Indonesian Journal of Global Health Research
Volume 8 Number 3, June 2026
e-ISSN 2715-1972; p-ISSN 2714-9749
http://jurnal.globalhealthsciencegroup.com/index.php/IJGHR

OVERVIEW OF QUALITY OF LIFE IN CHILDREN WITH MENINGITIS POST-TREATMENT

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ABSTRACT
The research, conducted from August 2020 to January 2021, was motivated by an indication of the quality of life problems of children with meningitis with prolonged treatment at dr. M. Djamil Padang related to the identification of complex neuropsychological sequelae in children. On the other hand, there has been an increasing trend in the number of pediatric meningitis patients hospitalized in these hospitals in recent years, especially the 2017–2019 period. The main objective of the study was to identify quality of life of children with meningitis post-treatment at dr. M. Djamil Padang in 2017–2019. The research method used was quantitative descriptive with a cross-sectional approach. Sampling in this study used purposive sampling, which found 34 respondents. The results showed that more than half (52.9%) of the sample of children with post-treatment meningitis had a poor quality of life, 29.4% had a poor quality of life with physical dimensions, 58.8% had a poor quality of life, respectively for the emotional and social dimensions, and 41.7% had a poor quality of life in the environmental/school dimension. In terms of age groups, poor quality of life was identified in 57.1% of children aged 2–4 years, 66.7% of children aged 5–7 years, and 40% of children aged 8–12 years.

Keywords: children; meningitis; quality of life

How to cite (in APA style)
Yoza, V. A. (2026). Overview of Quality of Life in Children with Meningitis Post-Treatment. *Indonesian Journal of Global Health Research*, *8*(3), 821–826. https://doi.org/10.37287/ijghr.v8i3.909.

INTRODUCTION

Meningitis is one of the most alarming infectious diseases because it causes high mortality and morbidity, especially in developing countries; therefore, early recognition and serious medical management are required to prevent death (Addo, 2018; Speets et al., 2018). Meningococcal meningitis, caused by the bacterium Neisseria meningitidis (or N. meningitidis), has the potential to cause major epidemics. Twelve serogroups of this bacterium have been identified, and six of them (A, B, C, W, X, and Y) can cause epidemics (WHO, 2018). The most common symptoms in patients with meningitis are stiff neck, high fever, light sensitivity, confusion, headache, drowsiness, seizures, nausea, and vomiting. In infants, bulging fontanelle and a ragdoll appearance are also frequently observed (Piotto, 2019). Bacterial meningitis ranks among the top ten causes of death due to infection worldwide and is one of the most dangerous infections in children. This type of meningitis is a leading cause of child mortality, with an estimated 115,000 deaths worldwide in 2015. The highest burden occurs in sub-Saharan Africa, known as the meningitis belt, stretching from Senegal to Ethiopia. The World Health Organization (WHO) reported 26,029 meningitis cases in mainland Africa in 2016, with 2,080 deaths (overall case fatality rate of 8%). There are higher reported incidences in certain countries or specific subpopulations. In New Zealand, for example, the average incidence of IMD was 2.3 per 100,000 people in 2019, with cases ranging from 0.03 to 4.5 per 100,000 depending on the health region (New Zealand Ministry of Health, 2019). In the Philippines, 75% of all confirmed meningitis cases were those aged 0–14 years during 2012–2013 (Philippines-DOH, 2019).

In Indonesia, the incidence of meningitis in children remains high, ranking 9th among the ten most common diseases based on data from eight teaching hospitals. Suspected bacterial meningitis cases in Indonesian children are higher than in developed countries, reaching 158 per 100,000 children per year. Anniazi (2020), who conducted a cross-sectional diagnostic study of children aged 2

months to 18 years with meningitis at Moewardi Hospital Surakarta (May 2018 – June 2019), stated that 23.9% of 46 pediatric patients with acute clinical meningitis were categorized as bacterial meningitis. It is estimated that the incidence of pediatric meningitis in Indonesia continues to increase, with mortality rates ranging from 18–40%. Several studies have demonstrated the impact of sequelae on the quality of life of meningitis patients, both adults and children. A study of 31 post-meningitis patients at dr. Hasan Sadikin General Hospital Bandung showed that only 48.39% of respondents perceived their quality of life as good, while the rest reported otherwise (Budiman, 2014). Meanwhile, Svendsen et al. (2020), who conducted research in Northern Denmark, concluded that improvements in medical care for pediatric meningitis patients did not significantly reduce mortality. Bacterial meningitis in children remains severe, with case mortality of 3–7% and neurological sequelae—such as hearing or visual impairment, motor dysfunction, learning disabilities, and epilepsy—occurring in 16–50% of cases. This disease can be life-threatening, with sudden onset and rapid progression, causing significant emotional stress and potentially affecting the quality of life of both the child and their family.

