

Section: General Nursing

Red onion compresses and warm foot baths to lower body temperature in school-aged children (7-12 years old) with hyperthermia

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Abstract

Hyperthermia, or an increase in body temperature, is a condition characterized by a rise in body temperature above the normal range. Fever commonly occurs when a person's health is compromised. Body temperature is considered normal if it falls within the range of 36.5–37.5°C. The World Health Organization (WHO) reports that 216,000 children have died globally due to febrile seizures, affecting more than 21.65 million children. Fever-related seizures are seizures that occur at high body temperatures (body temperature above 38°C) due to extracranial abnormalities. Non-pharmacological management of fever in children can be done by applying red onion compresses and soaking the feet in warm water. The purpose of this case study is to describe the effect of red onion compresses and warm foot baths on reducing body temperature in children with hyperthermia (aged 7–12 years). This case study uses a descriptive case study design. A questionnaire was administered to patients who met the inclusion criteria, with one respondent suffering from hyperthermia. The results obtained were as follows: before intervention, the body temperature was 38.5°C, and after intervention with red onion compresses and warm foot soaks, it was 36.5°C. Additionally, there were changes in family health management after receiving non-pharmacological education on red onion compresses and warm foot soaks for the care of children with hyperthermia. The conclusion of this case study is that nursing intervention involving red onion compresses and warm foot baths has an effect on lowering body temperature in children of school age (7-12 years) with hyperthermia.

Keywords: Complementary therapy, fever, hyperthermia, nursing care, paediatric nursing

Introduction

Hyperthermia, or an increase in body temperature, is a condition characterized by a rise in body temperature beyond the normal range (Barbi et al., 2017; Bach & Libert, 2022). Fever typically occurs when a person's health is compromised. Body temperature is considered normal if it falls within the range of 36.5 – 37.5°C. Hyperthermia is a common symptom in children that can be dangerous (Schleelein & Litman, 2009; Ho et al., 2020). Hyperthermia can occur due to microorganisms, such as viruses, bacteria, parasites, or fungi, attacking the body. The World Health Organization (WHO) reports that 216,000 children have died globally from febrile seizures, affecting over 21.65 million children. In the United States, 1.5 million people aged 6 to 36 months experience febrile seizures. Febrile seizures have been recorded annually in Japan at a rate of 8.8% and in India at a rate of 5–10%, compared to 2–4% in Europe. The frequency of febrile seizures is higher in Asia than in other regions, with 80–90% of cases occurring without complications. In Indonesia, it is estimated that between 80,000 and 100,000 people suffer from fever throughout the year. Fever cases are primarily experienced by children aged 3–19 years, accounting for 91% of cases. Approximately 2–5% of febrile seizures occur annually in Central Java.

Fever is sometimes considered a common occurrence, but under certain conditions, fever can lead to dehydration and seizures, and even pose a risk of causing more serious illnesses (Leung et al., 2018; Cappellari et al., 2023). Febrile seizures are seizures that occur at high body temperatures (body temperature above 38°C) due to extracranial abnormalities. A febrile seizure is a seizure that occurs during a rise in body temperature caused by an extracranial process. A simple febrile seizure is a febrile seizure lasting less than 15 minutes, which is common and does not recur during a single episode of fever. Complex febrile seizures are febrile seizures lasting longer than 15 minutes, either focal or multiple. Fever can affect all age groups, from infants to the elderly. Fever typically occurs briefly but can cause discomfort in the body. Fever in children is the most common case that causes parents to panic and bring their child to a doctor or healthcare facility. Pharmacological management includes the use of antipyretic drugs such as paracetamol. Ibuprofen, and non-pharmacological methods such as placing the child in a well-ventilated room, changing the child's clothing to lightweight, sweat-absorbing garments, providing adequate fluids, applying warm compresses, using red onion compresses, and soaking the feet in warm water. One medicinal plant that

can be used to control fever is red onion (*Allium Cepa varascalonicum*). Red onion contains organic sulfur compounds, specifically Allylcysteine sulfoxide (Alliin). When crushed, red onion releases the enzyme alliinase, which acts as a catalyst for alliin to react with other compounds, such as skin, which helps break down blood clots. The essential oil content in red onions can also improve blood circulation, making it smoother. Other compounds in red onions that can lower body temperature include florigugin, cycloalliin, methiin, and kaempferol.

