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Application of Warm Compresses in Patients with Dengue Hemorrhagic Fever (DHF) with Hyperthermia in Room Cendana 3, Kardinah Regional General Hospital, Tegal City

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ABSTRACT

Background & Objective: Dengue Hemorrhagic Fever (DHF), medically known as Dengue Hemorrhagic Fever/DHF, is an infectious disease caused by the dengue virus and transmitted through the bite of the Aedes aegypti mosquito. It is characterized by sudden fever lasting 2 to 7 days without a clear cause, weakness/fatigue, restlessness, abdominal pain, accompanied by skin bleeding manifestations such as petechiae, ecchymoses, or rashes (petechiae). A warm compress is a procedure using a cloth, washcloth, or towel soaked in warm water, then applied to specific body parts to provide comfort and lower body temperature. The purpose of this study is to describe cases of Dengue Hemorrhagic Fever in detail and depth. **Method:** This study was conducted using a qualitative descriptive method with a case study approach. The study was conducted at Kardinah General Hospital in Tegal City on patients with Dengue Hemorrhagic Fever/DHF on December 10, 2024. **Result:** The application of warm compresses as a non-pharmacological therapy was effective in reducing the body temperature of patients. Warm compresses were proven to have a positive effect in managing fever caused by DHF, resulting in a decrease in patients' fever after treatment was administered. **Conclusion:** It is recommended that research in the field of nursing, particularly pediatric nursing for patients with DHF, be further enhanced to improve the quality of care and provide more specific and targeted nursing interventions.

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Introduction

Dengue Hemorrhagic Fever (DHF) is a contagious disease caused by the dengue virus and transmitted through the bite of the Aedes aegypti mosquito. It is characterized by a sudden fever lasting 2 to 7 days with no apparent cause, weakness/fatigue, restlessness, abdominal pain, accompanied by skin bleeding manifestations such as petechiae, ecchymoses, or rashes (petechiae). Occasionally, nosebleeds, bloody stools, vomiting blood, impaired consciousness, or shock may occur (Ministry of Health of the Republic of Indonesia, 2011).

Dengue fever is a tropical disease that remains an international health issue to this day, having persisted for several decades. Dengue fever infections are a group of human diseases caused by the dengue virus (Ministry of Health of the Republic of Indonesia, 2020).

Hemorrhagic fever is an infectious disease caused by the dengue virus and belongs to the Arbovirus group, transmitted by the Aedes aegypti and Aedes albopictus mosquitoes, with rapid spread (Faisal, 2024).

Complications of dengue fever that may occur include hyperthermia, fluid deficiency, and the risk of Dengue Shock Syndrome (DSS), which includes vascular fragility, increased plasma leakage/heme concentration, and fluid loss due to increased capillary permeability, which can progress to hypovolemic shock, and an increased risk of multi-organ failure (Pang et al., 2017). Approximately 1 in 20 patients with dengue virus disease develop severe, life-threatening illness known as severe dengue fever (CDC, 2021). Therefore, it is important for parents, especially mothers, to be vigilant about the fever symptoms experienced by their children, especially if these symptoms indicate bleeding and shock due to plasma leakage, which can lead to DSS.

About half of the world's population is now at risk of dengue hemorrhagic fever (DHF), with an estimated 100–400 million infections occurring each year. Dengue is found in tropical and subtropical climates worldwide, primarily in urban and semi-urban areas. While many infections are asymptomatic or only cause mild illness, they can sometimes lead to more severe cases and even death (WHO, 2023).

The World Health Organization (WHO) estimates that 2.5 billion people worldwide are at risk of dengue fever, particularly those living in urban areas in tropical and subtropical countries. It is also estimated that there are 390 million dengue infections worldwide each year. Among the approximately 2.5 billion people at risk worldwide, around 1.3 billion, or 52% of the population, are in Southeast Asia. It is estimated that approximately 2.9 million cases of dengue fever with 5,906 deaths occur in Southeast Asia each year.

