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Water Tepid Sponge On Hyperthermia In Children With Feverish Seizures: A Case Report

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ABSTRACT

Hyperthermia is a condition of body temperature above normal as a result of an increase in the temperature regulating center in the hypothalamus. Hyperthermia (fever) can cause complications such as febrile seizures and decreased consciousness. Water tepid sponge is one of the treatments for hyperthermia (fever) through non-pharmacological measures. Water tepid sponge is a warm compress technique that combines block compression techniques on the superficial blood vessels using a wiping technique. This study aims to describe the application of water tepid sponge in the management of hyperthermia in children with febrile seizures. This type of research is a case study on one patient in the Pediatric Ward of Aloei Saboe Regional Hospital, Gorontalo City, data collection techniques through interviews, observation, physical examination and documentation. The implementation of water tepid sponge was carried out for 3 days in 15-20 minutes. Research Results: body temperature decreased from 38.0°C to 36.8°C after administering water tepid sponge for 15-20 minutes in 3 days. The conclusion of this study is that water tepid sponges have the potential to be a complementary non-pharmacological intervention in helping to reduce body temperature in children with hyperthermia.

1. INTRODUCTION

School-age children are those between the ages of 6 and 12 who are undergoing primary education, with school serving as a central experience in their lives. Factors such as crowded school environments, suboptimal hygiene, and lifestyle habits that are not yet fully healthy can trigger various illnesses among school-age children (Azzahra & Anggraini, 2022). Common ailments affecting these children include upper respiratory tract infections (URTIs), influenza, diarrhea, typhoid fever, dengue hemorrhagic fever, and skin diseases. A frequent common symptom associated with these conditions is hyperthermia (fever) or an elevation in body temperature (Satria et al., 2022). Hyperthermia (fever) can lead to complications such as febrile seizures and altered consciousness (Sudirman et al., 2023). A febrile seizure is a disorder resulting from a rise in body temperature above 38°C due to an extracranial process. These seizures are characterized by impaired consciousness, upward rolling of the eyes, clenched teeth, and foaming at the mouth. Severe febrile seizures may be associated with epilepsy and can lead to death (Siregar et al., 2022).

According to World Health Organization (WHO) data, the global prevalence of children experiencing febrile seizures exceeds 21.65 million, with over 216,000 child deaths attributed to the condition (WHO, 2023). In Indonesia, the incidence of febrile seizures reached 14,252 cases in 2021, with 90% of these cases caused by respiratory tract infections; a rate of 22.2% was recorded in 2020. Approximately 25–50% of children who experience a febrile seizure will have recurrent episodes (Ansari et al., 2022). Data regarding pediatric patients with febrile seizures at the pediatric ward of Prof. Dr. H. Aloei Saboe Regional General Hospital (RSUD) in Gorontalo City shows a total of 74 patients over the last four months: 20 patients in October 2025, 22 in November 2025, 21 in December 2025, and 11 in January 2026. Based on observations made by the researcher while on duty at the pediatric ward of Prof. Dr. H. Aloei Saboe Regional General

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Hospital, Gorontalo City, three out of the 22 patients present on January 13, 2026, were experiencing febrile seizures.

The management of hyperthermia (fever) is divided into two approaches: pharmacological and non-pharmacological. Pharmacological management involves the administration of medication to reduce hyperthermia (fever), commonly known as antipyretics. Non-pharmacological management involves reducing hyperthermia (fever) through physical measures, such as placing the child in a room with good temperature control and ventilation, dressing the child in lightweight, moisture wicking clothing, ensuring adequate hydration, and applying compresses (Faradilla et al., 2020). Applying compresses is a non-pharmacological method for lowering body temperature when a child experiences hyperthermia (fever). Mothers have traditionally relied on cold or ice compresses in such situations, and alcohol compresses have also been used. However, the use of ice compresses is no longer recommended; in reality, they often fail to lower the temperature sometimes even causing it to rise and can trigger crying, shivering, and cyanosis (bluish skin discoloration) in the child. A superior approach is the use of warm water compresses or tepid sponging (Rahmatika et al., 2022).