On the other hand, non-pharmacological approaches include warm foot baths, which are a type of non-pharmacological hydrotherapy that can relax muscles, reduce pain, dilate blood vessels, improve circulation, provide a calming effect, and provide warmth. Warm water foot soaks can lower body temperature because of the dilation of blood vessels concentrated in the foot area and improved blood circulation. This causes the thermostatic set point in the hypothalamus to re-adjust heat transfer from higher-temperature areas to lower-temperature areas. Based on preliminary studies in Dusun Pedak, Bumirejo, Mungkid, Magelang, pharmacological interventions such as administering antipyretic medications have been implemented, but non-pharmacological interventions to help reduce body temperature in patients with hyperthermia have not yet been applied. Therefore, the author is interested in conducting a study on "The Effect Of Red Onion Compresses And Warm Foot Baths On Lowering Body Temperature In Hyperthermia In School-Aged Children (7-12 Years Old)."

Case Description

Patient is a 7-year-old female, Muslim, residing in Pedak, Bumirejo, Mungkid, Magelang, with an elementary school education. During an assessment on May 17, 2025, the patient complained of fluctuating fever, dizziness, cough, flu, and decreased appetite. Vital signs examination showed a body temperature of 38.5°C, blood pressure of 112/71 mmHg, pulse rate of 105 beats per minute, and respiratory rate of 24 breaths per minute. During the interview, the patient stated that she had not undergone any examinations and had only purchased medication from a pharmacy. The patient mentioned that no other treatments had been administered, only rest and the use of Paracetamol and OBH purchased from the pharmacy; however, there was no improvement in her condition. As a result, Patient's mother expressed confusion about how to address her child's illness.

Based on the assessment conducted on May 17, 2025, the following subjective data was obtained: patient reported feeling dizzy, the client reported fluctuating fever, the client reported coughing and flu symptoms, and the client reported decreased appetite. Objective data includes: the client reported feeling dizzy, the client reported fluctuating fever, the client reported coughing and flu symptoms, and the client reported decreased appetite. Based on this data, there is a nursing issue of hyperthermia related to the disease process, evidenced by increased body temperature, fever, coughing, flu symptoms, and decreased appetite (D.0130). Additionally, subjective data was obtained: patient stated that no examinations had been conducted, only purchasing medication at the pharmacy. Patient stated that no other treatments had been administered, only rest and taking the medication purchased at the pharmacy, but there was no improvement in his condition. Mrs. D, his mother, stated that she was confused about how to manage her child's illness. Objective data included the family appearing panicked about their child's illness and the family appearing confused about how to manage their child's illness. Therefore, based on the data, there is a nursing issue of ineffective family health management related to decision-making conflicts, characterized by expressing difficulty in implementing the prescribed care and failing to take actions to reduce risk factors (D.0115).

Interventions performed to lower body temperature based on SIKI are Thermoregulation (L.14134), which includes monitoring body temperature, monitoring complications due to hyperthermia, providing a cool environment, loosening or removing clothing, and performing external cooling (onion compress, warm foot bath). Interventions implemented for Family Health Management (L.12105) include identifying actions that families can take, motivating the development of attitudes and emotions that support health efforts, utilizing available resources and facilities within the family, and teaching care methods that families can perform (non-pharmacological: Red Onion Compress, Warm Foot Soak). The same actions were carried out from May 17, 2025, to May 19, 2025, which included monitoring body temperature before and after applying a red onion compress, soaking feet in warm water, monitoring complications resulting from hyperthermia, providing a cool environment, loosening or removing clothing, and performing external cooling. (Red Onion Compress, Warm Foot Soak). The actions taken for Family Health Management (L.12105) include identifying actions that the family can take, motivating the development of attitudes and emotions that support health efforts, utilizing available resources and facilities within the family, and teaching care methods that the family can perform (non-pharmacological Red Onion Compress and Warm Foot Soak).

