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Administration of Tepid Sponge with Hyperthermia to Children with Typhoid Fever in the Hospital

Pegi Tri Utami[1], Rehana[2], Yunike[3]
[1,2,3]Ministry of Health Health Polytechnic Palembang, South Sumatra, Indonesia
Email: rehana@poltekkespalembang.ac.id, yunike@poltekkespalembang.ac.id, pegitriutami@student.poltekkespalembang.ac.id

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ABSTRACT
Typhoid fever is a disease that is often suffered by children, especially school-age children aged 5-14 years, because they spend a lot of time outside, especially at school, so children pay less attention to personal hygiene. Hyperthermia is a symptom that often appears in typhoid fever sufferers. To treat hyperthermia, you can use compresses, one of which is tepid sponge. This case study aims to reduce body temperature in children who experience hyperthermia. Method: This case study uses a descriptive design with a case study design, in the case of reducing body temperature using the tepid sponge technique through a nursing process approach carried out by researchers. Data collection in this study was by measuring the child's body temperature using a thermometer and comparing the results of body temperature measurements after the tepid sponge was carried out using a body temperature comparison sheet after and after the tepid sponge was carried out. Results: After implementing tepid sponge nursing, the results from patient I and patient II showed that body temperature improved to the normal range. Conclusion: Implementation of tepid sponge in patients with hyperthermia can be applied because it is effective in reducing body temperature.

Corresponding Author:
Rehana,
Ministry of Health Health Polytechnic Palembang,
South Sumatra, Indonesia.
Email: rehana@poltekkespalembang.ac.id

1. INTRODUCTION

The World Health Organization (WHO) stated that the incidence of typhoid fever was 25 million deaths worldwide in 2019, some of which were caused by infectious diseases. WHO estimates that Typhoid Fever causes 6.9 million to 48.4 million cases per year with the majority occurring in Asia [1].

The 2019 Indonesian Health Profile reported that the number of typhoid fever cases in Indonesia in 2019 reached 500/100,000 cases. This is based on research in 2019 that the incidence of typhoid fever was 81.7% of cases per 100,000 per year. Most cases of typhoid fever occur in children in the age group (5-15 years) amounting to 180.3/100,000 population. Based on the 10 most common diseases in hospital inpatients in Indonesia, typhoid ranks 3rd after diarrhea and dengue hemorrhagic fever, with a total of 41,081 typhoid cases with a typhoid mortality rate (CFR) of 0.67%(Indonesian Ministry of Health, 2019)**.**

South Sumatra Provincial Health Service, 2021, stated that the incidence of typhoid fever in the last three years has increased, namely in 2019 there were 12,354 cases, in 2020 there were 18,431 and in 2021 there were 18,694 cases. Apart from that, in the same three years in Palembang City the incidence of typhoid fever also increased, namely in 2019 there were 808 cases, in 2020 there were 849 cases and in 2021 there were 1,275 cases. Based on the 2021 Palembang City Health Service report, there were 219 typhoid fever sufferers, of which 78 cases were in children aged 5-14 years.

Typhoid fever is a disease that is often suffered by children, especially school-age children aged 5-14 years, which is the age of children who do not pay attention to personal hygiene and have the habit of snacking carelessly.[3]. At the age of 5-14 years, they do a lot of activities outside so they pay less attention to their diet, because they prefer to eat outside the home, where most of them still pay little attention to the cleanliness of the food. School age children also have the habit of snacking carelessly without paying attention to the level of

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cleanliness of the place, sometimes when children of that age eat or drink they just eat without washing their hands first, so that the above can cause the infection of typhoid fever.

Typhoid fever occurs as a result of infection or inflammation due to a response to microbial invasion which results in an increase in body temperature or hyperthermia. Hyperthermia is a process of the body's response to an infection process, the inability of heat loss mechanisms to compensate for excessive heat production resulting in an increase in body temperature [4]. Increased body temperature or hyperthermia is a symptom that often appears in typhoid sufferers. In children, hyperthermia is something that worries parents because hyperthermia or an increase in body temperature causes children to experience changes in attitude, behavior, appetite, habits in children, and discomfort in children.

