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Nursing Care for Hyperthermia in Patient Nn. Y.T with Tropical Malaria in the Internal Ward Class III at Serui Regional General Hospital

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Abstract. *Malaria is a mosquito-borne disease caused by obligate intracellular protozoa of the genus Plasmodium. It can affect individuals of all ages, particularly those living in areas suitable for mosquito breeding. This study employed a case study design involving one adult patient diagnosed with tropical malaria and experiencing hyperthermia. Data were collected through interviews, observation, and documentation, then analyzed using a systematic process of data collection, data reduction, data presentation, and conclusion drawing. Nursing care focused on managing hyperthermia through the application of warm compresses on affected areas, including the forehead, axilla, and groin. Following the intervention, the patient's body temperature decreased from 38.2°C to within the normal range. The intervention also contributed to patient comfort, reduced chills, and improved peripheral circulation. These findings indicate that warm compresses are an effective non-pharmacological nursing intervention for reducing elevated body temperature in malaria patients, supporting thermoregulation, enhancing patient comfort, and complementing medical treatment. Implementing timely and appropriate nursing interventions can play a critical role in managing hyperthermia, minimizing complications, and promoting faster recovery in patients with malaria.*

Keywords: *warm compress, malaria, hyperthermia, nursing care*

1. INTRODUCTION

Malaria is one of the leading causes of mortality and infection worldwide. It remains a significant public health problem in Indonesia and can be found in various regions. Many factors influence the risk of malaria, particularly the *Anopheles* mosquito species, human behavior, and environmental conditions. The risk of malaria increases when there are changes in these factors (Utami, 2022). Malaria parasites are blood protozoa belonging to the genus *Plasmodium*, transmitted through the bite of female *Anopheles* mosquitoes (Suciptio, 2015). Five *Plasmodium* species cause malaria in humans: *Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium ovale*, *Plasmodium malariae*, and *Plasmodium knowlesi*. However, reports on *P. knowlesi* in Indonesia are still limited (Suparyanto & Rosad, 2018).

Annually, more than 200 million malaria cases are transmitted by *Anopheles* mosquitoes, with the mortality rate decreasing from 759,000 in 2004 to 409,000 in 2019, representing a 46.1% reduction (WHO, 2021). In Indonesia, the Annual Parasite Incidence (API) of malaria in 2019 increased compared to 2018, from 0.84 to 0.93 per 1,000 population. While 300 districts or cities have achieved malaria elimination at the district level, only three provinces have achieved complete elimination. In Papua Province in 2019, 588,981 suspected cases were

detected in 29 districts and cities, with 27,579 confirmed positive by Rapid Diagnostic Test (RDT). Papua remains the province with the highest malaria prevalence, highlighting the need for accelerated elimination efforts supported by competent laboratory services (Tulak, 2021). By September 2023, malaria cases in Yapen Islands Regency totaled 12,562, showing a decrease of 7,642 cases compared to 2022 (Dinas Kesehatan Kabupaten Kepulauan Yapen, 2023).

Malaria presents with fever and chills a few days after infection, and although easily transmitted by mosquito bites, it can be fully cured if properly treated. If untreated, it may cause severe anemia, kidney failure, and even death (Pittara, 2022). Hyperthermia, or fever, is an elevation of body temperature caused by hormonal, metabolic, pharmacological, or environmental factors. It is defined as axillary temperature >37.5°C or core temperature >38.0°C (Lestari et al., 2019). Symptoms vary, including chills, fatigue, and warm skin, while some patients may also experience loss of appetite, redness of the skin, and lethargy. Hyperthermia in this patient is likely due to systemic infection and requires prompt management to prevent complications (Lestari et al., 2019).

One non-pharmacological intervention for hyperthermia is warm sponge compresses, applied to key areas such as the neck, axilla, and groin. This technique promotes heat loss through evaporation, effectively reducing body temperature in patients with hyperthermia (Mersi et al., 2019). Correct application of warm and cold compresses is essential to avoid worsening the condition (Sultoni, 2018). Based on this background, the researcher is interested in conducting a study entitled: “Nursing Care for Hyperthermia in Patient Nn. Y.T with Tropical Malaria in Internal Ward Class III at Serui Regional General Hospital.”

