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Case Study

Nursing care of aloe vera compress in a hyperthermia patient with dengue hemorrhagic fever at dr. Haryoto Hospital of Lumajang

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Abstract:
Dengue Hemorrhagic Fever (DHF) is an acute infectious disease caused by the dengue virus, which is generally transmitted through the bite of the Aedes aegypti mosquito. One of the main symptoms in the early phase is high fever, which often leads to hyperthermia, especially in pediatric patients. Uncontrolled hyperthermia can result in serious complications, including dehydration, febrile seizures, and neurological problems. This study aims to describe a nursing care intervention using aloe vera compresses to manage hyperthermia in children diagnosed with DHF. This case study was conducted at the Bougenville Ward, Dr. Haryoto Regional General Hospital, Lumajang, from December 15 to 18, 2024. The intervention consisted of applying aloe vera compresses twice daily for three days, with each session lasting 15–20 minutes. The effectiveness of the intervention was assessed by measuring the patient's body temperature before and after each session using a thermometer. The results showed a significant average temperature decrease of 1.5°C over three days, indicating a positive effect of the aloe vera compresses. Aloe vera contains active compounds such as natural saponins and salicylates, which function as antipyretic and anti-inflammatory agents, helping to reduce fever by inhibiting prostaglandin synthesis. This analysis confirms that aloe vera compresses are an effective complementary nursing intervention for managing hyperthermia in pediatric dengue fever patients. Based on these findings, it is recommended that aloe vera compresses be considered as a non-pharmacological option in clinical practice to support temperature regulation in febrile children.

Keywords:
aloe vera, compress, hyperthermia, nursing care, dengue fever

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INTRODUCTION

Dengue Hemorrhagic Fever (DHF) is an acute viral infection transmitted through the bite of the Aedes aegypti mosquito. One of the most common early symptoms of DHF is a high fever, which can progress to hyperthermia. Hyperthermia is defined as a condition in which body temperature exceeds the normal threshold of 37.5°C, due to internal and external factors that disrupt the body's heat dissipation mechanisms (Rindiani et al., 2023). In children, hyperthermia is a common

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manifestation due to the immaturity of the hypothalamic thermoregulatory system (Vita et al., 2023). The World Health Organization (WHO, 2018) reports approximately 65 million cases of hyperthermia in children worldwide, with 33% resulting in death, most often in South and Southeast Asia. In Indonesia, approximately 900,000 cases of children begin with fever each year, with an estimated 20,000 of these resulting in death (Zakiyah & Rahayu, 2022).

Fever is a physiological response to infection, but if left untreated, it can lead to complications such as dehydration, febrile seizures, and even structural brain damage (Wahyuningsih et al., 2021). Fever can be managed through pharmacological methods (e.g., antipyretics) and non-pharmacological interventions such as compresses. According to WHO guidelines, physical interventions such as compresses should be performed before administering medication (Edhis et al., 2024). Aloe vera compresses work based on the principle of conduction, absorbing heat from the skin due to their high-water content. Several studies have demonstrated their effectiveness. Suprana & Mariyam (2024) found that aloe vera compresses reduced fever by 0.85°C and 0.7°C in two subjects, while Zakiyah & Rahayu (2022) reported reductions of 1.5°C and 1.8°C in separate cases. These findings support the use of aloe vera compresses as a complementary nursing intervention to reduce fever in children. This study aims to describe the effectiveness of aloe vera compresses in reducing body temperature in pediatric patients with hyperthermia due to dengue fever in the Bougenville Ward, Dr. Haryoto Regional General Hospital, Lumajang.

METHOD

This study employed a case study design with a quantitative descriptive approach. The population consisted of pediatric patients diagnosed with Dengue Hemorrhagic Fever (DHF) accompanied by hyperthermia at Bougenville Ward, dr. Haryoto Hospital, Lumajang. The sample included one pediatric patient selected using purposive sampling based on inclusion criteria related to the diagnosis and presenting symptoms. The intervention involved the application of aloe vera compresses, administered twice daily over three consecutive days, with each session lasting between 15 and 20 minutes. The study was conducted from December 15 to 18, 2024. A digital thermometer was used to assess the effectiveness of the intervention by measuring body temperature before and after each compress session. Data were collected through direct observation and measurement. A univariate analysis was conducted to describe the patient's temperature changes, and the findings were presented narratively and in tabular form to illustrate the pre- and post-intervention differences. This research adhered to ethical principles for human subject research. Informed consent was obtained from the patient's legal guardian prior to intervention. Patient confidentiality was maintained, and the participant's safety and comfort were prioritized throughout the study.