The impact that will arise if fever is not treated properly will cause the child's growth and development to be disrupted, dehydration occurs due to increased evaporation of body fluids so that the body can lack fluids, body temperature above >42 C can cause neurological (nerve) damage, in addition to Therefore, the impact of hyperthermia on children is seizures or febrile convulsion and decreased consciousness, so pharmacological or non-pharmacological treatment is needed to treat hyperthermia quickly.

To treat hypertemia, it can be done pharmacologically, namely by administering fever-reducing drugs such as paracetamol or ibuprofen and can also be done using non-pharmacological measures. One way to reduce body temperature using non-pharmacological methods is by compressing it. Compress is a physical method to reduce body temperature if you have a fever. There are several compression methods that are often used, namely giving warm water compresses, cold water compresses, warm water compresses using a tepid sponge [5].

Based on the background of this problem, researchers are interested in providing an overview of a case study with the title "Implementation of Tepid Sponge Nursing with Hyperthermia in Children with Typhoid Fever at the Muhammadiyah Hospital in Palembang in 2023".

2. RESEARCH METHOD

The approach used in this research is a descriptive method with a case study approach through nursing care for typhoid fever patients with hyperthermia problems to reduce body temperature in children due to hyperthermia. The subjects in this case study were two typhoid fever patients who experienced hyperthermia with the initials An.A, aged 12 years and An.F, aged 8 years. Nursing care is carried out in the pediatric care room at Muhammadiyah Palembang Hospital. This research process was carried out on An.E from 18 to 20 March 2023 and An.F from 22 to 24 March 2023. This research procedure was carried out after obtaining approval from the hospital and then submitting research approval (informed consent) to both of the subject's parents. This is then continued with the nursing care process by conducting an assessment of the patient, determining the diagnosis and preparing interventions and finally carrying out an evaluation using SOAP format until the nursing care process ends. Data collection was carried out through interviews, observations, physical examinations, and documentation studies of diagnostic examination results. Data collection tools or instruments use a pediatric nursing care assessment format starting from head to toe physical examination, observation sheets, health education questionnaire sheets, diagnosis determination formats based on the IDHS and interventions and outcomes based on the SIKI and SLKI. The data analysis used in this case study is descriptive analysis presented in narrative form.

3. RESULTS AND ANALYSIS

3.1. Results

Nursing care for patients An.A (12 years) with a diagnosis of Fiver Typhoid Fever and An.F (8 years) with a diagnosis of Fiver Typhoid Fever through assessment, determination of nursing diagnosis, intervention, implementation and evaluation.

3.1.1. Nursing Assessment

The assessment was carried out through historical examination with interviews and head to toe physical examination, the following nursing data was obtained.

Case I (An.A)

Patient I with the initials An. A was taken to the emergency room at Muhammadiyah Palembang Hospital by his parents on March 18 2023 at 08.00 WIB. The patient is 12 years old and female. During the assessment, subjective data was obtained: The patient's mother said that her child had had a fever for 4 days before being taken to the hospital, the fever fluctuated, at night the temperature increased, the patient's mother said that her

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child's right eye was swollen, the patient's mother said that her child also experienced nausea (+) and vomiting (+), The patient's mother said her child had lost his appetite, eating 3 times/day, only eating 2-3 spoons in 1 portion. Objective Data: General condition is weak, Right eye looks swollen, Skin feels warm, Skin looks red, Lips look pale and dry, Vital signs: Temperature: 39.0ºC, BP: 110/70 mmHg, Pulse: 105 x/minute , RR: 21 x/minute, Widal Typhi H : (+) 1/320, Typhi O (+) 1/320. Based on the medical diagnosis, the patient was suffering from Fiver Typhoid Fever.

Case 2 (An. F)

Patient 2 with the initials An. F was taken to the emergency room at the Muhammadiyah Palembang Hospital by his parents on March 21 2023 at 21.00 WIB. The patient is 8 years old and female. When the assessment was carried out, subjective data was obtained: The patient's mother said that her child had a fever that had been up and down for 2 days before being taken to the hospital, at night the temperature increased. The patient's mother said that her child also experienced nausea (+), vomiting (+), The patient's mother said that her child had lost his appetite, he only ate ½ portion. The patient's mother said that her child was defecating 5-6 times/day. Objective Data: General condition is weak, Akrar feels warm, Skin looks red, Lips look pale and dry, Vital signs: Temperature: 38.8ºC, Pulse: 108 x/minute, RR: 23 x/minute, Widal Typhi H: (+) 1/160, Typhi O (+) 1/130. Based on the medical diagnosis, the patient was suffering from Fiver Typhoid Fever.