2. METHODE

This study employed a *descriptive case study* design aimed at providing an in-depth description of nursing care for a patient experiencing hyperthermia due to tropical malaria. The case study focused on a patient, Ms. Y.T., who was treated in the Internal Ward Class III of Serui Regional General Hospital, Yapen Islands Regency, Papua, from February 11–12, 2025. The research approach was based on the nursing process, which includes assessment, diagnosis, intervention, implementation, and evaluation. Data were collected from the patient, family members, and medical records using a standardized medical-surgical nursing assessment instrument provided by the educational institution. Data collection methods included biophysiological measurements (vital signs and *head-to-toe* examination), direct observation of the patient’s condition, and semi-structured interviews with the patient and family to obtain

information regarding personal identity, chief complaints, and medical history. Nursing diagnoses were determined using the *Indonesian Nursing Diagnosis Standards (SDKI)*, while the nursing care plan was developed based on the *Indonesian Nursing Intervention Standards (SIKI)*. The implementation outcomes were evaluated and documented using the SOAP (Subjective, Objective, Assessment, Plan) model. Data were analyzed descriptively through stages of data reduction, presentation, and conclusion drawing, and were then discussed in relation to existing nursing theories and literature. All stages of the research adhered to ethical considerations, including obtaining approval from the hospital and informed consent from the patient, as well as ensuring the confidentiality of the participant's identity.

3. RESULT AND DISCUSSION

a. Result

1) Nursing Assesment

The client, Ms. Y.T., is a 21-year-old unmarried female, a Toraja ethnic group member, and a Christian Protestant by religion. She is a college student residing on Gajah Mada Street and was admitted to the Internal Medicine Ward Class I & II of Serui Regional General Hospital (RSUD Serui) with medical record number 083159. The patient was admitted on February 9, 2025, with a medical diagnosis of *Tropical Malaria*, and data collection was conducted on February 10, 2025. The patient was referred from the Emergency Department and arrived using a wheelchair.

Upon admission, the patient complained of fever accompanied by chills and headache, which had persisted for approximately two days. Additional complaints included epigastric pain, nausea, vomiting, dizziness, and loss of appetite. The general condition appeared weak, but the patient was *compos mentis* with a body temperature of 38.8°C. The patient reported no history of hospitalization, surgery, or chronic medication. Her pre-illness body weight was 49 kg.

Vital signs examination revealed a blood pressure of 106/68 mmHg, pulse rate of 70 beats per minute, respiratory rate of 22 breaths per minute, temperature of 38.8°C, and oxygen saturation of 98%. The patient demonstrated awareness and understanding of her illness. Assessment of physiological needs showed normal oxygenation without shortness of breath, capillary refill <2 seconds, and normal S1-S2 heart sounds. Nutritional assessment indicated decreased appetite; the patient consumed half a portion of food once daily and approximately 700 cc of water per

day. The tongue appeared pink and clean, with no thyroid enlargement, but skin turgor was dry, and there was an imbalance between fluid intake and output. The identified nursing problem was *risk for nutritional deficit*.

In terms of elimination, the patient reported urinating two to three times per day and had not defecated since admission, with a normal frequency of one to two times daily before illness. No tenderness was found upon abdominal palpation, and no edema was present. Regarding activity and rest needs, the patient stated that sleep was irregular during illness, with approximately three hours of daytime sleep and eight hours at night. The patient could perform daily activities independently but experienced limited movement due to pain. Physical examination revealed normal muscle tone and strength (5/5).

For neurosensory needs, the patient was *compos mentis* with isochoric pupils and normal reflexes. Psychologically, the patient complained of fever, dizziness, headache, nausea, and decreased appetite, with a reported pain scale of 4 (moderate) that occurred during activity and lasted less than 30 minutes. The patient appeared weak, with a warm body temperature and facial grimacing during pain episodes. No disturbances were found in ego integrity or growth and development; at 21 years of age, the patient's development was appropriate. In terms of personal hygiene, the patient was assisted by her mother to bathe twice daily using a washcloth and appeared clean and well-groomed. The patient understood and followed the instructions provided by doctors and nurses and adhered to oral and injection therapies. Socially, the patient maintained good interaction with family members and healthcare staff.

Based on the overall assessment, the main nursing problem identified was *hyperthermia related to disease process*, as evidenced by a body temperature of 38.8°C, general weakness, and discomfort due to fever

2) Nursing Diagnosis

The nursing diagnosis established for the patient was Hyperthermia (D.0130), defined as an increase in body temperature above the normal range. Subjective data showed that the patient reported feeling feverish accompanied by chills. Objectively, the patient appeared weak and pale, with a compos mentis level of consciousness. The patient was on Ringer Lactate infusion at 20 tpm, and vital signs were as follows: blood pressure 106/68 mmHg, pulse rate 102 beats per minute, respiratory rate 22 breaths per

minute, body temperature 38.8°C, oxygen saturation 98%, and DDR Pf ++. The identified cause of hyperthermia was exposure to a hot environment, consistent with malaria infection.