RESULT

An 11-year-old boy, referred to as Patient A, was admitted to the Bougenville Pediatric Ward at RSD dr. Haryoto with a medical diagnosis of Dengue Hemorrhagic Fever (DHF). He developed a

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fever on the afternoon of Thursday, December 12, 2024, and received initial treatment with paracetamol at the Sukodono Health Center on the following day. As his condition deteriorated, he was brought to the Emergency Department on December 15 with a body temperature of 39.8°C. After receiving antipyretic medication and undergoing diagnostic evaluation, he was transferred to the Bougenville Ward for further management based on clinical indications of DHF. A comprehensive nursing assessment was conducted on December 15, 2024, at 1:00 p.m. At that time, the patient was on the fourth day of fever, presenting with a temperature of 38.8°C. He appeared lethargic and reported nausea, with a single episode of vomiting recorded at 9:00 AM. According to his mother, he had experienced a loss of appetite and marked fatigue since the onset of fever. His primary complaint was a persistently elevated body temperature.

According to Aini (2022), fever due to dengue infection typically resolves between the third and seventh day. The identified nursing problem was hyperthermia, resulting from the body's inflammatory response to the dengue virus (Wulandari et al., 2024). An evidence-based non-pharmacological intervention recommended for managing fever is the application of Aloe vera gel compresses, which has demonstrated efficacy in reducing body temperature in pediatric patients (Pangesti & Murniati, 2023). Aloe vera compress is a non-pharmacological method used to reduce body temperature in pediatric patients. The decrease in temperature occurs primarily through conduction, where heat is transferred from the body to the cooler surface of the Aloe vera gel. This mechanism is further supported by evaporation, in which body heat is released as sweat and subsequently converted into vapor, thereby enhancing the cooling effect. A study by Zakiyah & Rahayu (2022) reported that after applying Aloe vera compresses, the first participant experienced a temperature reduction of 1.5°C, while the second participant's temperature decreased by 1.8°C.

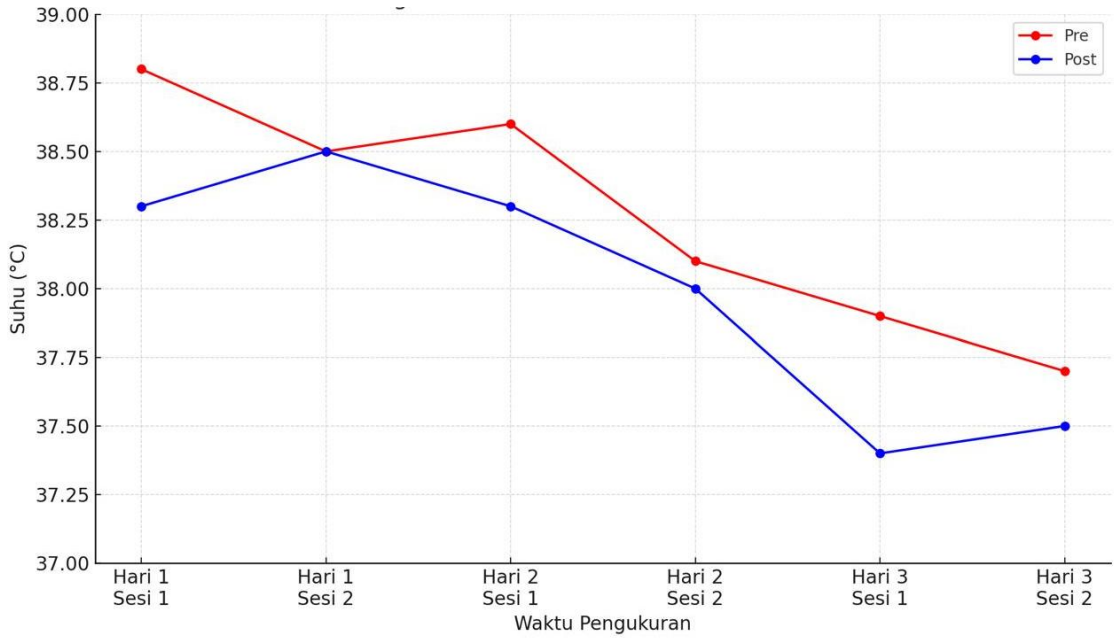

Figure 1. An Evaluation of Aloe Vera Compress Treatment for Hyperthermia

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DISCUSSION

Before the Aloe vera compress intervention, observations showed that Patient A had a body temperature above 37.5°C, indicating hyperthermia. The patient appeared irritable, had flushed and warm skin, and demonstrated reduced appetite (Saragih & Lestari, 2023). These clinical signs are consistent with findings reported by Zakiyah & Rahayu (2022), who noted that two children, aged 6 and 8, experienced fevers of up to 38.5°C due to an uncontrolled inflammatory response. This increase in body temperature is typically triggered by infection or inflammation, which activates immune cells such as macrophages and neutrophils. These cells release endogenous pyrogens, including IL-1, IL-6, and TNF-α, which act on the hypothalamus to induce fever (Bon, 2025).