WHO (2012) defines quality of life as an individual's perception of their position in life within the context of cultural and value systems in which they live, and in relation to their goals, expectations, standards, and concerns. Quality of life is influenced by multiple factors and is an individual's evaluation of various aspects, including physical health, mental health, social functioning, and environmental interactions. Routine assessment of quality of life is one way to detect the impact of meningitis on affected individuals (WHO, 2013; Hadinegoro et al., 2014). According to Potter & Perry (2010), child development is divided into several stages based on age range. Early childhood (1–6 years) is the period during which children learn independence, self-care, school readiness skills, and engage in peer play. Middle childhood (6–12 years) is when children master basic academic skills and improve self-control. Adolescence (13–18 years) involves rapid physical changes, height and weight increase, body posture development, and sexual maturation. All these developmental phases should progress appropriately; however, in children with meningitis who experience impaired quality of life, these developmental processes may be disrupted (Lucas, 2016).

A child's quality of life reflects overall pediatric health services, especially for those with chronic diseases. Around 6–12% of children with chronic illnesses adapt well, while the rest experience social, psychological, and educational disturbances, sometimes more severe than the physical limitations caused by the disease. In clinical practice, psychosocial aspects often receive less attention, as focus is placed on controlling the disease. Instruments have therefore been developed to ensure these aspects are not overlooked, including those used to measure quality of life (IDAI, 2015). One expected impact of assessing children's quality of life is to provide guidance for parents in implementing quality parenting. Parenting plays an essential role in a child's well-being, influenced by family, environment, and caregiving factors (IDAI, 2015; Hadinegoro et al., 2014).

Based on observations of pediatric meningitis patients with prolonged treatment in the HCU and PICU of the Obstetrics and Pediatrics Department at RSUP Dr. M. Djamil Padang, complex sequelae were commonly identified—such as skin disorders, hearing impairment, growth and developmental delays, and emotional or behavioral instability. Considering theories and studies showing a tendency toward decreased quality of life among meningitis patients due to sequelae, it can be assumed that post-treatment children at this hospital also experience quality-of-life issues. Further research is needed to confirm this assumption. As a referral hospital and teaching hospital, Dr. M. Djamil General Hospital provides extensive opportunities for academics, students, and independent researchers to conduct medical and nursing research. By understanding this profile, nursing interventions can be carried out more comprehensively, especially in efforts to improve the quality of life of children with meningitis. Based on the above considerations, the researchers aim to investigate the quality of life profile of children with meningitis at Dr. M. Djamil General Hospital in Padang .

METHOD

This study used a quantitative approach with a descriptive cross-sectional method (Arikunto, 2013). The study population consisted of children with post-treatment meningitis at Dr. M. Djamil Padang General Hospital during the period 2017–2019. Based on medical records, there were 34 children treated for meningitis during that period. Sampling was conducted using purposive sampling. The Pediatric Quality of Life Inventory (PedsQL) version 4.0 was used to assess the quality of life of these children. This questionnaire has been tested for validity and reliability. After the research was conducted, the data was processed and tested using chi-square. This study has been declared ethically sound by the Health Research Ethics Committee of Dr. M. Djamil Padang General Hospital with number 03/KEPK/2021.

RESULT

Table 1.
Distribution of Quality of Life Scores of Post-Treatment Children with Meningitis

Quality of Life	Good	%	Poor	%	Total (n)	%
Overall	16	47.1	18	52.9	34	100
Physical dimension	24	70.6	10	29.4	34	100
Emotional/Mental dimension	14	41.2	20	58.8	34	100
Social dimension	14	41.2	20	58.8	34	100
Environmental/School dimension	7	58.3	5	41.7	12*)	100

Note: *) Environmental/School dimension only assessed for children aged 5–18 years (n = 12).

