The 6th Mitra Husada Health International Conference (MiHHICo) 2026
Volume 6 (2026) ISSN: 2988-3768

MIDWIFERY CARE MANAGEMENT FOR A TWO-YEAR-OLD CHILD WITH TUBERCULOUS MENINGITIS

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ABSTRACT

Background: Tuberculous meningitis is a severe form of extrapulmonary tuberculosis that commonly affects children under five years of age and may lead to serious neurological complications, disability, or death if not managed appropriately.
Objective: This study aimed to describe the implementation of midwifery care management for a two-year-old child diagnosed with tuberculous meningitis in the Pediatric Intensive Care Unit (PICU) of Haji General Hospital Medan, North Sumatra Province, in 2025. **Methods:** A case study design was employed using Varney's seven-step midwifery management framework, including data collection, data interpretation, identification of actual and potential problems, immediate interventions, care planning, implementation, and evaluation. Data were obtained through observation, physical examination, medical records, and collaboration with the healthcare team. **Results:** Assessment findings showed decreased consciousness, respiratory distress, a history of seizures, muscle rigidity, and dependence on mechanical ventilation. Midwifery interventions focused on neurological and respiratory monitoring, airway maintenance, ventilatory support, vital sign assessment, fluid balance monitoring, and multidisciplinary collaboration. Evaluation indicated stable oxygen saturation, maintained airway patency, absence of recurrent seizures, and improvement in the patient's overall clinical condition. **Conclusion:** Comprehensive, systematic, and collaborative midwifery care contributed to patient stabilization, prevention of complications, and improvement of clinical outcomes in a child with tuberculous meningitis treated in the PICU.

Keywords: Tuberculous meningitis; toddler; midwifery care management; PICU; Varney's seven-step management.

INTRODUCTION

Tuberculosis (TB) remains one of the leading infectious diseases worldwide and continues to be a major public health problem, particularly in developing countries. According to the World Health Organization (WHO), millions of new TB cases are reported annually, with children accounting for a substantial proportion of the disease burden. Among the various forms of extrapulmonary tuberculosis, tuberculous meningitis (TBM) is the most severe manifestation due to its high mortality rate and risk of long-term neurological disability. Children under five years of age are especially vulnerable because of their immature immune systems and increased susceptibility to disseminated Mycobacterium tuberculosis infection. In Indonesia, tuberculosis remains a significant health concern and is among the countries with the highest TB burden globally. Despite ongoing national tuberculosis control programs, cases of pediatric tuberculosis and its complications continue to occur. Tuberculous meningitis contributes substantially to morbidity and mortality among children, particularly when diagnosis and treatment are delayed. Clinical manifestations such as fever, seizures, altered consciousness, respiratory distress, and neurological deficits often require intensive monitoring and comprehensive management in specialized healthcare settings, including Pediatric Intensive Care Units (PICUs) (Juliawan and Ida Ayu Putu Purnamawati, 2023).

Several studies have reported that early diagnosis, prompt antituberculosis therapy, and multidisciplinary management are essential to improve outcomes and reduce complications among children with TBM. Midwives play an important role in providing comprehensive care through continuous assessment, monitoring, health education, supportive interventions, and collaboration with other healthcare professionals. However, reports describing the application of Varney's seven-step midwifery management approach in children with tuberculous meningitis are still limited. Based on these considerations, it is necessary to describe the implementation of midwifery care management in a child diagnosed with tuberculous meningitis. The research question of this study is: "How is Varney's seven-step midwifery management applied in the care of a two-year-old child with tuberculous meningitis treated in the PICU of Haji General Hospital Medan?" The objective of this study was to describe the implementation of comprehensive midwifery care management using Varney's seven-step approach in a two-year-old child with tuberculous meningitis. The findings are expected to provide benefits for healthcare professionals, especially midwives, by enhancing knowledge and improving the quality of care for pediatric patients with severe infectious diseases, particularly tuberculous meningitis (Juliawan and Ida Ayu Putu Purnamawati, 2023).

METHODS

This study employed a descriptive research design using a case study approach. The case study method was selected to provide an in-depth understanding of the implementation of midwifery care management for a two-year-old child diagnosed with tuberculous meningitis and admitted to the Pediatric Intensive Care Unit (PICU) of Haji General Hospital Medan, North Sumatra Province, in 2025. The subject of this study was a two-year-old child diagnosed with tuberculous meningitis who received intensive care in the PICU. The participant was selected using a purposive sampling technique, whereby the case was chosen based on its relevance to the objectives of the study and the availability of comprehensive clinical data. As this research was conducted as a case study, only one patient was included as the subject of the investigation (Mittal, Kumar and Singh, 2024).