3.1.2. Nursing diagnoses

Nursing diagnosis is a clinical assessment of the client's response to the health problems or life processes they are experiencing, both actual and potential. Analysis of data from the two subjects was obtained to determine the nursing diagnoses for the two subjects An.A and An.F. 1 Focus Diagnosis was obtained, along with the nursing diagnoses found.

Table 1. Nursing Diagnosis

Patient I (An. A)	Patient 2 (An. F)
Hyperthermia is related to the disease process as evidenced by body temperature above normal values	Hyperthermia is related to the disease process as evidenced by body temperature above normal values

The research results showed that the nursing diagnoses for An.A and An.F were hyperthermia related to the disease process. Both subjects experienced the same nursing problems.

3.1.3. Nursing Intervention

From the formulation of the diagnosis of hyperthermia, the nursing goals for each patient are then formulated, namely after 3 treatments, it is hoped that the hyperthermia can be resolved using the outcome criteria based on SIKI and the family can understand and collaborate with the nurse in dealing with hyperthermia. Nursing actions planned to be implemented to reduce hyperthermia include: Main Intervention: Thermoregulation Education, Observation: Identify readiness and receive information, Therapeutic: Provide health education materials and media, Schedule health education according to agreement, Education: Teach how to give tepid sponge, Explain the benefits of giving it tepid sponge to treat hyperthermia in children.

3.1.4. Nursing Implementation

Nursing implementation is carried out based on the care plan and is carried out for 3 days of treatment. The interventions given to patients An.A and An.F were creating a therapeutic atmosphere to foster trust, providing therapeutic communication to the child so that the child was able to get to know and communicate with the researcher, identifying readiness and receiving information, providing a pre-test questionnaire provided by the researcher to the family. before health education, after the pre-test is completed, then provide health education. Next, the researchers used an observation sheet to identify the patient's body temperature before and after each tepid sponge procedure. Next, the tepid sponge was given which involved the family, especially the patient's mother. Firstly, the researchers asked about the availability of subjects to do tepid sponges, secondly the researchers explained the procedures for giving tepid sponges to treat hyperthermia while in hospital, thirdly they gave tepid sponges for 15-20 minutes. After completion, the researcher observed body temperature after the tepid sponge was carried out. The results of observing body temperature

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in patients with An. tepid sponge is 36.7ºC from the previous temperature of 37.3ºC. In patient An.F, the body temperature was found to be 38.2ºC from the previous 38.8ºC, on the second day the body temperature after the tepid sponge was 37.4ºC from the previous temperature of 38.0ºC, on the third day the body temperature after the tepid sponge was 36.8ºC. from the previous temperature of 37.5ºC.

3.1.5. Nursing Evaluation

The results of the evaluation of the increase in the patient's body temperature, after implementing the tepid sponge to treat hyperthermia in patient 1 (An. on the second day there was a decrease in body temperature after the tepid sponge, namely 37.6ºC, on the third day there was also a decrease in body temperature, namely 36.7ºC. The results of the post test of the health education questionnaire about tepid sponge which were filled in by the family showed that all the answers were correct. From the previous pre test results, the family only got 1 question out of 6 questions correct. So after health education, the patient's family understands about tepid sponge to reduce body temperature in children who experience hyperthermia. In patient 2 (An.F), before implementation, on the first day An.F's body temperature was 38.8ºC after the tepid sponge was carried out, the body temperature was 38.2ºC, on the second day the body temperature decreased after the tepid sponge, namely 37.4ºC, On the third day, body temperature also decreased, namely 36.8ºC. The results of the post test of the health education questionnaire about tepid sponge which were filled in by the family showed that all the answers were correct. From the previous pre test results, the family only got 2 questions out of 6 questions correct. So after health education, the patient's family understands about tepid sponge to reduce body temperature in children who experience hyperthermia. There was a difference in body temperature in the two patients before and after being given the implementation. According to researchers, the tepid sponge is one way to treat hyperthermia in children when treated in hospital.