If Patient A's fever is not managed promptly, it may exacerbate his clinical condition and delay recovery. After the application of Aloe vera compresses in nursing practice, the presence of elevated body temperature is defined as hyperthermia and is managed according to the Indonesian Nursing Intervention Standards (SNKI), specifically under the category of "Hyperthermia Management." This intervention encompasses a range of actions, including observational, therapeutic, educational, and collaborative components. Hyperthermia management can be achieved through pharmacological or non-pharmacological approaches. The pharmacological approach involves administering antipyretic drugs such as paracetamol (Amelia et al., 2023). The non-pharmacological approach includes regular monitoring of body temperature, providing a cool and comfortable environment, encouraging the use of loose-fitting clothing, promoting adequate fluid intake, and applying compresses as an external cooling method.

Aloe vera compresses have been shown to be effective in reducing body temperature in children with hyperthermia. One of the main active compounds in Aloe vera is saponin, which functions as a natural antipyretic and anti-inflammatory agent by inhibiting prostaglandin synthesis through the cyclooxygenase (COX) pathway that elevates the hypothalamic set point during fever. Additionally, Aloe vera contains natural salicylates that act similarly to aspirin in reducing inflammation. Other components, such as lignin, enhance the absorption of active substances into deeper skin layers and help retain skin moisture, preventing excessive fluid loss during fever.

The cooling effect of Aloe vera also occurs through conduction, where heat is transferred from the body to the Aloe vera gel. With its high-water content (approximately 95%), Aloe vera effectively absorbs body heat. This local cooling stimulates the hypothalamus to lower the set point, reduce heat production, and promote heat dissipation through peripheral vasodilation. Furthermore, compounds such as aloin and emodin contribute additional anti-inflammatory effects (Zakiyah & Rahayu, 2022). In this case, a temperature reduction of 1.5°C was recorded following the Aloe vera compress intervention. This finding is supported by Edhis (2024), who also reported significant reductions in body temperature following similar interventions.

Based on both empirical data and literature, the researcher concludes that Aloe vera compresses have a significant effect on lowering body temperature in Patient A. This effectiveness is attributed to the presence of saponin, which accelerates heat dissipation, and lignin, which maintains fluid balance by minimizing excessive evaporation (Saragih & Lestari, 2023). However, a confounding factor in evaluating the nursing care outcomes for Patient A was the concurrent use of pharmacological therapy. During the implementation of Aloe vera compress therapy, the patient also

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received paracetamol 300 mg three times a day. Paracetamol is known to reduce fever in children within four hours of administration (Amelia et al., 2023). On December 15th, 16th, and 17th, 2024, Patient A received this pharmacological therapy in conjunction with the Aloe vera intervention. Therefore, it is possible that the observed effectiveness of Aloe vera compresses may have been influenced by the concurrent administration of antipyretic medication.

CONCLUSION

Dengue Hemorrhagic Fever (DHF) is a disease caused by dengue virus infection, transmitted through the bite of female Aedes aegypti or Aedes albopictus mosquitoes. This infection can result in a decreased platelet count (thrombocytopenia), impaired platelet function, and reduced coagulation factors, all of which significantly contribute to the risk of severe bleeding. One of the most common nursing problems encountered in DHF patients is hyperthermia, a condition characterized by an elevated body temperature above the normal range, resulting from an imbalance between heat production and heat loss, which indicates dysfunction in the body's thermoregulatory system. This imbalance may be caused either by increased internal heat production or impaired heat dissipation. An Evidence-Based Nursing (EBN) intervention to manage hyperthermia is the application of Aloe vera compresses. With approximately 95% water content, Aloe vera is considered safe and rarely causes allergic reactions. The cooling effect is primarily achieved through conduction, where heat is transferred from the body to the cooler Aloe vera gel. Based on the implementation of Aloe vera compresses over three consecutive days, with each session lasting 15 to 20 minutes, the patient's body temperature decreased by an average of 1.5°C, indicating the effectiveness of this therapy in significantly reducing fever.

CONFLICT OF INTEREST

Aloe vera compress therapy is an Evidence-Based Nursing (EBN) intervention that can serve as an effective learning resource and be applied to clients experiencing hyperthermia-related nursing problems. This therapy can be integrated into the nursing care process as an independent intervention, enabling nurses to implement it as a non-pharmacological method to help reduce fever. Furthermore, it holds potential for development and formal adoption by healthcare institutions as part of standardized nursing care protocols for managing hyperthermia through non-pharmacological approaches, such as Aloe vera compresses.

