

Research**Overview quality of life of deaf children
in Government Special School II Banjarmasin****Melody Audria Kurniadi**

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ABSTRACT

Background: Hearing loss affects a person's ability to communicate actively. In addition to social barriers, non-interactive communication can affect a person's emotional state. Early intervention at a child's age is very important to note. **Purpose:** To provide an overview of the quality of life (QoL) of deaf children socially and emotionally, and to assess the use of hearing aids (HA) in their daily lives. **Method:** Conducted using a cross-sectional method on 37 students aged 11-18 years, at the Government Special School II Banjarmasin. The research media used was a Strength and Difficulties questionnaire. The data was then processed using SPSS. Subjects were 19 male and 18 female, with the highest number being 13 years of age. Only 1 participant had anatomical abnormalities in the ear canal. All students had hearing loss and did not know the cause of hearing loss. **Result:** As many as 50% of participants experienced abnormalities in behaviour, 40% were borderline, and only 10% were normal. The relationship problems in peer groups sub-scale experienced the most disruption. Almost all participants (97%) of the study did not use their HA due to damaged (13%), or being left at home (65%). **Conclusion:** All children used sign language as a way of communication, and never had speech therapy. Almost all deaf children had behavioural disorders. Most participants (97%) did not wear their HA. This was one of the factors that caused the quality of life of children with hearing impairment to decline.

Keywords: hearing loss, deaf, child, behavioural disorder, hearing aid, quality of life

ABSTRAK

Latar belakang: Gangguan pendengaran memengaruhi kemampuan seseorang dalam berkomunikasi secara aktif. Selain hambatan sosial, komunikasi yang tidak interaktif dapat memengaruhi keadaan emosional seseorang. Intervensi sejak usia dini pada anak sangat penting untuk diperhatikan. Intervensi dini dapat dilakukan dengan penggunaan alat bantu dengar (ABD). **Tujuan:** Menggambarkan kualitas hidup anak tunarungu secara sosial dan emosional, serta menilai penggunaan ABD dalam kehidupan sehari-hari. **Metode:** Penelitian potong lintang pada 37 peserta didik dengan rentang usia 11-18 tahun di Sekolah Luar Biasa Negeri II Banjarmasin. Media penelitian yang digunakan adalah kuesioner Strength and Difficulties yang terdiri dari 25 pernyataan. Data kemudian diolah menggunakan SPSS dan disajikan dalam bentuk tabulasi. Data demografis laki-laki berjumlah 19 orang dan perempuan berjumlah 18 orang, dengan usia terbanyak adalah 13 tahun. Hanya 1 peserta dari keseluruhan yang memiliki kelainan anatomis pada liang telinga. **Hasil:** Seluruh siswa mengalami gangguan pendengaran, dan tidak mengetahui penyebabnya. Sebanyak 50% peserta mengalami abnormalitas dalam tingkah laku, 40% lainnya borderline, dan hanya 10% normal. Yang paling banyak mengalami gangguan adalah sub-skala relasi dalam kelompok teman sebaya. Hampir seluruh peserta penelitian (97%) tidak menggunakan ABD dengan alasan rusak (13%), atau ditinggal dirumah (65%). **Kesimpulan:** Seluruh subjek menggunakan bahasa isyarat sebagai media komunikasi, dan tidak pernah menjalani terapi wicara. Hampir seluruh anak tunarungu mengalami gangguan tingkah laku. Hampir seluruh anak (97%) tidak menggunakan ABD. Hal ini menjadi salah satu faktor yang menyebabkan kualitas hidup anak dengan tunarungu semakin menurun.

