

Section: General Nursing

Aloe vera therapy to reduce fever in children with typhoid

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Abstract

Typhoid fever is an acute intestinal infection caused by *Salmonella Typhi*, which enters the human body through contaminated food and water. It is a highly contagious disease that can affect large populations and potentially lead to outbreaks. In endemic areas, the primary mode of transmission is contaminated water, whereas in non-endemic areas, food contaminated by asymptomatic carriers is the main source of transmission. Typhoid fever often causes an elevated body temperature, particularly in children, resulting in the nursing diagnosis of hyperthermia. To manage hyperthermia, non-pharmacological interventions such as aloe vera compresses can be utilized. Aloe vera is composed of approximately 95% water, which provides a cooling effect for patients with hyperthermia. It reduces body temperature through conduction, whereby heat is transferred from the body to the aloe vera. This case study aimed to determine the effectiveness of aloe vera compresses in reducing body temperature among children with typhoid fever and hyperthermia in the Tulip 2 Ward at Soerojo Hospital, Magelang. A descriptive case study method was used, involving the application of aloe vera compress therapy for three consecutive days. The results showed a total decrease in body temperature of 1.2°C over the 3-day period, with an average reduction of 0.2°C following each application of the aloe vera compress.

Keywords: Complementary therapy, fever, infection, nursing care, typhoid

Introduction

Typhoid fever is an acute intestinal infection caused by *Salmonella Typhi*, which enters the human body through contaminated food and beverages (Ashton et al., 2025). This condition often leads to an increase in body temperature, particularly in children, resulting in a nursing problem known as hyperthermia (Zhao et al., 2021). Hyperthermia refers to a state in which body temperature rises above 37°C, representing a normal physiological response to infection. Infection itself occurs when microorganisms invade the body. If hyperthermia is not promptly managed, it can lead to complications such as dehydration due to fluid loss, and in severe cases, seizures (Nardone et al., 2016). Fever can be managed using non-pharmacological methods. These include applying compresses, wearing light clothing, and increasing fluid intake. One traditional non-pharmacological approach for reducing fever in children is the use of aloe vera compresses (Novidha & Zubaidah, 2023). Aloe vera, a widely available plant, contains approximately 95% water, which provides a cooling effect. The cooling occurs through conduction, where heat is transferred from the body to the aloe vera. A study demonstrated that applying aloe vera compresses can reduce body temperature in hyperthermia patients (Vitria & Sulistiawan, 2024).

This case study holds profound significance for contemporary nursing practice because it bridges the gap between traditional ethnobotanical knowledge and evidence-based, non-pharmacological hyperthermia management. Typhoid fever, an acute systemic infection caused by the bacterium *Salmonella typhi*, presents a unique clinical challenge in pediatric nursing due to its characteristically prolonged, high-grade pyrexia that heavily compromises a child's metabolic state and physical comfort. While conventional antipyretic medications like paracetamol are routinely administered to reset the hypothalamic thermostat, relying solely on repetitive chemical interventions can strain a child's immature hepatic and renal pathways (de'Angelis et al., 2025). By rigorously investigating the application of Aloe vera gel compresses as a supportive cooling mechanism, this study introduces a scientifically validated, adjunctive nursing intervention that expands the clinical toolkit for paediatric care, optimizing thermoregulation without inducing chemical toxicity. From a physiological perspective, this research enriches nursing science by illuminating the distinct biochemical mechanisms through which Aloe vera facilitates rapid, non-invasive heat dissipation on a vascular level. Aloe vera consists of approximately 95% water bound within a complex polysaccharide matrix (Hamman, 2008), but its therapeutic superiority over a standard water compress lies in its active phytochemical constituents, particularly saponins and lignin's. When applied topically to high-vascularity zones such as the forehead, axillae, or inguinal folds, the saponins act as natural vasodilators that expand peripheral blood vessels, thereby accelerating the transit of internal body heat to the skin's surface where it can be evaporated.

