

EFFECT OF TEPID SPONGE ON CHANGES IN BODY TEMPERATURE IN CHILDREN

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ABSTRACT

Introduction: Fever is a state of body temperature above normal as a result of an increase in temperature control in the hypothalamus. Most children have fever due to thermoregulation in the hypothalamus. The purpose of literature review is to explore the effect of giving a water tepid sponge on reducing fever in children.

Method: This study uses the literature review with article searches conducted on the electronic databases of Science Direct, Garuda and Google Scholar. There were 543 articles on Science Direct, Garuda and Google Scholar but only 10 articles that met all the inclusion criteria and were reviewed

Results: There is an effect on reducing fever in children by using a water tepid sponge.
Conclusion: Based on the results of a review of 10 literatures on reviewed the characteristics of study respondents aged 1-12 years. Respondents who experienced hyperthermia/increased body temperature there was an influence of changes/decreased body temperature by giving water tepid sponge an average repeatedly so that the body temperature becomes 100% normal. The average temperature of children with fever in the 10 literatures is 38.5°C, the result with p value = 0.001 on the tepid water sponge which means that there is an effect of decreasing body temperature with the action of the water tepid sponge.

Keywords: Tepid Sponge; Body Temperature

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INTRODUCTION

Fever is a state of body temperature above normal as a result of an increase in temperature control in the hypothalamus. Most children have fever due to thermoregulation in the hypothalamus (Hendrawati & Elvira, 2019). According to the Community Center for Child Health, Fever is defined as a body temperature above 38°C, which is a natural immunological response to pathogens and it is a common sign of illness in children. Fever occurs as a common symptom of the first mechanism of infection in the body. This can lead to a health crisis (Kemenkes RI, 2019).

World Health Organization (WHO, 2020) there are 17 million cases of fever worldwide, with an incidence of 16-33 million and reaching 500-600 thousand deaths each year caused by the fever.

Cases of fever in children in Asia, Japan are 20%, South America and Europe are 3-4%, then in India there are 5-10% cases, and in Guam there are 14% fever rates. The incidence of fever in Indonesia is not directly explained, but from the data available at the Indonesian Ministry of Health (2019) there are several diseases whose symptoms are accompanied by fever such as DHF (Dengue Hemorrhagic Fever) as many as 9,358 people, 0.75% of people are infected with malaria, and Typhoid fever reaches an average of 800/100,000 population with a prevalence of 358-810/100,000 population (Kemenkes RI, 2018).

The cause of this fever occurs due to several factors such as immunization, viral and bacterial infections, diseases caused by mosquito bites, side effects of drugs, too long in the sun, disease, and cancer (Halodoc, 2019). The body is said to be

having a fever if the arterial or internal temperature rises to 38°C (Aijaz et al., 2022). The potential danger of fever that is not treated immediately can cause seizures, dehydration, serious illness, coma and even death (Wilson et al, 2019). Fever cannot be considered a trivial matter, it is important for us to know what is meant by fever, types of fever, causes and also treatment for fever. Complications that can arise due to fever are cell damage and dysfunction of various organs, resulting from excessive heat exposure and thermoregulation failure / seizures (Solas, 2020).

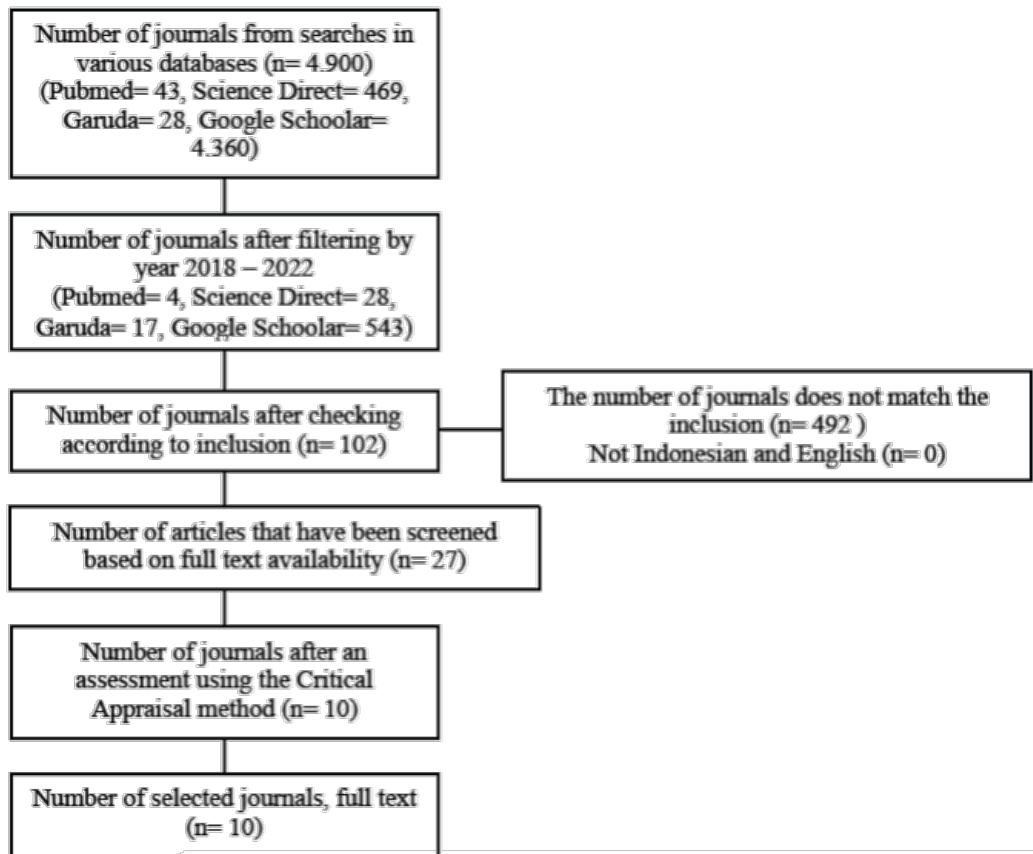
Handling fever is usually done with pharmacological or non-pharmacological measures can also be done both. Pharmacological action is by giving antipyretic drugs while non-pharmacological one of them is by doing tepid sponge action. Water Trepid Sponge is an action to improve temperature control through evaporation and conduction which is usually carried out in children / someone who has a high fever (Hendrawati & Elvira, 2019). So, Water Trepid Sponge is an act of wiping the body of a child/someone who has a high body temperature by using a warm water sponge with a temperature of 37°C with a vulnerable time of 10-15 minutes, where parents can do it themselves without any side effects. The purpose of doing this water tepid sponge is to lower the body temperature of