Kata kunci: tunarungu, anak, gangguan tingkah laku, alat bantu dengar, kualitas hidup

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INTRODUCTION

Deafness is a form of disability that can occur at any age and any gender. According to the Big Indonesian Dictionary (*Kamus Besar Bahasa Indonesia [KBBI]*), deafness is an inability to hear or cannot hear.¹ WHO distinguishes hearing loss into two definitions, namely hearing difficulties and deafness. Hearing difficulties are terms for people with hearing disabilities ranging from mild to severe degrees, while deafness is a term for people who have very severe hearing loss, which means very little hearing or cannot hear. People with hearing difficulties can communicate with limited spoken language which could be obtained with the help of Hearing Aid (HA), cochlear-implant, or other assistive devices. Meanwhile, deaf people use sign language to communicate.²

As many as 5% of the world's human population have hearing loss. This number is equivalent to 430 million people who experience limitations due to hearing loss. The age group that dominates this condition is adulthood (90%). According to *Riset Kesehatan Dasar (RISKESDAS)* of the Ministry of Health of the Republic of Indonesia, data on year 2018, there were 0.11% of children aged 24-59 months with hearing loss.³ Meanwhile, according to the Data for the Management Information System for Persons with Disabilities (SIMPDI) in 2019, among the total number of persons with disabilities in Indonesia, 7.03% of children were deaf.⁴ As many as 60% of hearing loss in children were caused by preventable causes. The age group with the most hearing loss was those aged 75 years and over.⁵

In normal people, humans can hear sounds between 0-25 dB. If a person can only hear sound with a sound power of 25-40 dB,

then it is stated as mild deafness. Moderate deafness is ability to hear at a sound power of 40-55 dB, while severe deafness is at a sound power of 70-90 dB. A person is declared very severely deaf if he only can hear at a sound level >90 dB. The degree of deafness can be assessed qualitatively and quantitatively. Qualitative assessment is carried out by several physical examinations, namely examination with a tuning fork and whisper test. Meanwhile, a quantitative examination of hearing loss to determine the degree of deafness can be done using tools such as audiometry.⁶

Deafness can be caused by many factors that can occur in various periods of life, including in the period before birth, during pregnancy, after birth, at the age of children and adults. Aetiologies of deafness are divided into several periods as follows: in the prenatal period it could be caused by genetic factors, namely hereditary and non-hereditary hearing loss, in addition to intrauterine infections that can affect hearing such as Rubella and Cytomegalovirus infections, Herpes Simplex or Zika Virus.^{2,7} After birth, several aetiologies could cause hearing loss such as birth asphyxia, hyperbilirubinemia, and low birth weight. In the phase of children to adolescents, hearing loss could be caused by chronic ear infections both suppurative and non-suppurative, and intracranial infections such as meningitis. Chronic disease, ototoxic drugs, smoking, and high intensity sounds are more common cause in adulthood and old age.²

HA is an electronic device for amplifying sound that is usually worn in or behind the ear of a person with hearing loss.⁸ There are several types of HA based on the position of use, namely Behind the Ear Hearing Aids (BTE) for HA which is located behind the ear;

In the Ear Hearing Aids (ITE) for HA located in the ear, and In the Ear Canal Hearing Aid (ITC) for HA which entirely in the ear canal.

ITE-HA sits in the bowl-shaped portion of the ear (concha), filling either partially or fully depending upon the earmold chosen. ITC-HA are slightly smaller than ITE type and sits a bit deeper within the ear canal. Each type of HA has its own advantages and disadvantages. The most frequent used type of HA is BTE 9 type hearing aid.^{9,10}

Communication has an important role in development and interaction, especially during childhood. Limited communication will have an impact both socially and emotionally. In addition, the process of children education and learning will also be disrupted. Verbal language skills are unlikely to occur spontaneously in deaf children. Early intervention is very important either with the use of HA or surgery. Seeing such a large impact on a person's survival, researchers felt the need to observe the description of the quality of life (QoL) of deaf children, and the use of HA apparatus in children with hearing impairments.

METHOD

This research was conducted at the Government Special School II Banjarmasin, using cross-sectional method. Research sampling was carried out on all students with hearing impairment or deafness. The age range of research subjects was 11-18 years old. The research was conducted using a questionnaire, and the data was processed with SPSS application.

The questionnaire used in this study was the Strength and Difficulties Questionnaire in Indonesian. During the interview, the researcher used signs, assisted by a sign language translator teacher. The questionnaire was used for disabled children aged 11-18 years. The questionnaire consisted of 25 statements which were divided into 5 sub-scales. There were 4 sub-scales that assessed behavioural difficulties, namely the emotional sub-scale, the disruptive behaviour sub-scale, the hyperactivity and inattention sub-scale and the relationship problems sub-scale, in peer groups. Indifference sub-scale was applied to assess the power scale. The score that was given for each statement was 0 for not true, 1 for somewhat true, and 2 for true. The total score was obtained by adding up the scores of the 5 sub-scales with a total score ranged of 0-40. If there were statements answered less than 3 in one sub-scale, then the sub-scale score was considered 0.¹¹

RESULT

The total number of subjects were 37 children, with age range of 11-18 years, consisted of 18 males and 19 females. All research subjects were children with special needs, namely children with hearing impairments or deaf.