REFERENCES

Aini, L., Astuti, L., Suswitha, D., Arinda, D. R., Maharani, S., & Muliasari, S. (2022). Implementasi Water Tepid Sponge dalam Mengatasi Masalah Hipertemia pada Penderita Demam Berdarah Dangue. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (Pkm)*, *5*(8), 2448–2457. https://doi.org/10.33024/jkpm.v5i8.6483

Volume 01 Number 01 (December 2025)
p-ISSN: 0000-0000
e-ISSN: 0000-0000

Amelia, D., Putri, S. A., & Rosdiana, R. (2023). Penerapan Terapi Kompres Aloe Vera Pada Anak Demam. *JUKEJ : Jurnal Kesehatan Jompa*, *2*(1), 105–110. https://doi.org/10.57218/jkj.vol2.iss1.703

Bon, E. I. (2025). Peculiarities of the Pathogenesis of Fever in Childhood. *Clinical Trials and Clinical Research*, 1–7. https://doi.org/10.31579/2834-5126/093

Edhis, F., Mamentu, P., & Harun, R. (2024). Pengaruh Pemberian Kompres Aloe Vera Terhadap Suhu Tubuh Pada Anak Di Wilayah Kerja Puskesmas Kuma Kecamatan Tabukan Tengah Kabupaten Kepulauan Sangihe. *Ilmu Kesehatan Umum*, *2*(1), 107–117.

Pangesti, W., & Murniati, M. (2023). Penggunaan Kompres Aloevera untuk Menurunkan Suhu Tubuh Anak Demam: Case Study. *Jurnal Manajemen Asuhan Keperawatan*, *7*(2), 88–94. https://doi.org/10.33655/mak.v7i2.172

Rindiani, A., Cahyaningrum, E. D., & Rahmawati, A. N. (2023). Edukasi Pemberian Kompres Aloevera Sebagai Penurun Demam Anak Pada Kader dan Ibu Di Posyandu Delima Desa Pliken. *Jurnal Altifani Penelitian Dan Pengabdian Kepada Masyarakat*, *3*(5), 731–738. https://doi.org/10.59395/altifani.v3i5.485

Saragih, N. H., & Lestari, R. F. (2023). Analisis Asuhan Keperawatan Pada Anak Dengan Penerapan Terapi Kompres Aloevera Terhadap Penurunan Suhu Tubuh. *Jurnal Ilmiah Keperawatan IMELDA*, *9*(1), 41–47. https://doi.org/10.52943/jikeperawatan.v9i1.1142

Suprana, O. W., & Mariyam, M. (2024). Penerapan kompres aloe vera untuk menurunkan suhu tubuh anak dengan demam. *Ners Muda*, *5*(1), 54. https://doi.org/10.26714/nm.v5i1.10425

Vita, D. G., Sari, I. P., & Wulandari, Y. (2023). Efektifitas Penurunan Suhu Tubuh Subfebris Pada Anak Kejang Demam Dengan Menggunakan Kompres Hangat Di Ruang Rawat Inap Gardenia RSUD M.Sani. *Jurnal Medika Husada*, *3*(2), 50–66. https://doi.org/10.59744/jumeha.v3i2.47

Wahyuningsih, Widyaningsih, T. S., & Sulistyowati, N. (2021). *Efektivitas Kompres Water Tepid Sponge pada Kasus Hipertermi untuk Menurunkan Tingkat Kecemasan pada Orangtua di RS Permata Medika Semarang*. *11*(1), 1–14. http://scioteca.caf.com/bitstream/handle/123456789/1091/RED2017-Eng-8ene.pdf?sequence=12&isAllowed=y%0Ahttp://dx.doi.org/10.1016/j.regsciurbeco.2008.06.005%0Ahttps://www.researchgate.net/publication/305320484_SISTEM_PEMBETUNGAN_TERPUSAT_STRATEGI_MELESTARI

Wulandari, D., Khoiriyati, A., & Kristanto, W. P. (2024). Pemberian Water Tepid Sponge Untuk Menurunkan Hipertermia Pada Anak dengan Dengue Hemorrhagic Fever (DHF). *Jurnal Ventilator*, *2*(2), 20–30. https://doi.org/10.59680/ventilator.v2i2.1112

Zakiyah, F., & Rahayu, D. A. (2022). Penerapan kompres menggunakan aloevera untuk menurunkan suhu tubuh anak dengan hipertermia. *Ners Muda*, *3*(2). https://doi.org/10.26714/nm.v3i2.8376