Based on the findings (Table 1), 18 children (52.9%) scored <70, indicating poor quality of life. Meanwhile, 16 children (47.1%) scored ≥70, indicating good quality of life. The highest score was 87 (good), and the lowest was 54 (poor).

Table 2.
Quality of Life Distribution by Age Group

Age Group / Dimension	Good (f)	%	Poor (f)	%	Total (n)	%
2–4 years	9	42.9	12	57.1	21	100
Physical dimension	15	71.4	6	28.6	21	100
Emotional/Mental dimension	8	38.1	13	61.9	21	100
5–7 years	2	33.3	4	66.7	6	100
Physical dimension	3	50.0	3	50.0	6	100
Emotional/Mental dimension	1	16.7	5	83.3	6	100
8–12 years	3	60.0	2	40.0	5	100
Physical dimension	4	80.0	1	20.0	5	100
Emotional/Mental dimension	3	60.0	2	40.0	5	100
13–18 years	2	100	0	0	2	100
Physical dimension	2	100	0	0	2	100
Emotional/Mental dimension	2	100	0	0	2	100

The highest percentage of quality-of-life problems among children aged 2–4 years was in the social dimension (66.7%). A similar pattern was found in children aged 8–12 years (60%). For children aged 5–7 years, the most affected dimension was emotional/mental (83.3%).

Table 3.
Quality of Life Based on Length of Stay and GCS Score

Characteristics	Range	Freq. (f)	Good Quality of Life (f)	%	Poor Quality of Life (f)	%
Length of hospitalization	10–15 days	21	16	76.2	5	23.8
	16–20 days	13	0	0	13	100
GCS on admission	7–9 (somnolent)	12	0	0	12	100
	10–11 (delirium)	6	0	0	6	100
	12–13 (apathetic)	16	0	0	16	100
GCS at discharge	14–15 (compos mentis)	16	16	100	0	0

Table 3 shows that 76.2% of children hospitalized for 10–15 days had good quality of life. In contrast, all children (100%) hospitalized for 16–20 days had poor quality of life. Additionally, children with GCS scores of 7–9 (somnolence) and 10–11 (delirium) upon admission all had poor

quality of life. Similarly, those discharged with GCS 12–13 (apathetic) also all had poor quality of life.

DISCUSSION

Kualitas Hidup Anak Meningitis Dimensi Fisik

Quality of life is influenced by several factors and is an individual evaluation of a number of aspects, including physical health, mental health, social functioning, and interactions within the environment (Cowgill, 2016). In this study, in the physical dimension, it was found that less than half (29.4%) of children with meningitis had a poor quality of life after treatment at Dr. M. Djamil Padang General Hospital in 2017–2019. This is in line with a study conducted by Edmond (2017), in which 34.4% of respondents had a poor quality of life in the physical domain. In addition, research conducted by Komalasari et al. (2019) found that 44.7% of children with meningitis had a poor quality of life in terms of physical function. The highest quality of life score obtained for the physical dimension in this study was 88 (good category), while the lowest was 53 (poor category).

To determine the specific quality of life issues related to physical function/dimensions generally experienced by children with meningitis after treatment at Dr. M. Djamil Padang General Hospital, based on the questionnaire results, it was found that 35.3% of respondents chose the answer options “sometimes” or “often” for statement 8 (problems related to low energy levels/feeling weak), 23.5% chose the same answer option for statement 4 (difficulty lifting heavy objects), and 20.6% chose the same answer option for statements 2 (difficulty running) and 6 (difficulty picking up/carrying toys or doing certain tasks around the house). For statement 1 (difficulty walking or walking more than 100 meters), statement 3 (difficulty exercising), statement 5 (difficulty bathing or bathing alone), and statement 7 (experiencing pain), most respondents (> 80%) chose the answer options “never” or “almost never,” which means that most parents stated that their children had no problems with these four physical functions. This study also found that physical quality of life was significantly impaired in children with meningitis, one example being difficulty walking (ages 2–4 years) and walking more than 100 meters (ages 5–18 years), which was experienced by 40% of 10 children whose physical quality of life was poor. This is in line with research conducted by Edmond (2017), which found that the most problematic physical domain of quality of life in children with meningitis was difficulty walking more than 100 meters, at 65.5%. This is believed to be related to several conditions that require the use of assistive devices in children, such as hearing aids, wheelchairs, and others (Karppinen, 2017).