3) Interventions

Based on the nursing diagnosis and outcome criteria (SLKI: Thermoregulation [L.14134]), the goal was to regulate body temperature within normal limits within 6–8 hours, indicated by decreased chills, pallor, and body temperature. The nursing interventions (SIKI: Hyperthermia Management [I.15506]) included:

a) Observation: Identifying the cause of hyperthermia and monitoring the patient's body temperature regularly.
b) Therapeutic Actions: Administering oral fluids and prescribed antimalarial medications (Paracetamol, DHP, and Primaquine).
c) Education: Advising bed rest to reduce metabolic demands and teaching the patient how to perform a warm compress at 40°C using a clean cloth or towel applied for 15–20 minutes on targeted areas.
d) Collaboration: Collaborating with the medical team for intravenous administration of fluids and electrolytes (Ringer Lactate 20 tpm).

4) Implementation

On the first day (Tuesday, February 11, 2025), nursing actions were implemented at 08:00–08:25. The identified cause of hyperthermia was environmental exposure, and the patient's body temperature was 38.8°C. The nurse provided oral fluids and medication, encouraged rest, and initiated warm compress education. The infusion of Ringer Lactate was maintained at 20 tpm.

5) Evaluation

At 14:00, evaluation revealed that the patient still reported fever and chills, with a body temperature of 38.8°C. The nursing problem was not yet resolved, and interventions were continued. On the following day (Wednesday, February 12, 2025), the same interventions were implemented between 14:10–14:30. The patient's body temperature decreased to 36.0°C. The patient reported that the fever had subsided, chills and pallor were reduced, and overall condition improved. At 19:00, evaluation indicated that the nursing problem was resolved, and interventions were discontinued. Oral medication therapy was continued to support recovery.

b. Discussion

1) Nursing Assessment

Nursing assessment is a critical initial stage in the nursing process because it serves as the foundation for establishing accurate diagnoses and implementing appropriate interventions. The process is conducted systematically and comprehensively, based on factual data from multiple sources. The accuracy of the assessment directly affects the legitimacy of the diagnosis and the effectiveness of patient care delivery (Olfah & Ghofur, 2016).

In the case of Ms. Y.T., the assessment was conducted on Thursday, February 10, 2025, in the Class III Internal Medicine Ward of RSUD Serui. The 21-year-old patient complained of unstable fever accompanied by chills, consistent with the clinical manifestations of malaria. Fever in malaria results from infection by the *Plasmodium* parasite, which releases endogenous pyrogens such as cytokines and prostaglandin E_2 (PGE_2) during the erythrocytic phase. These substances stimulate the hypothalamus to raise the body's temperature set point, triggering fever (Vera, 2024).

The assessment findings showed the following vital signs: blood pressure 106/68 mmHg, pulse rate 70 beats/minute, temperature 37.5 °C, respiration rate 22 breaths/minute, and oxygen saturation 98%. The patient also experienced nausea and vomiting, which may lead to decreased appetite and a risk of nutritional deficit. Fever increases the body's metabolic demand; therefore, inadequate nutritional intake could worsen the patient's health condition (Nararif & Kusuma, 2015).

It is essential to differentiate between fever and hyperthermia. Hyperthermia refers to an elevation in body temperature not caused by an increased hypothalamic set point but by a failure in thermoregulatory mechanisms, such as excessive heat exposure or drug effects. In malaria, a persistently high temperature can progress to hyperthermia, which requires prompt management, including warm compresses, active cooling, and antipyretic administration (Valente Pires et al., 2023).

Nursing management for patients with malaria-related fever or hyperthermia includes regular temperature monitoring, administration of antipyretics such as paracetamol, and education regarding adequate hydration and nutrition. A study by Chawla et al. (2024) showed that early administration of antipyretics in patients with cerebral malaria reduced the risk of seizures and neurological complications

associated with hyperthermia. Therefore, proactive nursing interventions are crucial in managing the body's response to malaria infection.