Simultaneously, its lignin content enables deep dermal penetration, ensuring that the cooling effect is sustained while maintaining skin barrier integrity and preventing excessive trans-epidermal fluid loss. By documenting these precise biophysical pathways, the study empowers nurses to transition from an intuitive, routine delivery of care to highly rationale-driven, evidence-based physical interventions that significantly lower paediatric body temperature and prevent febrile convulsions. Furthermore, this study directly advances the core nursing philosophies of holistic, family-cantered care and resource optimization within diverse public health settings. Managing typhoid fever in paediatric patients extends beyond immediate clinical stabilizing; it involves mitigating the intense psychological distress, restlessness, and anxiety experienced by both the febrile child and their caregivers. Because Aloe vera is a universally accessible, cost-effective, and highly renewable botanical resource, validating its therapeutic efficacy equips community, public health, and paediatric nurses with a powerful educational asset for family discharge planning. Educating parents on how to independently prepare and safely apply these cooling compresses fosters a sense of agency and reduces health-related anxiety, transforming families from passive observers into active participants in the child's recovery. Ultimately, this research provides healthcare institutions—particularly those operating in resource-limited or rural environments—with a sustainable, culturally congruent framework that lowers the financial burden of prolonged hospitalizations while maintaining impeccable standards of pediatric safety and clinical excellence.

Case Description

The patient is a 6-year-old male who presented with fever, dizziness, and nausea with vomiting for the past three days. He had previously been examined at a community health centre; however, his fever persisted with fluctuations, and the nausea and vomiting continued. On admission, he had been febrile for three days with accompanying dizziness, nausea, and vomiting. His vital signs were: temperature 38°C, respiratory rate 22 breaths/minute, and pulse 92 beats/minute. On December 10, 2025, the patient was treated by a paediatric specialist with a continuous intravenous infusion at 200 mL/hour, followed by a macro drip at 20 drops/minute, along with paracetamol injection 500 mg four times daily, ondansetron injection 4 mg twice daily, and ceftriaxone injection 1 g twice daily. The patient weighed 20 kg and was 108 cm tall, with a BMI of 18, which falls within the normal range. His hair was straight, black, and clean. During illness, his oral intake was reduced to half of his usual portion, and his activities during hospitalization required parental assistance. On physical examination, the patient appeared in fair general condition. His mucous membranes were moist, conjunctivae were pink, skin turgor was elastic, bowel sounds were present at 12 times/minute, and all extremities moved actively. Laboratory results revealed leukopenia with a white blood cell count of $3.5 \times 10^3/\mu\text{L}$ and thrombocytopenia with a platelet count of $100 \times 10^3/\mu\text{L}$. The medical diagnosis was typhoid fever, and the nursing diagnosis was hyperthermia. In addition to collaborative pharmacological therapy with paracetamol and ceftriaxone injections, the patient received aloe vera compress therapy once daily for three consecutive days. The compress was prepared by peeling the aloe vera skin, rinsing the gel under running water, and applying it to the axilla for 5 minutes.

Discussion

Typhoid fever is an acute infectious disease of the small intestine caused by *Salmonella Typhi*, which enters the human body through contaminated food and water (Boakye Okyere et al., 2025; Kuehn et al., 2025). In children, clinical manifestations are generally milder than in adults. During the first week of illness, children typically present with a fever that rises gradually, particularly in the afternoon and evening. This is often accompanied by anorexia, nausea, vomiting, dizziness, and abdominal discomfort (Shafqat et al., 2025; Afsar et al., 2025). These symptoms result from the infectious process initiated by *Salmonella Typhi* and are consistent with the clinical complaints observed in this patient, who was suspected of having typhoid fever (Buzilă et al., 2025). Based on the assessment data, the priority nursing diagnosis established was Hyperthermia (D.0130) related to the disease process, as evidenced by an elevated body temperature of 38°C, leukocytes of $3.5 \times 10^3/\mu\text{L}$, platelets of $100 \times 10^3/\mu\text{L}$, a pulse rate of 88 beats/minute, and a respiratory rate of 20 breaths/minute. The nursing intervention was planned for 3×24 hours with the expected outcome of improved thermoregulation (L.14134), specifically the return of body temperature to the normal range. The second nursing diagnosis was Nausea (D.0076) related to gastric distension, as evidenced by the patient's complaints of nausea and vomiting. The expected outcome was decreased nausea (L.08065), with the outcome criterion being a reduction in the sensation of vomiting.

