sup>. The questionnaires covered the basic situation of hearing-impaired children and their families, the current status of postoperative rehabilitation intervention, family needs and satisfaction, etc. The purpose of this study is to comprehensively understand the current situation and dilemmas of postoperative rehabilitation of hearing-impaired children, and to put forward corresponding countermeasures based on this, to enhance the effectiveness of the rehabilitation of hearing-impaired children. In the course of the research, it was found that the rehabilitation of children with hearing impairment faces three major difficulties: language rehabilitation, family empowerment and social integration.

### 2.1. Language rehabilitation dilemma

Nearly half of the hearing-impaired children’s language rehabilitation training results are average or unsatisfactory,

indicating that the overall effect needs to be improved. Economic pressure, family training cooperation and other factors constrain the effect of rehabilitation, the high cost of rehabilitation has a greater impact, nearly half of the parents are affected by this problem, and family training cooperation has a great impact on more than 60%, to change the status quo need to be coordinated in various aspects. Only 36% of parents believe that language rehabilitation resources are sufficient, reflecting the relative lack of resources. At the same time, nearly 40% of parents need additional tools to assist in rehabilitation, and nearly half of the parents expect professionals to assess the progress of rehabilitation regularly, so the current supply of resources fails to meet the actual demand. Insufficient training methods and individualized adaptation. The varying effectiveness of children’s speech and language rehabilitation training may be due to the lack of individualization of training methods, which may not be able to adequately adapt to each child’s learning abilities and interests. Among the influencing factors, 51.4% of the training methods have a greater and greater impact on the rehabilitation effect, indicating that it is urgent to optimize the training methods and enhance their relevance (Table 1).

**Table 1.** Degree of difficulty faced by the child during postoperative speech rehabilitation

| Difficulty           | Frequency | Percentage |
|----------------------|-----------|------------|
| No difficulty at all | 6         | 1.4%       |
| Some difficulty      | 72        | 16.7%      |
| Average difficulty   | 192       | 44.4%      |
| More difficult       | 114       | 26.4%      |
| Very difficult       | 48        | 11.1%      |
| Total                | 432       | 100.0%     |

### 2.2. Difficulties of family empowerment

Parents’ participation in rehabilitation training is difficult. Parents face many obstacles in participating in their children’s rehabilitation training, such as busy work, lack of professional knowledge and skills, financial pressure and biased attitudes. The psychological burden on families is heavy and there is a lack of guidance. Families of children with hearing impairment generally suffer from psychological pressure, with more than half of

them having high and very high pressure, and more than half of them have a need for professional psychological counseling services, but there may be a lack of effective channels for psychological counseling and professional support at present. Difficulties in formulating and implementing family rehabilitation programs. Most parents attach importance to the formulation of family rehabilitation training plans, but lack sufficient capacity and support in key aspects of plan implementation, such as the design of training content, time schedule, interface with institutions and psychological counseling for their children, etc. Parents who expect greater or great help account for a certain proportion in all aspects (Table 2).

**Table 2.** The extent to which you feel your child has difficulty integrating into the social environment (e.g., school, community, etc.)

| Option               | Frequency | Percentage |
|----------------------|-----------|------------|
| No difficulty at all | 6         | 1.4%       |
| Some difficulty      | 90        | 20.8%      |
| Average difficulty   | 162       | 37.5%      |
| More difficult       | 126       | 29.2%      |
| Very difficult       | 48        | 11.1%      |
| Total                | 432       | 100.0%     |

### 2.3. Difficulties of social integration

Low social acceptance hinders integration. When participating in social activities, children with hearing impairment often encounter a lack of understanding or obstacles from the outside world, with more than 70% of them encountering such situations “sometimes,” “often,” “always,” seriously hindering their integration into society, limiting their social scope and social integration. This seriously hinders their integration into society and limits their socialization and participation in society. There are obstacles to the implementation of integrated education. Although more than 90% of parents support integrated education, nearly 30% of parents do not know enough about the school’s integrated education program, which may make it difficult for parents to effectively cooperate with the school during the implementation of integrated education, affecting the learning and integration effect of children with hearing impairment in

school. Inadequate social support system. Parents have a strong demand for social support measures for children with hearing impairment, such as the construction of public facilities, the development of social activities, and employment support, but current social support is unable to meet these needs, and there are shortcomings in promoting the full integration of children with hearing impairment into society (Table 3).

**Table 3.** Level of parental involvement in the child’s postoperative rehabilitation process

| Level of participation     | Frequency | Percentage |
|----------------------------|-----------|------------|
| Insufficient participation | 0         | 0          |
| Less participation         | 36        | 8.3%       |
| Average participation      | 138       | 31.9%      |
| Involved more              | 114       | 26.4%      |
| Frequent participation     | 144       | 33.3%      |
| Total                      | 432       | 100.0%     |

## 3. Study on the causes of dilemmas in postoperative rehabilitation of children with hearing-impairment

### 3.1. Analysis of the difficulties in language rehabilitation

The main reason for “poor rehabilitation effect and limited promotion” is that for many families, bearing high rehabilitation costs for a long period of time is a heavy financial burden, which may lead to the parents not being able to provide a complete rehabilitation program for their children on a continuous basis <sup>[4]</sup>. In addition, most of the parents are not professional rehabilitation trainers and lack professional knowledge of language rehabilitation for children with hearing impairment, so they cannot properly carry out rehabilitation training in the home environment.

### 3.2. Analysis of social integration difficulties

The main reason for “low social acceptance hinders integration” is that there are stereotypes of children with hearing impairment in the society, which affects the public’s attitude towards children with hearing impairment and makes children with hearing impairment face more unfair treatment in the society. At the same time, children

with hearing impairment have difficulties in language learning and expression due to hearing impairment, which makes the communication between them and the general population significantly impaired. In addition, despite the popularization of the concept of integrated education, insufficient teacher expertise and school resources make it difficult for children with hearing impairment to achieve full development and integration in schools.

### 3.3. Analysis of family empowerment dilemma

The main reason for “parents’ difficulties in participating in rehabilitation training” is that parents have limited energy, making it difficult for them to combine work with their children’s rehabilitation training <sup>[5]</sup>. At the same time, the knowledge and skills training resources provided by society are limited and of different quality, making it difficult for parents to obtain professional guidance. In addition, the traditional view in some areas is that rehabilitation relies mainly on professionals and ignores the role of parents, resulting in low motivation for parental participation.

## 4. Research on the solution path of post-operative rehabilitation for hearing-impaired children

The “Pyramid Three-Step Integrated” rehabilitation model

constructed in this paper is centered on the individual hearing-impaired child, and centers on three key areas: family empowerment, language rehabilitation, and social integration.

In the area of family empowerment, we conduct parent interviews to understand the needs of parents, organize parent classes to impart knowledge and skills, set up mutual support groups to promote experience exchange, and provide psychological guidance to relieve parents’ pressure, so as to enhance the supportive capacity of families in rehabilitation.

In the speech and language rehabilitation section, we have developed a variety of tools such as cochlear locks and articulation aids, strengthened hearing screening and return visits, and carried out a variety of activities and utilized the “Whale Language” platform to enhance the effect of rehabilitation in all aspects.

In the Social Integration section, the company has set up a special integration classroom, organized a series of 52Hz activities, and promoted artistic popularization of science, so as to help hearing-impaired children better integrate into the society.

This model integrates the resources of the government, medical institutions, schools, social welfare organizations and other parties, realizes the synergy of multiple subjects, and has strong innovation and practical value.

### Disclosure statement

The author declares no conflict of interest.

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