Table 2 Sheet Comparison of Temperatures in Children When Tepid Sponge

Day/Date/Time	Child I (An. A)		Day/Date/Time	Child II (An. F)	
	Before	After		Before	after
Saturday March 18, 2023	39.0ºC	38.5 ºC	Wednesday March 22, 2023	38.8 ºC	38.2 ºC
Sunday March 19, 2023	38.2 ºC	37.6 ºC	Thursday March 23, 2023	38.0 ºC	37.4 ºC
Monday March 20, 2023	37.3ºC	36.7ºC	Friday March 24, 2023	37.5 ºC	36.8ºC

3.1. Discussion

After implementing nursing for 3 days starting on 18-20 March 2023 for patient 1 and 22-24 March 2023 for patient 2, the researcher had two specific objectives in carrying out research on children suffering from typhoid fever with hyperthermia problems in the Rasyid Thalib Rumah children's ward. Palembang Muhammadiyah Hospital. In chapter five, the researcher will discuss the gap between theoretical concepts and nursing actions carried out in the field.

3.1.1. Tepid Sponge Implementation

On the first day before conducting the assessment, the researchers built a relationship of mutual trust (BHSP) with the two patients and their families. The main focus in this discussion was the effect of tepid sponge on hyperthermia in children with typhoid fever. Before researchers implement the tepid sponge, researchers need to observe the patient's body temperature according to the SOP that the researchers have prepared. Body temperature measurements in patient I (An. A) and patient II (An. Body temperature measurements in patients 1 and II were carried out through measurements in the axilla using a digital thermometer.

Researchers implemented tepid sponge nursing with hyperthermia in patient 1 (An.A) and patient II (An.F) for 3 consecutive days in accordance with the SOP and Indonesian Nursing Intervention Standards (SIKI) guidebook. Before the process of administering the tepid sponge, the researcher explained the purpose and procedure for administering the tepid sponge. The aim of giving tepid sponges is to reduce high fever thereby stabilizing the body temperature of patients who have high fever. Tepid sponge is applied to the neck, axillae and groin for 15 minutes with warm water at 37°C. Researchers also provide education regarding the tepid sponge method to the patient's parents with the aim that the patient's parents can implement this intervention so that the fever can be resolved. Researchers also conducted a pre-test on the patient's parents

on the first day before being given education about the tepid sponge and on the third day the researchers carried out an evaluation by giving a post-test to the patient's parents.

Implementation carried out on patient I on March 18 2023, day 1 of the tepid sponge administration accompanied by the patient's mother. Before doing tepid sponge on An. A had his body temperature checked first, namely 39.0ºC, after being given a tepid sponge for 15 minutes by re-wetting the washcloth every time it started to dry, the body temperature measurement result was 38.5ºC. On the 2nd day, while giving the tepid sponge, the researchers involved the patient's mother in giving the tepid sponge. Before the tepid sponge was administered, the patient's body temperature was 38.2ºC. After being given the tepid sponge for 15 minutes by re-wetting the washcloth every time it started to dry, the result was a decrease in body temperature of 37.6ºC. On the 3rd day, the researcher asked the patient's mother to do the tepid sponge, accompanied and directed by the researcher according to the existing SOP. After carrying out the tepid sponge action for 15 minutes by re-wetting the washcloth every time it started to dry, the result was 36.7ºC with the previous temperature being 37.3ºC.

Implementationcarried out on patient II on March 22 2023, day 1 of the tepid sponge administration accompanied by the patient's mother. Before doing tepid sponge on An. A had his body temperature checked first, namely 38.8ºC, after being given a tepid sponge for 15 minutes by re-wetting the washcloth every time it started to dry, the body temperature measurement result was 38.2ºC. On the 2nd day, while giving the tepid sponge, the researchers involved the patient's mother in giving the tepid sponge. Before the tepid sponge was administered, the patient's body temperature was checked, namely 38.0ºC. After giving the tepid sponge for 15 minutes by re-wetting the washcloth every time it started to dry, the result was a decrease in body temperature of 37.4ºC. On the 3rd day, the researcher asked the patient's mother to do the tepid sponge, accompanied and directed by the researcher according to the existing SOP. After carrying out the tepid sponge action for 15 minutes by re-wetting the washcloth every time it started to dry, the result was 36.8ºC with the previous temperature being 37.5ºC.