The quality of life in terms of physical dimension was poor in 29.4% (10 children) of the sample of children with meningitis, and the identification of several problems related to the children's physical function as described above indicates that there are still effects/impacts from residual neurological symptoms, such as hearing or vision impairment, movement disorders, as well as learning disabilities and epilepsy, in some children with meningitis after treatment. Low physical quality of life can result in impaired motor, sensory, and cognitive development in the form of low environmental exploration and thinking and memory abilities (Murni, 2017).

Kualitas Hidup Anak Meningitis Dimensi Emosi/Mental

For the emotional dimension, this study found that more than half (58.8%) of the meningitis children sample had a poor quality of life. This condition is in line with a study conducted by Karppinen (2017), which found that 79.06% of meningitis patients had problems with emotional/mental functioning (their quality of life was categorized as poor). The range of the highest and lowest scores for the emotional dimension of quality of life in this study was identified as quite significant, namely 90 (good category) for the highest and 40 (poor category) for the lowest. When viewed by age group, the percentage of children with meningitis whose emotional quality of life is categorized as poor is 61.9% for children aged 2–4 years, 83.3% for those aged 5–7 years, 40% for those aged 8–12 years, and 0% (nil) for those aged 13–18 years. Problems with

children's emotions can, among other things, affect their self-control in daily activities. According to Potter & Perry (2010), in middle childhood (ages 6–12), children should show development in mastery of basic skills (reading, writing, arithmetic) and self-control.

The specific and dominant problems found in the sample of children with meningitis in this study, which ultimately caused their emotional quality of life to deteriorate, were frequent anger and difficulty sleeping. A total of 47.1% of respondents chose the answer options "sometimes" or "often" for statement 3 (feeling angry) and 44.1% chose the same answer options for statement 4 (sleep problems). Meanwhile, for statement 1 (feeling afraid/very afraid), statement 2 (feeling gloomy/sad), and statement 5 (feeling worried or anxious about what will happen to them), the percentage of respondents who chose the same answer option was smaller than the two previous statements, namely 35.3% each.

Emotional aspects are related to an individual's mental state, which leads to the individual's ability to adapt to various developmental demands in accordance with their abilities, both internal and external demands (Khodaverdi et al., 2011). According to Gheissari et al (2012), the emotional dimension includes a child's ability to express anger, sadness, fear, sleep disturbances, and anxiety about what will happen to them. In addition, the emotional aspect/dimension is a response to stimuli that cause physiological changes accompanied by strong feelings (Ali, 2018). This study also found that 55% of respondents (whose children's emotional quality of life was categorized as poor) felt that their children lacked confidence in their condition (sometimes feeling gloomy/sad). Some of the effects of meningitis can affect the quality of life of children's emotional dimension in the form of appearance (body image) and disability (handicap), which will trigger feelings/attitudes of low self-esteem (Hadinegoro, 2014). In addition, physical differences compared to healthy children often cause anxiety and depression in children with meningitis, especially in adolescents who are beginning to pay attention to their appearance (Edmond, 2017). The resulting consequences are that children become more irritable, while adults feel hopeless and easily offended. This condition is believed to trigger a low quality of life in terms of emotional function/dimension in 58.8% of the sample of children who had suffered from meningitis in this study.

CONCLUSION

More than half of the children with meningitis, namely 58.8%, were male, and 61.8% were in the 2–4 age group, with an average length of stay of 14.4 days, with a GCS score of 10.6 (delirium category) upon admission/start of treatment and 13.3 (apathetic category) upon discharge/completion of treatment. More than half (52.9%) of children with meningitis who were treated at Dr. M. Djamil Padang General Hospital in 2017–2019 had a poor quality of life. Less than half had poor physical and environmental/school quality of life (29.4% and 41.7%, respectively), and more than half had poor emotional/mental and social quality of life (58.8%, respectively

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