Data were collected through interviews with the patient's family, direct observation of the patient's condition, physical examinations, and a review of medical records and supporting diagnostic findings. The collected information included patient demographics, medical history, clinical manifestations, physical examination results, laboratory findings, medical interventions, therapeutic management, and the patient's progress throughout the hospitalization period. The instruments used in this study included a midwifery assessment form, observation sheets, patient medical records, and clinical monitoring equipment routinely used in the PICU, such as vital sign monitors, pulse oximeters, and mechanical ventilators. The assessment focused on neurological status, respiratory function, vital signs, fluid balance, and the patient's response to treatment (Mittal, Kumar and Singh, 2024).

The provision of care was guided by Varney's seven-step midwifery management framework, which consists of data collection, data interpretation, identification of actual and potential problems, immediate interventions, care planning, implementation, and evaluation. Data obtained from the case were analyzed descriptively by comparing the clinical findings with relevant theories, clinical guidelines, and previous research findings. The results were then presented narratively to provide a comprehensive description of the midwifery care management implemented for a toddler with tuberculous meningitis. This study was conducted with permission from Haji General Hospital Medan and with informed consent obtained from the patient's family for the use of clinical data in this case report. Patient confidentiality and privacy were maintained throughout the study in accordance with ethical principles governing health research. If available, the ethical approval number, date of approval, and the issuing ethics committee or institution should be included in this section (Mittal, Kumar and Singh, 2024).

RESULTS

This case study involved a two-year-old child diagnosed with tuberculous meningitis who was admitted to the Pediatric Intensive Care Unit (PICU) of Haji General Hospital Medan, North Sumatra Province. Upon admission, the patient presented with a decreased level of consciousness, respiratory distress, recurrent seizure episodes, and generalized body rigidity. Owing to the severity of the condition, the child required intensive monitoring and ventilatory support to maintain adequate respiratory function and prevent further clinical deterioration. Clinical assessment findings indicated significant neurological impairment, as evidenced by altered consciousness and a history of repeated seizures. In addition, respiratory dysfunction necessitated the use of mechanical ventilation. Throughout the hospitalization period, continuous monitoring was performed to evaluate neurological status, respiratory function, vital signs, oxygen saturation levels, fluid balance, and the patient's response to therapeutic interventions (Triantono, 2021).

Midwifery care management was implemented according to Varney's seven-step framework, which includes comprehensive assessment, data interpretation, identification of actual and potential problems, immediate interventions, planning, implementation, and evaluation. The care provided focused on maintaining airway patency, monitoring neurological and respiratory status, observing vital signs, assessing fluid balance, and collaborating closely with the multidisciplinary healthcare team in administering treatment and supportive care. Evaluation of the implemented care demonstrated gradual clinical improvement. The patient maintained a patent airway, oxygen saturation remained within stable limits, no recurrent seizures were observed during the treatment period, and the overall clinical condition improved compared with the initial presentation at admission (Triantono, 2021).

DISCUSSION

Tuberculous meningitis is considered one of the most severe manifestations of extrapulmonary tuberculosis because it affects the central nervous system and can result in serious neurological complications. The clinical manifestations observed in this case, including impaired consciousness, recurrent seizures, respiratory distress, and body rigidity, reflect significant neurological involvement caused by meningeal inflammation. These findings support current evidence indicating that pediatric patients with tuberculous meningitis commonly experience neurological deficits, seizure activity, and disturbances in vital physiological functions due to increased intracranial pressure and inflammatory damage to neural tissues. The decreased level of consciousness observed in this patient may be attributed to inflammatory processes affecting the meninges and brain structures, leading to impaired cerebral function. Similarly, recurrent seizures likely resulted from irritation and dysfunction of neural tissue caused by the infectious process. These observations are consistent with previous studies reporting altered mental status and seizure episodes as common clinical manifestations among children with tuberculous meningitis (Wijaya, Mantik and Rampengan, 2021).