Final nursing evaluation Hyperthermia is associated with the disease process, as evidenced by an increase in body temperature, fever, cough, and flu, and decreased appetite (D.0130). On May 19, 2025, the following data was obtained: S: the dizziness had decreased, the fever had subsided, the cough and flu had decreased, improved appetite. O: The client appears weak, the client's body feels warm to the touch, the client's heart rate is normal, the client's skin is no longer red, body temperature is 36.5°C, blood pressure is 112/78 mmHg, pulse is 119 beats per minute, respiration is 20 breaths per minute. A: The hyperthermia issue is resolved. P: Maintain therapeutic intervention with red onion compresses and warm foot soaks. Evaluation of ineffective family health management related to decision-making conflicts, characterized by difficulty in implementing prescribed care and failure to reduce risk factors (D.0115) on May 19, 2025, data obtained: S: there was an improvement after receiving complementary

therapy with red onion compresses and warm foot soaks, she had performed complementary therapy with red onion compresses and warm foot soaks, she knew how to manage her child's illness, O: The family is no longer panicking about their child's illness, The family already knows how to manage their child's illness, A: The issue of ineffective family health management has been resolved, P: Maintain the intervention.

Discussion

Based on the results of the analysis of the assessment, the most prominent nursing issues identified in the client's complaints were: Hyperthermia related to the disease process, evidenced by an increase in body temperature, fever, cough, and flu, decreased appetite (D.0130) and Ineffective Family Health Management related to decision-making conflicts, characterized by expressing difficulty in implementing prescribed care and failing to take actions to reduce risk factors (D.0115). This aligns with the findings obtained during the assessment. Patients with hyperthermia often complain of an increase in body temperature above normal, which aligns with studies on the use of red onion compresses to reduce fever in infants using the conduction-evaporation method, where conduction is the transfer of heat from one object to another through direct contact (Fatmawati et al., 2024; Syiffani et al., 2023). When warm skin touches another warm surface, heat transfer occurs through evaporation. This is supported by the presence of compounds in red onions, namely propyl disulfide and propyl methyl disulfide, which are easily vaporized when used in appropriate doses. According to (Syiffani et al., 2023), there is a primary heat transfer mechanism in the application of warm water foot soaks: evaporation is the process of vaporizing liquid from a wet surface, which requires heat energy from that surface, thereby lowering the surface temperature. Evaporation occurs when water on the skin evaporates during foot soaking, helping to lower body temperature by converting body heat into sweat. Additionally, the use of warm water foot soaking also reduces body temperature through several major blood vessels located in the foot area (Takahashi et al., 2022; Nasiri et al., 2024).

The implementation of red onion compress therapy is carried out in the following stages: Preparation stage: the researcher prepares 3-4 cloves of red onion (1.3 grams), a grater or knife for grinding, coconut oil or telon oil, a body temperature thermometer, and a small plate. Orientation stage: The researcher greets and introduces themselves, identifies and asks about the patient's main complaints, asks the family if the patient has an allergy to red onions, explains the purpose, procedure, and duration of the treatment, and gives the patient and family the opportunity to ask questions before the treatment is performed. Work stage: The researcher peels the skin of the red onions and washes 3-4 cloves thoroughly, grate the onions using a grater or knife, then mix with oil. The researcher measures the body temperature before applying the onion compress, recommends wearing lightweight clothing, applies the onion mixture to the right/left armpit, and on the frontal area (forehead or brow) of the child for 15 minutes, then measures the child's body temperature again after 15 minutes. Perform once daily and a maximum of twice daily while the child is still experiencing fever, record the temperature measurement results, Termination Stage: Inform the patient that the procedure is complete, provide positive reinforcement to the patient, schedule the next appointment, tidy up the equipment, say goodbye and greetings, and wash hands. This procedure is performed with a 5-hour interval after administering antipyretics (Hamzanwadi & Basuni, 2024).

The implementation of warm water foot bath therapy is carried out in the following stages: Preparation stage: The researcher prepares a thermometer, basin/bucket, towel, warm water at 38°C. Orientation stage: Greeting, introducing oneself, explaining the purpose, explaining the procedure, agreeing on the time, and asking about the readiness of the patient and family. Work stage: Wash hands, explain the purpose of the procedure to be performed, position the patient, measure the patient's temperature with a thermometer before the procedure, prepare the bucket, then fill it with cold and hot water, then measure the water temperature to 38°C, If the feet appear dirty, it is recommended to wash them first, soak the feet up to the ankles for 10–15 minutes, measure the water temperature every 5 minutes, and if the temperature drops, switch to another basin prepared with water at 38°C. After completion, lift the patient's feet, dry them with a towel, and measure the patient's temperature after the procedure. Termination Stage: Evaluate the procedure, communicate the follow-up plan, say goodbye, and bid farewell. This procedure is performed with a 5-hour interval after administering antipyretics (Sari, 2024).

