

Research

Financing hearing aids for patients with congenital deafness in Indonesia

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ABSTRACT

Background: The appropriate management of patients with congenital deafness is installing hearing aids, either external hearing aids or implanted in the ear (cochlear implant), aiming to reduce the medical and social burden, besides improving the quality of life of sufferers. **Objective:** To ascertain the cost of hearing aids in patients with congenital deafness, in the form of external hearing aids or cochlear implants. **Method:** A descriptive study with cross-sectional design using questionnaires through interviews. The sample size was 535 mothers whose children had congenital deafness at 24 hospitals with facilities for establishing a diagnosis of congenital deafness in 17 provinces in Indonesia. **Result:** Most respondents were aged 30-39 years (55%), occupations were housewives (71.8%), and education level was high school (52.5%). The type of hearing aid used mostly was external (92.7%), with 45.9% paid by personal expense. The surgically planted hearing aids in 22 children was mostly cochlear implants (95.5%), which were financed by the Indonesian Healthcare and Social Security Agency (BPJS) plus personal costs (50%). **Discussion:** This study found that the most common type of hearing aid used by children with hearing impairments was external hearing aids (92.7%) through independent financing (45.9%). Only 7.3% of patients chose surgery in hearing habilitation, and 95.5% were cochlear implants. The small percentage of surgery were due to the high-priced of cochlear implants, and the government did not cover all financial expenses. **Conclusion:** Most external hearing aids were paid independently-out-of-pocket, while cochlear implant surgeries were funded by BPJS, plus extra costs independently.

Keywords: congenital deafness, cost, hearing aid, cochlear implant.

ABSTRAK

Latar belakang: Penatalaksanaan terbaik untuk penderita tuli kongenital adalah pemasangan alat bantu dengar (ABD), baik berupa ABD eksternal maupun ABD yang ditanam dalam telinga (implan koklea), dengan tujuan untuk mengurangi beban medis dan sosial, serta meningkatkan kualitas hidup penderita. **Tujuan:** Untuk mengetahui seberapa besar biaya pemasangan ABD pada penderita tuli kongenital, baik berupa ABD eksternal maupun implan koklea. **Metode:** Penelitian deskriptif dengan rancangan cross sectional study menggunakan kuesioner melalui wawancara. Besar sampel 535 ibu yang anaknya menderita tuli kongenital pada 24 rumah sakit yang memiliki fasilitas penegakkan diagnosis tuli kongenital di 17 provinsi di Indonesia. **Hasil:** Sebagian besar responden berusia 30-39 tahun (55%), pekerjaan terbanyak adalah ibu rumah tangga (71.8%), dan tingkat pendidikan SMA (52.5%). Jenis ABD yang terbanyak adalah ABD eksternal (92,7%) dengan pembiayaan secara mandiri 45,9%. Pemasangan ABD dengan tindakan operasi dilakukan pada 22 anak, yang terbanyak adalah implan koklea (95,5%) yang dibiayai oleh Badan Penyelenggara Jaminan Sosial (BPJS) ditambah dengan biaya sendiri (50%). **Diskusi:** Penelitian ini mendapati bahwa ABD yang terbanyak digunakan

oleh anak dengan gangguan pendengaran adalah ABD eksternal (92,7%) dengan biaya mandiri (45,9%). Rehabilitasi pendengaran dengan tindakan operasi hanya dilakukan pada 7,3% pasien, berupa implantasi koklea 95,5%. Kecilnya persentase rehabilitasi bedah dikarenakan tingginya harga implant koklea, dan bantuan dari BPJS tidak meliputi keseluruhan biaya. **Kesimpulan:** Sebagian besar pembiayaan alat bantu dengar eksternal secara mandiri, sedangkan operasi implan koklea menggunakan biaya BPJS ditambah biaya sendiri.

Kata kunci: tuli kongenital, pembiayaan, alat bantu dengar, implan koklea

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INTRODUCTION

Hearing loss is one of the global problems in numerous countries because it impacts the patient's welfare and quality of life, especially in patients with congenital deafness. The prevalence of hearing loss is increasing year after year.¹ Congenital deafness is one of the most common congenital disabilities and sensory disturbances globally.² World Health Organization (WHO) 2014 data showed that 34 million children have hearing impairments.³ In the United States, in the year 2021 the disorder was found in 2-3 cases per 1000 live births.⁴ The proportion of congenital deafness in children aged 24-59 months in Indonesia based on a survey in the year 2019 was 0.11%.⁵

Appropriate management of patients with congenital deafness by establishing an early diagnosis and early intervention is very important to reduce the medical and social burden on patients, families, and communities, and also to improve patients' quality of life.

One of the early intervention treatments is the installation of hearing aids, both external (conventional) hearing aids such as Pocket / Body Worn Type, Behind the Ear (BTE), Open-fit mini BTE, In the Ear (ITE), In the Canal (ITC) & Completely in Canal (CIC), Spectacle Aid (US. FDA.2018) and cochlear implants. These hearing aids require high costs, especially habilitation with cochlear implants. The price of external hearing aids

varies depending on the type and technology. The costs for cochlear implants consist of preoperative audiological evaluation, supporting examinations, consultation on operating tolerance, treatment, surgery, and postoperative costs such as activating the implant (switch on) and mapping within six months. A minimum of six mappings is required postoperatively. Simultaneous cochlear implant installation costs Rp. 28,548,000 while the sequential installation with two cochlear implant operations costs Rp. 47,658,012.^{1,6}

METHOD

This was a descriptive research with cross-sectional design conducted from January to December 2020, using questionnaires through interviews face-to-face or by telephone led by the researchers. Respondents were mothers whose children had congenital deafness and diagnosed based on the Auditory Brainstem Response (ABR) examination.