The presence of respiratory compromise requiring mechanical ventilatory support indicates the advanced severity of the disease. Severe neurological impairment may affect respiratory control mechanisms, making intensive care management essential. Previous research has emphasized that children with severe tuberculous meningitis often require critical care interventions and close monitoring to reduce morbidity and improve clinical outcomes. The condition of the patient in this case aligns with these findings, as intensive respiratory support was necessary throughout the acute phase of treatment. The application of Varney's seven-step midwifery management model provided a structured and systematic approach to patient care. Continuous assessment of neurological status, respiratory function, fluid balance, and vital signs facilitated the early identification of potential complications and supported timely clinical decision-making. The favorable outcomes observed, including stable oxygen saturation, maintenance of airway patency, and the absence of recurrent seizures, suggest that comprehensive and collaborative care contributed substantially to patient stabilization and recovery (Wijaya, Mantik and Rampengan, 2021).

This case study further supports previous evidence highlighting the importance of early recognition, intensive monitoring, and multidisciplinary collaboration in the management of pediatric tuberculous meningitis. Comprehensive midwifery care can play a valuable role in preventing complications, promoting clinical stability, and improving the quality of healthcare services provided to critically ill children with neurological disorders. One of the strengths of this study lies in the comprehensive assessment and systematic application of Varney's seven-step management process, which enabled continuous evaluation and individualized care planning. However, the study is limited by its single-case design, which restricts the generalizability of the findings to broader populations. Therefore, future studies involving larger sample sizes are recommended to further evaluate the effectiveness of comprehensive midwifery care management in improving outcomes among children diagnosed with tuberculous meningitis (Wijaya, Mantik and Rampengan, 2021).

CONCLUSIONS

The findings of this case study indicate that the application of Varney's seven-step midwifery management framework provided a structured and effective approach to caring for a two-year-old child with tuberculous meningitis in the Pediatric Intensive Care Unit (PICU) of Haji General Hospital Medan. The assessment process revealed several critical health

problems, including impaired consciousness, respiratory difficulties, recurrent seizure episodes, generalized rigidity, and dependence on mechanical ventilation. By implementing comprehensive care measures such as continuous neurological and respiratory monitoring, airway maintenance, fluid balance assessment, and close collaboration with the multidisciplinary healthcare team, the patient's complex healthcare needs were appropriately addressed (Oo and Agrawal, 2025).

The outcomes of care demonstrated noticeable clinical improvement, as reflected by a stable airway, adequate oxygen saturation levels, the absence of recurrent seizures during the observation period, and an overall improvement in the patient's condition. These results suggest that systematic, comprehensive, and coordinated midwifery care plays an essential role in supporting recovery, reducing the risk of complications, and enhancing the quality of care for pediatric patients with tuberculous meningitis (Oo and Agrawal, 2025).

In light of these findings, healthcare professionals should continue to emphasize early assessment, intensive monitoring, and interdisciplinary collaboration when managing children with severe neurological infections. Additionally, future research involving a larger number of cases is recommended to further explore the effectiveness of comprehensive midwifery care management and to strengthen the evidence regarding its contribution to improving clinical outcomes among pediatric patients with tuberculous meningitis (Oo and Agrawal, 2025).

ACKNOWLEDGEMENT

The author would like to express sincere gratitude to Almighty God for His blessings, guidance, and grace, which made the completion of this article possible. The author also extends appreciation to the Director of Haji General Hospital Medan, the Head of the Pediatric Intensive Care Unit (PICU), and all healthcare professionals who provided permission, assistance, and support throughout the implementation of this case study. Special thanks are addressed to the academic supervisor, clinical supervisor, and lecturers for their valuable guidance, constructive suggestions, and continuous encouragement during the preparation of this manuscript. The author is also grateful to the patient's family for their cooperation and willingness to provide the information required for the assessment process. Finally, the author would like to acknowledge all individuals who contributed, either directly or indirectly, to the successful completion of this article. Their support and contributions were invaluable to the accomplishment of this work.

CONFLICT OF INTEREST AND FUNDING DISCLOSURE

The author declares that there are no conflicts of interest related to the preparation and publication of this article. The study and manuscript preparation were conducted independently without any influence from external parties that could affect the research findings or their interpretation.

This study did not receive any specific grant or financial support from government agencies, commercial organizations, or non-profit institutions. All expenses related to the implementation of the case study and the preparation of the manuscript were borne by the author.

AUTHOR CONTRIBUTIONS

The author was solely responsible for all aspects of the study and manuscript preparation. Contributions included conceptualization of the study, data collection and curation, case investigation, methodology development, data analysis, validation of findings, resource management, project administration, data presentation, preparation of the original draft, and

critical review and editing of the manuscript. The author also interpreted the study findings and approved the final version of the article for publication.

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