The Ministry of Health reported that in Indonesia in 2023, there were 68,407 cases of Dengue Hemorrhagic Fever (DHF) with 493 deaths due to dengue fever, and in 2022, the majority of cases were children aged 0-14 years (Ministry of Health of the Republic of Indonesia, 2023). According to data from the Ministry of Health in 2020, the number of dengue fever cases in Indonesia reached 71,700 cases by July. The provinces with the highest number of cases were West Java with 10,772 cases, Bali with 8,930 cases, East Java with 5,948 cases, NTT with 5,539 cases, Lampung with 5,135 cases, Jakarta with 4,227 cases, West Nusa Tenggara with 3,796 cases, Central Java with 2,846 cases, Yogyakarta with 2,720 cases, and Riau with 2,255 cases. In 2019, the number of cases was higher at 112,954. However, the number of cases and deaths this

year remains low compared to 2019. Similarly, the number of deaths this year stands at 459, while in 2019 it was 751 (Ministry of Health, 2020).

Based on the Central Java Provincial Health Profile, it was reported that the incidence rate of dengue fever in 2022 was 35.1 per 100,000 population, indicating that the dengue fever incidence rate in Central Java Province was lower than the national target (<51/100,000 population) and the Renstra target (<46/100,000). The Case Fatality Rate (CFR) in Central Java in 2022 reached 2% (>1%), which is higher than the national target. The city of Tegal has had a high incidence of dengue fever for three consecutive years, with data from the Tegal City Health Department showing an Incidence Rate (IR) in 2022 was 38.28 per 100,000 population, and the highest Case Fatality Rate (CFR) in Central Java Province was 7.5%, with Panggung Village being the village with the highest incidence and mortality rates due to DBD in Tegal City.

Based on research conducted by Anisa (2019) in Nopianti (2023) on the care of children with dengue fever using warm water compresses, an average temperature reduction of 0.4°C per day was observed over three days, indicating a decrease in temperature after applying warm water compresses in line with the target, and it can be concluded that warm water compresses are effective in reducing the body temperature of patients. Hyperthermia is a particular concern for nurses, as untreated fever can lead to brain damage, hyperpyrexia causing shock, epilepsy, mental retardation, or learning disabilities. Immediate action must be taken to help lower body temperature, one of which is through warm compresses. Applying warm water compresses dilates blood vessels and improves blood flow, allowing heat to be dissipated more quickly into the air.

This study aligns with the theory proposed by Lee (2019), who states that applying warm compresses to the body sends signals to the hypothalamus via the spinal cord. When heat-sensitive receptors in the hypothalamus are stimulated, the effector system releases signals that initiate sweating and peripheral vasodilation. Changes in blood vessel size are regulated by the vasomotor center in the medulla oblongata of the brainstem, under the influence of the anterior hypothalamus, leading to vasodilation. This vasodilation increases the release/loss of energy/heat through the skin (sweating), resulting in a decrease in body temperature, bringing it back to normal levels.

Objective

Based on the above description, the researcher is interested in compiling a final project report on "The Application of Warm Compresses on Patients with Dengue Hemorrhagic Fever (DHF) with Hyperthermia in Room Cendana 3 of Kardinah Regional General Hospital, Tegal City."

Method

This study was conducted using a qualitative descriptive method with a case study approach. The research was carried out at Kardinah General Hospital in Tegal City on patients diagnosed with Dengue Hemorrhagic Fever/DBD on December 10, 2024, with a focus on nursing care. Data collection was conducted through medical history, physical examination, and direct observation. The data obtained were then analyzed to describe the application of warm compress interventions in reducing body temperature in patients experiencing hyperthermia due to DHF. The validity of the data in this case study includes Credibility, Dependability, Confirmability, and

Transferability. The data analysis conducted in this study involved analyzing all data findings at each stage of the nursing process by comparing existing concepts and theories in nursing regarding patients with Dengue Hemorrhagic Fever/DBD. The data obtained from the nursing care process, starting from assessment, diagnosis, planning actions, implementing actions, to evaluating the results of actions, were then described and narrated in accordance with previous theories.