Researchers conducted physical examinations and interviews with research participants. From the physical examination of the external ear, it was found that none of the study subjects had anatomic abnormalities of the auricle (microtia). There was 1 subject (3%) who had an anatomic abnormality of the ear canal, which was ear canal atresia.

Table 1. Demographic data of deaf students at Government Special School II Banjarmasin with age range of 11-18 years

Gender	N
Male	18 (48%)
Female	19 (52%)

Table 2. Abnormalities of external anatomy of deaf children at the Government Special School II Banjarmasin

No	Abnormalities	Frequency (n=37)	
		Yes (%)	No (%)
1	Microtia	0	100
2	Ear canal disorders	3	97
3	Knowing the causes of hearing loss	0	100

Table 3 presented data regarding language disorders in research subjects. All participants had hearing and speech impairments. All study subjects did not know the cause of their hearing loss. All study participants had never undergone speech therapy.

In Table 4 there was data regarding the use of HA in deaf children at Government Special School II Banjarmasin. Only 3% of all students used HA while they were in the

school environment. Most children did not use HA for several reasons, namely the HA was damaged or left at home. As many as 12% of participants admitted that they did not use HA because the HA was damaged or broken. As many as 85% of participants claimed to have HA but did not use it, and left it at home. The reason for not using it was because participants felt uncomfortable when using HA. Most participants felt that there were sounds that made their ears hurt.

Table 3. Language disorders in deaf children at Government Special School II Banjarmasin

No	Abnormalities	Frequency (n=37)	
		Yes (%)	No (%)
1	Speech impairment	100	0
2	Use of Sign Language	100	0
3	Speech therapy	0	100

Table 4. Data on the use of HA in deaf children at Government Special School II Banjarmasin

No	HA use	Frequency (n=37)	
		Yes (%)	No (%)
1	Using HA	3	97
2	HA was damaged	12	88
3	Have HA but not used	85	15

A description of the data from the Strength and Difficulty questionnaire scores for deaf children at Government Special School II Banjarmasin was presented in Table 5. From the research results it was found that only 11% of participants had a normal total score, while borderline scores were found in 35% of participants. More than half of the participants had an abnormal total score (54%). The sub-scale with the most abnormal result was the relationship in the peer group sub-scale, which was 32%. Meanwhile, the subscale with the lowest abnormal results

were the hyperactivity inattention subscale and the indifference sub-scale (8%). The sub-scale with the most normal values was the emotional sub-scale (84%). Meanwhile, the disruptive behaviour and hyperactivity inattention sub-scales had a normal value of 78% out of the participants. The sub-scale with the lowest normal value is the indifference sub-scale (76%). The most borderline results were obtained on the relationship in the peer group sub-scale (30%). Also, the borderline results are also quite high on the indifference sub-scale (16%).

Table 5. Questionnaire scores of Strengths and Behavioural Difficulties in deaf children at Government Special School II Banjarmasin

No	Sub-scale	Result	Frequency (%)
1	Emotional	Normal	84
		<i>borderline</i>	5
		Abnormal	11
2	Relationship problems in peer groups	Normal	38
		<i>borderline</i>	30
		Abnormal	32
3	Disruptive behaviour	Normal	78
		<i>borderline</i>	11
		Abnormal	11
4	Hyperactivity - Inattention	Normal	78
		<i>borderline</i>	13
		Abnormal	8
5	Indifference	Normal	76
		<i>borderline</i>	16
		Abnormal	8
6	Total score	Normal	11
		<i>borderline</i>	35
		Abnormal	54

DISCUSSION

The role of language in everyday life is very important in a person's development intellectually, socially, and emotionally. Children with hearing loss, especially those that occur from birth, will experience obstacles in communicating, both in speaking and in understanding other people's speech. Troubled communication certainly has a big impact on a person's quality of life (QoL).¹²