The water tepid sponge is a warm compress technique that combines the application of compresses over superficial blood vessels with a wiping method. It is a warm compress method capable of lowering body temperature. This procedure enhances the regulation of body heat loss through evaporation and conduction and is typically performed on patients experiencing hyperthermia (Lega et al., 2022). Based on observations made by the researcher while on duty in the pediatric ward of Prof. Dr. H. Aloei Saboe Regional General Hospital (RSUD) in Gorontalo City, the management of febrile patients by ward nurses relies more frequently on pharmacological interventions specifically antipyretics like paracetamol drips. Conversely, the application of nonpharmacological measures, such as warm compresses, has not been optimal; the nurse to patient ratio is disproportionate, making the "water tepid sponge" technique which requires approximately 15–20 minutes to administer seem impractical. Consequently, the researcher selected the water tepid sponge method as the non-pharmacological therapy to be administered to febrile patients in the pediatric ward.

2. METHOD

This study was conducted in the Pediatric Ward of Prof. Dr. H. Aloei Saboe Regional General Hospital, Gorontalo City, from January 14 to 17, 2026. It employed a descriptive case study design, with data collected through interviews, observations, physical examinations, medical record reviews, and body temperature monitoring; the data were subsequently analyzed descriptively based on the nursing care process. The study procedure involved measuring the patient's body temperature using a digital thermometer placed in the axilla five minutes prior to administering a tepid sponge bath. The researcher then prepared the water at a temperature of 35°C–40°C. Subsequently, the researcher applied compresses to specific body areas the forehead, neck, axillae, and inguinal folds for 15–20 minutes, repeating the procedure three times daily. Twenty-five minutes after the tepid sponge bath, the researcher re-measured the patient's body temperature using a digital thermometer placed in the axilla.

3. RESULT AND DISCUSSION

Result

Table 1. Body Temperature Measurement Results Before and After Water Tepid Sponge

Day/ Date	Body Temperature Measurement Results		Duration of Therapy
	Before	After	
Thursday, 15 January 2026	38˚C	37.8˚C	15-20 Minute
	38˚C	37.9˚C	15-20 Minute
	37.9˚C	37.8˚C	15-20 Minute
Friday, 16 January 2026	37.8˚C	37.6˚C	15-20 Minute
	37.7˚C	37.5˚C	15-20 Minute

	37.6˚C	37.4˚C	15-20 Minute
Sunday, 17 January 2026	37.6˚C	37.5˚C	15-20 Minute
	37.4˚C	37˚C	15-20 Minute
	36.9˚C	36.8˚C	15-20 Minute

(Source: Primary Data, 2026)

Based on Table 1, the body temperature of the child, R.R.A. measured using an axillary thermometer dropped from 38°C to 37.8°C on the first day of tepid sponging; on the second day, it fell from 37.8°C to 37.4°C; and on the third day, it decreased from 37.6°C to 36.8°C. Tepid sponging was administered three times daily for a duration of 15–20 minutes.

Discussion

The management of hyperthermia (fever) involves two approaches: pharmacological and non-pharmacological interventions. Pharmacological intervention entails the administration of fever-reducing medications, commonly known as antipyretics. However, the widespread use of synthetic fever-reducing drugs carries significant potential side effects, such as gastrointestinal disturbances, gastrointestinal bleeding, uric acid retention, and liver or kidney damage. Therefore, non-pharmacological measures should be actively promoted to enhance public knowledge regarding traditional treatment methods, such as the use of compresses (Fitri et al., 2020).

Applying compresses is a non-pharmacological method for lowering body temperature when a child experiences hyperthermia (fever). Mothers have traditionally used cold compresses or ice when their children have a fever alcohol compresses have also been used for this purpose. However, the use of ice compresses is no longer recommended, as it often fails to lower the temperature or may even cause it to rise and can lead to crying, shivering, and cyanosis (bluish skin). A superior method is the use of warm water compresses or tepid sponging (Rahmatika et al., 2022). The water tepid sponge method combines warm compresses specifically applying compresses over major blood vessels with a full body sponging technique. Its mechanism of action integrates two processes: conduction and evaporation. This method stimulates the hypothalamus to induce sweating and peripheral vasodilation, facilitating heat transfer via conduction, while evaporation allows heat to dissipate as sweat (Rahman et al., 2022).