The target population in this study was mothers whose children had congenital deafness in Indonesia, while the accessible population was mothers whose children diagnosed with congenital deafness, and diagnosed based on ABR examinations at 24 hospitals in 17 provinces in Indonesia. The inclusion criteria in this study were mothers whose children (age up to six months old) had congenital deafness based

on the ABR examination. The minimum sample size in this study was based on a large sample calculation of 400 respondents in 17 provinces in Indonesia based on the number of congenitally deaf patients (n = 214,100 people) according to the 2005 Indonesian Health Profile with 95% confidence level. The data collection method was quota sampling, where each province collected data as many as 23 respondents.

RESULT

There were 535 mothers whose children had congenital deafness and completed the questionnaire based on interviews by the researchers. Table 1 showed most respondents aged 30 to 39 years (55%) with mean age of 34.1 years. Most of the respondents' occupations were housewives (71.8%) with high school education level (52.5%).

Table 1. Demographic characteristics of mothers with congenitally deaf children

Demographic characteristics	n (N=535)
Age in years (mean ± standard deviation)	34.1 ± 6.409
Age (n, %)	
<20 years	3 (0.6)
1-29 years	129 (24.1)
30-39 years	295 (55.1)
40-49 years	99 (18.5)
>50 years	9 (1.7)
Level of education (n, %)	
Primary school or below	42 (7.9)
Junior high school	73 (13.6)
Senior high school	281 (52.5)
Diploma	34 (6.4)
Bachelor degree	91 (17.0)
Master degree	14 (2.6)
Profession (n, %)	
Housewives	384 (71.8)
Private Sector Employee	66 (12.3)
Civil servants	34 (6.4)
Female worker	1 (0.2)
Entrepreneur	50 (9.3)

Table 2. Types of hearing aids

Hearing aids	Frequency	Percentage
External	279	92.7
Surgery	22	7.3
Total	301	100.0

Based on Table 2, the frequent type of hearing aid used in patient with congenital deafness was external hearing aids (92.7%).

Table 3. Financing method for external hearing aids

Financing method	Frequency	Percentage
BPJS	54	19.4
BPJS with additional charges	58	20.8
Donors/ Donations	39	14.0
Independent/out-of-pocket	128	45.9
Total	279	100.0

Based on Table 3, most of the financing methods for purchasing external hearing aid were independent/out-of-pocket 45.9%.

Table 4. Types of surgery performed

Surgery type	Frequency	Percentage
BAHA	1	4.5
Cochlear implants	21	95.5
Total	22	100.0

Based on Table 4, most types of surgery performed for patient with congenital deafness were cochlear implants (95.5%)

Table 5. Financing methods for hearing surgery

Surgical habilitation costs	Frequency	Percentage
BPJS with additional costs	11	50.0
Donors/Donations	7	31.8
Independent/out-of-pocket	4	18.2
Total	22	100.0

Based on Table 5, the method of financing for hearing surgery was mostly BPJS with additional costs (50%).

DISCUSSION

Based on the results of this study, it was found that the most common type of hearing aid used by children with hearing impairments was external hearing aids (92.7%) through independent financing (45.9%). The large percentage of independent financing for external hearing aids was because external hearing aids which were funded by BPJS. most often did not meet the required standard quality, especially in patients with severe to very severe congenital deafness. The standard quality of hearing aids used for congenital hearing impaired patients should have a minimum of 8 channels and two microphones with recovery sound technology, with a minimum price of IDR 7,500,000. up to IDR 24,000,000. The financial assistance from BPJS (The Social Health Insurance Administration Body), currently was only IDR 1.000.000. per one ear, every five years, should be supported by medical indications, and was given in the form of hearing aids.⁷ According to this study, the BPJS only helped 19.4% in financing hearing aids. Previously, external hearing aid financing could be gained through BPJS by adding an excess fee on top of IDR 1,000,000. - but since the issuance of the Presidential Regulation of the Republic of Indonesia number 82 /2018 concerning

health insurance, the financing of external hearing aids was no longer under the coverage of BPJS.⁸

This study also found out that only 7.3% of patients chose surgery in hearing habilitation, and 95.5% were cochlear implants. The small percentage of surgery were due to the high-priced of cochlear implants, and the government did not cover all financial expenses. The financial aid of cochlear implants borne by the government through the BPJS was only the cost of supporting examinations, surgery costs, and post-implantation costs, while the provision of cochlear implants was financed personal out-of-pocket.¹ The standard cochlear implant costs was around IDR 250 million.-

Other countries such as Myanmar, for congenital hearing impaired patients, the government only cover the surgery cost but does not cover the cost of cochlear implants. Nepal as well, only covers ear health care but does not cover the provision of hearing aids. Bhutan and Maldives governments do not cover costs for the diagnosis of congenital deafness up to provision of hearing aids. In Bangladesh, six hospitals cover hearing facilities for patients with congenital deafness.⁹ In Australia, cochlear implants are paid by private health insurance or through

the Australian Department of Veterans Affairs according to indications approved by the Australian Register of Therapeutic Goods.¹⁰ In contrast, in the United States, all costs for cochlear implants, from laboratory tests to cochlear implant surgery, are fully financed by the government.¹¹

This study found out that the type of hearing aid used in hearing habilitation was mainly independently financed external hearing aids. Most of cochlear implants installation were supported by BPJS, plus independent cost for the provision of cochlear implants.

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