The evaluation conducted over three days while providing nursing care revealed changes based on the diagnosis of hyperthermia related to the disease process, evidenced by an increase in body temperature, fever, cough, and flu, and decreased appetite (D.0130). By implementing hyperthermia management through external cooling methods (Red Onion Compress, Warm Foot Soak) for the third time, patient reported reduced dizziness, no longer experiencing fever, decreased coughing and flu symptoms, improved appetite, and appears slightly weak, the client's body feels warm, the client's heart rate is normal, the client's skin is no longer red, body temperature has decreased from 37.2°C to 36.5°C, blood pressure is 112/78 mmHg, pulse is 119 beats per minute, and respiration is 20 breaths per minute. Evaluation of diagnosis: Ineffective Family Health Management related to decision-making conflict, characterized by expressing difficulty in implementing the prescribed care, failure to perform actions to reduce risk factors (D.0115), namely Mrs. A. A. stated that there was an improvement after receiving complementary therapy with red onion compresses and warm foot soaks, and will apply the non-pharmacological therapy that has been taught if her child becomes ill again.

A similar study entitled “The Application of Red Onion Compresses to Reduce Body Temperature in Children with Fever in the Working Area of the Simpang Gaung Community Health Center, Indragiri Hilir Regency” states that the results of the study show that the body temperature of children with fever before the application of red onion compresses in the working area of the Simpang Gaung Community Health Center averaged 38.60 degrees Celsius, while the body temperature of children with fever after the red onion compress at the Simpang Gaung Health Center averaged 36.30 degrees Celsius (Nurvawati et al., 2025; Maulida & Wanda, 2017). There was an effect of the red onion compress on reducing the body temperature of children with fever at the Simpang Gaung Health Center with a p-value of $0.001 < 0.05$. The limitations of this study were that the respondents were feeling ill and therefore a little fussy, making it difficult for them to cooperate in activities such as changing into thin clothing and not using thick blankets, but the respondents refused because these were their favourite items. The patient also had difficulty communicating due to their anxious and unstable condition, making it hard to concentrate and reluctant to undergo therapy. However, after being convinced with an explanation about the benefits of red onion compress therapy and warm foot soaks, and persuaded by their family, the patient agreed to undergo red onion compress therapy and warm foot soaks. Additionally, there is a limited number of references related to research using the combination of red onion compress therapy and warm foot soaks.

Conclusion

Based on the nursing care provided to the patient with a diagnosis of Hyperthermia related to the disease process, evidenced by an increase in body temperature, fever, cough, and flu, decreased appetite (D.0130), and Ineffective Family Health Management related to decision-making conflicts, characterized by expressing difficulty in carrying out the prescribed care, failure to implement risk-reducing measures (D.0115) resulting from the patient's condition, it can be concluded that the effect of red onion compresses and warm foot soaks on reducing body temperature in children with hyperthermia (ages 7–12) showed a decrease in body temperature on the first day from 38.5°C to 37.8°C. On the second day, there was a decrease in body temperature from 37.9°C to 37.2°C. On the third day, there was a decrease from 37.2°C to 36.5°C. Additionally, there was a change in family health management, marked by an understanding of their child's health care through non-pharmacological approaches such as red onion compresses and warm foot soaks. Red onion compresses and warm foot soaks are very easy to learn and are one of the best complementary therapies because they are easy to learn, cost-effective, do not require specific time or location, and do not require special equipment, making them easy to implement. The case of hyperthermia highlights the importance of the patient's psychological condition, which requires not only medical therapy but also complementary therapy to support the patient's recovery. It is hoped that healthcare workers, especially nurses, can apply complementary therapy using red onion compresses and warm foot soaks for elevated body temperature in hyperthermia patients as a supportive therapy alongside the medical therapy already provided.

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