Results

TABLE 1. Results of Body Temperature Reduction in Patients After Warm Compresses

Day of Treatment	Initial Body Temperature (°C)	Body Temperature After Compress (°C)	Change
Day 1	38,6	38,2	-0,4
Day 2	38,2	37,6	-0,6
Day 3	37,6	37,2	-0,4

Discussion

Based on the research results shown in Table 1, this study aims to evaluate the effectiveness of applying warm compresses to pediatric patients with Dengue Hemorrhagic Fever (DHF) and hyperthermia in Room Cendana 3 of Kardinah General Hospital in Tegal City. The research results indicate that after three days of applying warm compresses, the patients' body temperature decreased significantly from 38.6°C to 37.2°C. Warm compresses were applied for 10–15 minutes on the forehead, armpits, and groin area twice daily. In addition to the decrease in temperature, patients also showed clinical improvement, such as reduced irritability and increased appetite. Supporting examinations also confirmed the improvement in patients' conditions, such as increased platelet levels and stabilized hematocrit, indicating no further plasma leakage.

Findings from two journal articles concluded that warm compresses should be administered to patients with Dengue Hemorrhagic Fever and hyperthermia. This is because the main issue that must be addressed immediately in cases of Dengue Hemorrhagic Fever or DBD is hyperthermia. First, the researchers identified the patient's identity by stating their name and age, then explained the purpose and steps of the procedure. After that, the nurse monitored the patient's body temperature by checking it with a thermometer placed in the axillary fold. If the patient's body temperature increased, the warm compress treatment would be administered. Next, prepare tools such as clean gloves, cloth, washcloth, or towel, and warm water. Then perform hand hygiene or wash hands in six steps. After that, put on clean gloves and begin the warm compress treatment by applying warm water compresses for 10–15 minutes using a cloth, washcloth, or towel soaked in warm water. then apply it to the patient's forehead to provide comfort and lower body temperature. After that, explain the signs and symptoms of Dengue Hemorrhagic Fever, then explain that if the child has a fever, actions such as applying a warm compress, providing a comfortable environment, accompanying the child during the fever to make them feel safe and comfortable, giving more fluids than usual, and limiting strenuous physical activity should be taken. The application of warm compresses in nursing interventions for DHF patients has a positive effect in reducing body temperature caused by fever, making it easier for the patient to rest and feel more comfortable. A decrease in body temperature prevents the patient from experiencing shock, as there is no plasma leakage in the patient's body caused by the dengue virus.

Next, tidy up the patient and the equipment used, then remove gloves and wash hands. The care is performed for three consecutive days, at least twice a day, for 10–15 minutes to ensure effective results, as there is an improvement in body temperature.

The warm compress treatment for hyperthermic patients, conducted by the researcher, involves applying warm water compresses for 10–15 minutes. The equipment used for the warm compress treatment includes cloth, washcloths, or towels soaked in warm water, which are then applied to the patient's forehead. The treatment performed by the researcher was documented. Based on the results of the warm compress treatment for DHF patients with hyperthermia over three consecutive days, the researcher concluded that the patient's body temperature gradually decreased from an initial increase to a decrease. Therefore, the researchers concluded that the application of warm compresses on patients with Dengue Hemorrhagic Fever (DHF) or DBD with hyperthermia is effective for patients experiencing hyperthermia or elevated body temperature.

The argument the researchers wish to convey in this study is that the application of warm compresses should be performed for more than three days to achieve more optimal results.

Conclusion

Based on the results of a case study conducted on December 10–12, 2024, on patients with Dengue Hemorrhagic Fever (DHF) and hyperthermia in Room Cendana 3 of Kardinah General Hospital in Tegal City, it can be concluded that the application of warm compresses as a non-pharmacological therapy is effective in reducing patients' body temperature. Warm compresses have been proven to have a positive effect in managing fever caused by DHF, resulting in a decrease in patients' fever after treatment. Therefore, it is recommended that research in the field of nursing, particularly pediatric nursing for DHF patients, be further enhanced to improve the quality of care and provide more specific and targeted nursing interventions. Additionally, hospitals are encouraged to improve the quality of nursing care by focusing on effective interventions to address nursing issues in DHF patients. For future research, it is recommended to conduct a more in-depth and careful study on nursing care, particularly in determining the most appropriate interventions based on the patient's condition, to provide optimal solutions in managing DHF.

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