According to Rahmatika et al. (2022), a water tepid sponge bath can reduce body heat through evaporation and conduction in children suffering from hyperthermia. Heat transfer via conduction is initiated by applying a warm, wet washcloth to the body, while the evaporation process results from the wiping action, which stimulates sweating. Based on the available literature, compresses using warm water are employed to facilitate evaporation from the bodies of children suffering from hyperthermia (Hadiyah et al., 2024). Similarly, in a study conducted by Manalu et al. (2023), compresses were applied using warm water moistened washcloths to five specific areas the neck, axillae, groin, abdomen, and chest for 15 minutes once daily over a three day period this resulted in a temperature drop for Child A from 38°C to 36.7°C, and for Child D from 39°C to 37°C.

In this case study, researchers measured the patients' body temperature using an axillary thermometer five minutes prior to the administration of a water tepid sponge; compresses were then applied for 15–20 minutes to the forehead, neck, axillae, and inguinal areas, followed by a repeat measurement 25 minutes after the procedure began. Following the water tepid sponge application, a temperature reduction of 0.2°C to 1.0°C was observed. This aligns with the study by Albayani et al. (2022), in which compresses were applied for 15–20 minutes to lower body temperature to the desired target. In that study, Client 1 had an initial temperature of 38.5°C, a water tepid sponge was administered once daily for 15–20 minutes over a three-day period, resulting in an improvement to 37.0°C. Similarly, Client 2 had an initial temperature of 38.8°C, a water tepid sponge was administered once daily for 15–20 minutes over three days, resulting in an improvement to 37.0°C.

Water tepid sponge helps lower body temperature objectively, thereby directly contributing to the achievement of nursing care goals: reducing body heat and preventing further adverse effects associated with high fever. The reduction in body temperature achieved through tepid sponging also improves the patient's physiological responses such as alleviating tachycardia and stabilizing respiration while providing subjective relief, making the patient feel more comfortable and less restless (Stefanus et al., 2022). In this case study, the patient received antipyretic therapy (paracetamol), fluid therapy, bed rest, and adequate hydration, wore lightweight clothing; and stayed in a cooler environment due to air conditioning. Paracetamol works by inhibiting prostaglandin synthesis in the hypothalamic thermoregulatory center, thereby helping to lower the body's temperature set point, while fluid therapy and adequate hydration maintain fluid balance and support heat loss via evaporation. Additionally, lightweight clothing, sufficient rest, and a comfortable environment facilitate the body's heat dissipation process. Therefore, the observed temperature reduction likely resulted from the synergistic effect of these various interventions, making it impossible to isolate the effect of the water tepid sponge alone.

Water tepid sponge is an intervention that is relatively easy to perform, requires no specialized equipment, is low cost, and is safe when carried out according to procedure. Furthermore, this technique can be taught to parents or family members as an initial measure to help lower a child's body temperature while medical assistance is being sought. Proper education regarding the procedure, the use of lukewarm water, and monitoring the child's condition can enhance family involvement in care and help prevent complications associated with hyperthermia (Faradilla et al., 2020). Based on the findings of this case supported by existing theory and prior research tepid sponging can be considered a beneficial adjunctive therapy for accelerating the reduction of body temperature in children with infection-induced hyperthermia. However, this intervention is not intended to replace pharmacological therapy; antipyretics remain a crucial component of fever management. Therefore, tepid sponging should be implemented in conjunction with other medical and nursing interventions to achieve optimal outcomes in the management of hyperthermia.

This case study involved only a single patient without a comparison group; therefore, the findings cannot be generalized to the entire population of children with febrile seizures. Furthermore, the concurrent administration of various other interventions made it impossible to isolate and measure the specific effect of the water tepid sponge on reducing body temperature. Consequently, research involving larger sample sizes, a comparative design, and control for confounding factors is required to obtain stronger scientific evidence regarding the effectiveness of this intervention.

4. CONCLUSION

Following the administration of water tepid sponge therapy over a 72-hour period, body temperature decreased from 38°C to 36.8°C, indicating that tepid water sponging has the potential to serve as an adjunctive non-pharmacological intervention for lowering body temperature in children with hyperthermia.

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