The nursing intervention for hyperthermia included hyperthermia management (I.15506), which involved identifying the cause of hyperthermia, monitoring body temperature, providing a cool environment, applying aloe vera compress therapy, and collaborating in the administration of paracetamol injection. On Tuesday, December 10, 2024, at 4:00 PM, aloe vera compresses were applied to the patient's axilla for 5 minutes for the first time. This intervention had not previously been implemented for patients with hyperthermia at Soerojo Hospital, Magelang. During the procedure, both the patient and family were cooperative and able to perform the technique independently. After 5 minutes of aloe vera compress application, the patient's body temperature decreased from 38°C to 37.8°C, reflecting a reduction of 0.2°C. The intervention was continued for three consecutive days until December 12, 2024. By Thursday, December 12, 2024, at 7:00 PM, the patient's body temperature had stabilized at 36.8°C. This decrease is likely due to the conduction process facilitated by the aloe vera compress, in which heat is transferred from the patient's body to

the aloe vera. Conduction occurs between the cooler aloe vera and surrounding tissues, including superficial blood vessels, thereby reducing local temperature. As the cooled blood circulates to other parts of the body, the conduction process continues, resulting in a systemic decrease in body temperature. The reduction in body temperature may also be associated with the properties of aloe vera, which has been reported to penetrate pores and cells up to five times faster than water, enhancing its cooling effect; however, this mechanism requires further scientific validation. Throughout the three-day hospitalization from December 10 to December 12, 2024, the patient received collaborative therapy consisting of paracetamol 500 mg injections, ceftriaxone 1 g injections, and non-pharmacological aloe vera compress therapy. The patient's condition showed progressive improvement during this period.

On assessment dated December 12, 2024, the patient reported that he no longer felt feverish. From the first to the third day of intervention, his body temperature gradually decreased: on Tuesday, December 10, 2024, it was 38°C; on Wednesday, December 11, 2024, it was 37.3°C; and on Thursday, December 12, 2024, it had normalized to 36.8°C. The patient was discharged the following day. The combination of pharmacological therapy with paracetamol 500 mg injections and non-pharmacological therapy using aloe vera compresses effectively addressed hyperthermia in this child with typhoid fever. In this case study, the intervention resulted in a total body temperature reduction of 1.2°C over three consecutive days. These findings are consistent with previous studies indicating that aloe vera compresses can significantly influence body temperature changes in children (Setiasih et al., 2025; Saputra et al., 2025; Pratiwi & Indrawati, 2025). In this study, compresses were applied for 5 minutes per session in conjunction with pharmacological treatment.

Conclusion

Aloe vera compresses facilitate heat transfer through conduction, whereby heat from the human body is absorbed by the aloe vera. In this study, we observed a consistent decrease in body temperature following aloe vera compress therapy in patient An. I over three consecutive days, with a reduction of 0.2°C recorded after every 5 minutes of therapy. This decrease in body temperature may be attributed to the unique properties of aloe vera, which is reported to penetrate pores and cells up to five times faster than water, thereby enhancing its cooling effect. However, this claim warrants further scientific validation. For future studies, it is recommended to conduct randomized controlled trials with larger sample sizes to confirm the efficacy of aloe vera compresses in managing hyperthermia. Additionally, future research should compare aloe vera with other non-pharmacological interventions, investigate optimal application duration and frequency, and explore the physiological mechanisms underlying its cooling effect through laboratory analysis.