Based on the results of this study, body temperature decreased or decreased from hyperthermia to normal after 3 days of treatment by administering tepid sponges to areas of large blood vessels such as the neck, axillae, and groin of the patient. The results of this study are in line with research[6]which states tepid sponge is performed on large blood vessels such as in the neck, axillae, thigh crease. The tepid sponge is carried out in areas of large blood vessels with the aim of providing a signal to the hypothalamus and then accelerating vasodilation of peripheral blood vessels and facilitating the transfer of heat in the body to the surrounding environment resulting in a decrease in body temperature.

Based on the results of this study, administering tepid sponge for 15 minutes with warm water at a temperature of 37°C in large blood vessel areas such as the neck, axillae, and groin was proven to be effective in reducing body temperature. This research is in line with research[7]which stated that a tepid sponge should be applied to the neck, axillary and thigh creases with compression for a duration of 15-20 minutes with a water temperature of 34°C-37°C.

The results of this study are in line with research[8]which states that there is a difference in body temperature before the tepid sponge and after the tepid sponge. The results of this research are also in line with research conducted by[4]who explained that the technique of giving tepid sponges to large blood vessel areas was more effective in reducing body temperature. This is in accordance with the theory put forward by[9]which states that in the armpit area there are large veins which have excellent vasodilation capabilities in reducing body temperature.

3.1.2. Analysis of the Influence of Tepid Sponge

The results of the implementation of Tepid Sponge nursing with hyperthermia in children with typhoid fever which researchers carried out for 3 consecutive days in patient I (An.A) and patient II (An.F) showed that the problem of hyperthermia was resolved in both patients, as evidenced by the presence of periodic decrease in body temperature after implementing Tepid Sponge in both patients.

On the first day of patient 1 (An.A), before implementing the tepid sponge, the body temperature was measured at 39.0°C, but after implementing the tepid sponge, there was a decrease in body temperature of 0.5°C, namely from 39°C down to 38.5 °C, In patient I (An.A), from the first day to the third day of implementation, it was seen that there was a periodic decrease in body temperature from initially 39.0°C to 36.7°C. Meanwhile, in patient II (An.F) after the tepid sponge was carried out on the first day, the result was a decrease in body temperature of 0.6°C, namely from 38.8°C to 38.2°C, and in patient II (An.F) from From the first to the third day of implementation, it was seen that there was a periodic decrease in body temperature

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from initially 38.8°C to 36.8°C. Giving tepid sponge for 15 minutes with warm water temperature of 37°C on the neck, axilla and thigh creases in Typhoid Fever patients has been proven to have an impact on reducing the body temperature of patient 1 and patient II because it has a vasodilation effect (widening of blood vessels) so it is very influential in the process of lowering body temperature.

4. CONCLUSION

After implementing tepid sponge nursing on patient I (An.A) and patient II (An.F) in the Rasyid Talib children's inpatient room at Muhammadiyah Palembang Hospital who experienced typhoid fever with hyperthermia nursing problems for 3 days starting March 18-20 2023 in patient I and March 22-24 2023 in patient II, the following conclusions were obtained:

The effect of implementing tepid sponge nursing with hyperthermia on the first day of patient I (An. On the third day, the body temperature was measured at 36.7°C. while in patient II (An.F) there was also a periodic decrease in body temperature after implementing the tepid sponge, namely by 0.6°C from 38.8°C to 38.2°C, and on the third day the results of body temperature measurements were obtained. 36.8°C. These two results show that the tepid sponge has been proven to be effective in reducing body temperature in pediatric typhoid fever patients with hyperthermia problems.

The results of the analysis of the effect of implementing tepid sponge nursing on hyperthermia in children with typhoid fever which was carried out on both patients showed that the problem of hyperthermia was resolved, as evidenced by the periodic decrease in body temperature after implementing tepid sponge in both patients.

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