Considering the assessment data and current literature, nurses should develop a comprehensive nursing care plan. Interventions should include close monitoring of vital signs, symptomatic treatment for nausea and fever, and patient and family education on dietary habits, hydration, and home temperature monitoring. This approach is expected to accelerate recovery and prevent serious complications

2) Nursing Diagnosis

Nursing assessment serves as a critical foundation for determining nursing diagnoses and implementing effective interventions. In the case of Ms. Y.T., aged 21, the assessment conducted on February 10, 2025, revealed the main complaint of unstable fever with a body temperature of 37.5 °C accompanied by nausea and vomiting. Although not yet clinically categorized as hyperthermia (>38 °C), these findings indicate a high risk of developing the nursing diagnosis of Hyperthermia, particularly in the context of malaria infection.

Hyperthermia is established when the body temperature rises above normal due to a disturbance in hypothalamic thermoregulation, often triggered by systemic infections such as malaria. In malaria, *Plasmodium* parasites induce the release of endogenous pyrogens, prompting the hypothalamus to increase the temperature set point, resulting in fever and chills (McCallum & Higgins, 2024). This process manifests clinically through elevated temperature, increased heart and respiratory rates, and general discomfort.

Identifying hyperthermia in malaria patients is crucial because it signifies not only a symptom but also an immune system response to a severe infection. Without timely management, hyperthermia can lead to complications such as seizures, delirium, severe dehydration, or organ damage. Therefore, periodic temperature assessment and documentation of temperature changes are key indicators in nursing evaluation (NurseStudy, 2024).

According to Talakoro (2024), the primary nursing diagnosis for malaria patients at RSUD Serui is hyperthermia, followed by acute pain as a secondary diagnosis. The priority of care is directed toward hyperthermia management, as it is the patient's main complaint and limits daily functioning. This aligns with the Indonesian Nursing Diagnosis Standards (SDKI), which define hyperthermia as an

increase in body temperature above 38.5 °C due to environmental exposure, infection, or dysfunction in the thermoregulatory system (Windawati & Alfiyanti, 2020).

A precise diagnosis of hyperthermia based on accurate assessment data and evidence-based interventions ensures optimal recovery without further complications. In the case of Ms. Y.T., continuous monitoring and prompt intervention for hyperthermia are essential to achieving recovery from malaria infection.

3) Nursing Interventions

The nursing diagnosis of hyperthermia was determined based on assessment findings showing a body temperature of 38.8 °C accompanied by nausea and vomiting in Ms. Y.T., diagnosed with malaria. Hyperthermia in this context is a physiological response to *Plasmodium* infection, which triggers the immune system to release endogenous pyrogens (Chawla et al., 2024).

According to the Indonesian Nursing Intervention Standards (SIKI), hyperthermia is defined as a body temperature increase above the normal threshold (>37.5 °C at night or >38 °C during the day) due to impaired thermoregulation. Typical symptoms include elevated body temperature, warm or flushed skin, increased respiratory and heart rates, and general discomfort. The main goals of nursing intervention are to reduce body temperature, maintain fluid balance, and prevent complications such as seizures or severe dehydration (Dewi & Permatasari, 2022).

The nursing care plan includes:

a) Observation: Monitoring body temperature and vital signs every 4–6 hours.
b) Education: Instructing the patient and family about adequate hydration and rest.
c) Therapeutic actions: Applying warm compresses to body folds, providing lightweight clothing, and maintaining a cool environment.
d) Collaboration: Administering antipyretics such as paracetamol under medical supervision (Kemenkes RI, 2023).

Non-pharmacological interventions such as warm compresses have been shown to effectively lower body temperature through peripheral vasodilation. External heat stimulates thermoreceptors, leading to vasodilation and enhanced heat

dissipation (Elyta et al., 2023). This method is safe, easy to implement, and can be combined with oral hydration to enhance evaporative cooling.

Pharmacological interventions, such as paracetamol, may be required when the temperature rises significantly or systemic symptoms occur. According to Maharningtyas and Setyawati (2022), a multimodal approach combining pharmacological and non-pharmacological methods produces better outcomes in hyperthermia management among acute infection patients.

The interventions planned for Ms. Y.T. were consistent with current nursing practice guidelines. Regular temperature monitoring, warm compresses, and patient education were implemented appropriately. Continuous evaluation remains essential to ensure intervention effectiveness and prevent complications

4) Nursing Implementation

Following the care plan, the warm compress intervention was carried out on February 11, 2025, for Ms. Y.T., who presented with hyperthermia (body temperature 38.8 °C). The warm compress was applied to the axillary and inguinal areas using a towel soaked in water at approximately 37 °C. The procedure followed the standard operating protocol, beginning with patient education to ensure cooperation and comfort. The area was cleansed prior to application, and compresses were applied for 15 minutes, replaced every 5 minutes to maintain a consistent temperature. The patient was cooperative and reported no discomfort during the procedure.