References

- Afsar, N. S., Marisa, S. F., Mohona, S. Q., Ashraf, S., Rahman, M., & Sami, C. A. (2025). A case of typhoid fever with neurological presentation. *IDCases*, 40, e02203. <https://doi.org/10.1016/j.idcr.2025.e02203>
- Ashton, P. M., Mageiros, L., Meiring, J. E., Chunga-Chirambo, A., Khanam, F., Dongol, S., Banda, H., Karkey, A., Preciado-Llanes, L., Thomaides-Brears, H., Gibani, M., Rajib, N. H., Rahman, N., Biswas, P. K., Bhuiyan, M. A. I., Kay, S., Auger, K., Seret, O., Thomson, N. R., Pollard, A. J., ... STRATAA Study Group (2025). Interplay between the gut microbiome and typhoid fever: insights from endemic countries and a controlled human infection model. *Microbiome*, 13(1), 168. <https://doi.org/10.1186/s40168-025-02125-7>
- Boakye Okyere, P., Twumasi-Ankrah, S., Newton, S., Nkansah Darko, S., Owusu Ansah, M., Darko, E., Agyapong, F., Jeon, H. J., Adu-Sarkodie, Y., Marks, F., & Owusu-Dabo, E. (2025). Risk Factors for Typhoid Fever: Systematic Review. *JMIR public health and surveillance*, 11, e67544. <https://doi.org/10.2196/67544>
- Buzilă, E. R., Dorneanu, O. S., Trofin, F., Sima, C. M., & Iancu, L. S. (2025). Assessing Salmonella Typhi Pathogenicity and Prevention: The Crucial Role of Vaccination in Combating Typhoid Fever. *International journal of molecular sciences*, 26(9), 3981. <https://doi.org/10.3390/ijms26093981>
- de'Angelis, G. L., Vincenzi, F., Fornaroli, F., Buonvicino, D., & Chiarugi, A. (2025). New perspectives for optimizing fever and pain management in pediatrics: evidence supporting therapeutic awareness in clinical practice. *Italian journal of pediatrics*, 51(1), 255. <https://doi.org/10.1186/s13052-025-02107-3>
- Hamman, J. H. (2008). Composition and applications of Aloe vera leaf gel. *Molecules (Basel, Switzerland)*, 13(8), 1599–1616. <https://doi.org/10.3390/molecules13081599>
- Kuehn, R., Rahden, P., Hussain, H. S., Karkey, A., Qamar, F. N., Rupali, P., & Parry, C. M. (2025). Enteric (typhoid and paratyphoid) fever. *Lancet (London, England)*, 406(10509), 1283–1294. [https://doi.org/10.1016/S0140-6736\(25\)01335-2](https://doi.org/10.1016/S0140-6736(25)01335-2)
- Nardone, R., Brigo, F., & Trinka, E. (2016). Acute Symptomatic Seizures Caused by Electrolyte Disturbances. *Journal of clinical neurology (Seoul, Korea)*, 12(1), 21–33. <https://doi.org/10.3988/jcn.2016.12.1.21>
- Novidha, D. H., & Zubaidah, Z. (2023). Effects of Aloe Vera Poultice on Babies' Body Temperature Decrease after DPT-HB Vaccination. *Faletehan Health Journal*, 10(03), 270–277. <https://doi.org/10.33746/fhj.v10i03.582>
- Pratiwi, A., & Indrawati, I. (2025). Application of Aloevera Compress to Reduce Fever in Children. *Indonesian Journal of Global Health Research*, 7(3), 127-134. <https://doi.org/10.37287/ijghr.v7i3.6004>

- Saputra, G. A., Firmansyah, A., & Sandriani, S. (2025). Case Study on the Application of Aloe Vera Compress Technique to Reduce Body Temperature in Children with Hyperthermia in Rajadesa. *International Journal of Holistic and Spiritual Care*, 1(1), 11–19. <https://doi.org/10.56359/ijhsc.v1i1.566>
- Setiasih, S., Setiasih, S., & Yuliani, D. R. (2025). The Effect Of Aloe Vera Compress On Reducing Body Temperature In Children With Fever After Pentavalent Dpt Immunization. *JKM (Jurnal Kebidanan Malahayati)*, 11(10). <https://doi.org/10.33024/jkm.v11i10.22951>
- Shafqat, Z., Kanwal, S., Yousaf, A., Shafqat, A., Kamal, Z., Zahid, M. I., & Shabir, S. (2025). Clinical Spectrum and Outcomes of Typhoid Fever: A Retrospective Study. *Cureus*, 17(10), e94621. <https://doi.org/10.7759/cureus.94621>
- Vitria, & Sulistiawan, A. (2024). Application of Aloe Vera Compress to Reduce Body Temperature of Post-Op Patients Submandibular Abscess Drainage Incision with Hyperthermia Nursing Problems in the Children's Ward of Raden Mattaher Hospital, Jambi Province. *Jurnal Pinang Masak*, 3(1). <https://doi.org/10.22437/jpima.v3i1.36317>
- Zhao, Y., Hu, J., Gu, Y., Wan, Y., Liu, F., Ye, C., & Zhang, X. (2021). Development and Implementation of a Pediatric Nursing-Clinical Decision Support System for Hyperthermia: A Pre- and Post-test. *Computers, informatics, nursing : CIN*, 40(2), 131–137. <https://doi.org/10.1097/CIN.0000000000000812>