Researchers conducted a study on deaf children at Government Special School II, Banjarmasin. The study was conducted on disabled children aged 11-18 years. From the results of physical examination, anatomical abnormalities of the outer ear were rarely found in the study subjects. Only 1 person (3%) of the 37 participants had an external anatomical abnormality, namely ear canal atresia. This was in accordance with the theory which stated that the formation of the inner ear does not depend on the formation of the outer ear and middle ear during

embryology. Congenital hearing loss could occur due to developmental disorders in structural neurosensory malformations in the inner ear, or disturbances in sound conduction in the middle ear or in the outer ear.¹³

All study participants felt they did not know what caused their current hearing loss, and all children experienced speech disorders. This might occur due to the high probability that all children had congenital deafness, or were deaf since birth. According to data, congenital deafness is the most common birth defect, with incidence of 2-3 cases in 1,000 births.¹³ A study had found that 71% cases of children with hearing loss had bilateral hearing loss. However, permanent bilateral congenital hearing loss was less common, with a prevalence of only 1.2 per 1,000 births.¹⁴

Speech and language ability is certainly influenced by one's listening ability. All research subjects experienced speech disorders. Hearing loss in children from birth

to 3 years of age has a major impact on speech and language disorders. This of course will affect a person's QoL because it will affect several aspects, namely cognitive, emotional, and academic aspects.¹⁵ From the results of this study, it was found that all children (n=37) experienced speech disorders. All children communicated using Sign Language with their surroundings. None of the participants had ever undergone speech therapy, and how to learn to communicate with proper Sign Language. This was quite concerning because it would have an impact on the future of the child. Socially and economically unfavourable QoL was also stated in a study in Nepal, that according to data as many as 80% of individuals with hearing loss lived in lower middle incomes.¹⁶

Assessment of the QoL was carried out using the Behavioural Strengths and Difficulties questionnaire. The interpretation of the results of the assessment was that the higher the score on the behavioural difficulty sub-scales (emotional, disruptive behaviour, hyperactivity and inattention, and relations sub-scales) the more severe the problems in each sub-scale. Conversely, the lower the score on the power subscale (the indifference sub-scale), the more severe the problem will be on that subscale. The interpretation of the questionnaire was in Table 6.¹¹

In this study, it was found that the results of abnormal behaviour scores were 54% of participants; with the sub-scale that had the most abnormal results was relationships with peer sub-scale. This score could be used as a basis for recognizing children who had the potential to experience mental disorders, especially due to the inability to relate well with peers or the surrounding environment. This could also be one of the parameters of the child's QoL; most children with hearing impairment will experience a decline in QoL.

A study at Dr. Soetomo Hospital, Surabaya also gave similar results that children with sensorineural deafness could experience several developmental disorders in speech and language. In addition, because it occurred at an early age in life, this of course would cause psychiatric disorders such as cognitive, psychological, and neuropsychopathological disorders.¹⁷

However, determining whether a child has a mental disorder or not, should not be based solely on this questionnaire. This needs to be supported with a variety of additional information that could be obtained from parents, family, friends, or the surrounding environment. In addition, the diagnosis of mental disorders can only be established by professional experts, namely psychologists or psychiatrists.

Table 6. Interpretation of the Behavioural Strengths and Difficulties questionnaire

Behavioural Difficulty score	Normal	Border	Abnormal
	0-15	16-19	20-40
Emotional Sub-scale score (emotional symptoms)	0-5	6	7-10
Disruptive behaviour sub-scale score (conduct problems)	0-3	4	5-10
Hyperactivity-inattention sub-scale score	0-5	6	7-10
Relationship problems with peer groups sub-scale score (peer problems)	0-3	4-5	6-10
Indifference sub-scale score (proportional)	6-10	5	0-4

In conclusion, the incidence of children with hearing impairment is quite concerning. Limitations in communication have a major impact on the QoL. Children with hearing impairment are more prone to mental disorders due to limitations in socializing and behavioural conduct. Very little attention on the use of HA had led to minimal sound stimulation for those children, hence, a special attention in this matter will make a better QoL for their future.

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