Nursing implementation for malaria patients with hyperthermia should consider environmental factors and family involvement. In this case, the nursing problem was also linked to the family's limited caregiving ability. According to Kahi (2024), the nursing process involves systematic planning and implementation of therapeutic, educational, and collaborative actions to restore optimal patient health.

Empirical studies confirm the effectiveness of warm compresses. Pawestri (2023) found that applying warm compresses for 15–20 minutes every 4-6 hours, combined with hydration and environmental adjustments, significantly reduced body temperature ($r = 0.78$; $p < 0.01$). Similarly, Suparti et al. (2020) reported that malaria patients receiving both warm compresses and antipyretics experienced a 1.2-day shorter fever duration compared to those who received only antipyretics. Aurelia et al. (2022) emphasized that optimal technique selecting vascularized areas,

maintaining water temperature between 37–40 °C, and applying compresses for 15–20 minutes maximizes heat dissipation through vasodilation.

According to WHO (2023), the management of malaria-induced hyperthermia should combine pharmacological (antipyretics and antimalarial therapy) and non-pharmacological (warm compresses, hydration, and ventilation) interventions. Continuous temperature monitoring every 4–6 hours is recommended to evaluate response and prevent complications (Kozier et al., 2022). Adequate hydration is also essential, as hyperthermia increases fluid loss through perspiration and respiration (Wood et al., 2023).

This intervention reflected a holistic approach that emphasized physiological and psychological comfort. Potter et al. (2023) highlighted that patient comfort enhances compliance and recovery. The combination of warm compresses, hydration, rest, and monitoring proved effective in lowering body temperature and expediting recovery

5) Nursing Evaluation

Nursing evaluation represents the final stage of the nursing process, aiming to assess the effectiveness of interventions by comparing the patient's condition with predetermined goals and outcome criteria. In the case of Ms. Y.T., the evaluation was conducted after two days of intervention (February 10–11, 2025). The nursing diagnosis of hyperthermia related to the disease process was successfully resolved following regular warm compress application and supporting non-pharmacological measures.

According to Hadinata and Abdillah (2022), evaluation involves comparing post-intervention patient data with expected outcomes, identifying whether goals were fully, partially, or not achieved. In this case, the patient's temperature decreased from 38.8 °C to normal levels, with improved general condition and no additional complaints.

The success of this intervention was supported by the patient's family, who actively participated in care and learned the proper compress technique. Family involvement aligns with the holistic nursing principle emphasizing social support in recovery (Dewani, 2020).

Warm compresses also demonstrated physiological and psychological benefits. Jannatiyah (2021) reported that warm compresses improve blood

circulation and oxygenation, promoting relaxation, reducing tension, and naturally lowering body temperature. Evaluation results indicated no discrepancy between interventions and outcomes. All nursing goals particularly in managing hyperthermia were successfully achieved. This demonstrates that the care process was systematic and evidence-based.

In conclusion, the evaluation of Ms. Y.T.'s case confirmed the effectiveness of the implemented interventions, emphasizing the importance of timely nursing actions, family participation, and continuous monitoring to ensure successful recovery and prevent complications.

4. CONCLUSION

The results of this case study demonstrated that the nursing care provided to Ms. Y.T., a 21-year-old female patient diagnosed with *tropical malaria* and presenting with hyperthermia, was effective in reducing body temperature and improving overall clinical condition. Comprehensive nursing management consisting of accurate assessment, the establishment of the nursing diagnosis *hyperthermia related to infection process*, and evidence-based interventions such as warm compress application, temperature monitoring, hydration education, and collaboration with physicians proved successful in restoring normal thermoregulation. The application of warm compresses was found to be an effective, safe, and non-pharmacological method to reduce body temperature in malaria patients with hyperthermia. This intervention facilitated vasodilation, improved circulation, and enhanced comfort without adverse effects. Post-intervention evaluation indicated that the patient's body temperature decreased from 38.8°C to normal, with the disappearance of chills and a marked improvement in physical strength. Overall, this study emphasizes the critical role of nurses in identifying and managing hyperthermia through timely assessment and implementation of appropriate interventions. Family involvement and patient education were also key to maintaining treatment continuity. Therefore, warm compress therapy can be recommended as a complementary nursing intervention in managing hyperthermia among patients with infectious diseases, particularly malaria.

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