hyperthermic patients. The administration of the tepid sponge itself has the effect of making vasodilation of blood vessels, skin pores, decreasing blood viscosity, increasing metabolism and stimulating impulses through skin receptors that are sent to the posterior hypothalamus to reduce high body temperature. This Trepid Sponge can also lower 1.4°C within 20 minutes (Hendrawati & Elvira, 2019).

The research that has been done aims to explore or find the effect of giving a water tepid sponge which can reduce body temperature in children who have hyperthermia. Thus, the authors are interested in discussing this literature review which discusses giving water tepid sponges to reduce fever in children.

METHOD

This literature review is a summary of all research studies based on a particular theme. The literature search was carried out in January 2022. The materials used in this study were secondary which were obtained not from their own/direct research, but were obtained from research data that had been used by previous researchers (Original Research). The secondary databases obtained with high reputation are Pubmed, Scienc Direct and medium reputation, namely Garuda, Google



Picture 1. PICOS Framework

Scholar. with a predetermined theme. The literature search in this literature review uses four databases including PubMed, Science Direct, Garuda, Google Scholar. Search articles/journals using keywords with a PICO table and Boolean operators (AND, OR, NOT), which are used to expand or specify the search, making it easier to determine which journal article to use. The keywords used when searching for “tepid sponge” AND “body temperature”.

This literature search strategy uses databases such as PubMed, Science Direct, Garuda, and Google Scholar. Found in the first search stage (PubMed = 43, ScienceDirect = 469, Garuda = 28, Google Scholar = 4,360), filtered from 2018 to March 2022 to focus the search on the desired destination, then (PubMed = 4), Science Direct = 28, Garuda = 17, Google Scholar = 543. The total number of articles that can be retrieved is 10. The literature used in this literature review is still in the form of original studies, or using Quality Indexed Scimago Q1Q4 to facilitate or simplify the selection based on field of study, title, and summary using the application Mendeley. Never reviewed. You can use this application to find duplicate journal articles from the number of search results, Pubmed, Science Direct, Garuda, and Google Scholar databases. Below are initial search results, duplicates, research-based selections, titles, summaries, and chart images that the selected journal can sort or review.

RESULTS

In the article Effect of Tepid Sponge on changes in body temperature in children under five who have fever in Dr. Achmad Mochtar Bukittinggi Hospital explained that there is an effect of water tepid sponge on reducing fever in children. Using a quasi-experimental research design with one group pretest-posttest. The population in this study were children under 5 years of age who had a fever. Before being given the tepid sponge all toddlers experienced high temperatures (100%) of the 12 respondents, after being given the tepid sponge the temperature of all respondents became normal (100%). The average body temperature of 38.3°C dropped to 37.1°C. Statistical test showed that there was a significant effect of giving tepid sponge on changes in body temperature with $p = 0.000 (\leq 0.05)$. The article on Controlling Body Temperature with the Tepid Water Sponge Method and Warm Compresses for Fever Toddlers explains the effect of the water Tepid Sponge on reducing fever in children. Using a quasi-experimental design with a non-equivalent control group design. The population in this research is 17 children aged 1-2 years, 2-3 years 5 children, 3-4 years 3 children, 4 - 5 years old 5 children and male 21 children, female

9 children who have fever. Before being given a tepid sponge, the average body temperature of 38.6°C for 15 minutes dropped to 38.1°C and after 30 minutes of treatment it dropped to 37.6°C. The results of the analysis of the average decrease in temperature in the water tepid sponge is 0.9930C. The results were tested by paired-samples t-test and independent-samples t-test, the results were $p=0.0001 (p<0.05)$.

In the article on the Effectiveness of Water Tepid Sponge at 37°C and a Warm Compress at 37°C to Decrease in Temperature in Children with Hyperthermia, it is explained that there is an effect of water Tepid Sponge on reducing fever in children. Using a quasi-experimental research design with non-equivalent control design. The population in this study were children aged 1 year 6 children, 2 years 5 children, 3 years 1 child, 4 years 6, 5 years 12 children and male 17 children, female 13 children being treated at Tidar Hospital, Magelang City who experienced hyperthermia. . Before being given a tepid sponge, the average body temperature was 38.4°C when the action was taken, it dropped to 36.5°C, there was a minimum body temperature of 37.3°C after being given the action to 36 °C and at a maximum temperature of 40.1 °C after being given the action it dropped to 37°C .

The article on the Effectiveness of Giving Tepid Water Sponge Compress and Giving Red Onion Compress on Reducing Body Temperature in Children with Fever in Banjarmasin, South Kalimantan explains the effect of water tepid sponge on children who have hyperthermia. Using quasi experiment with pretest-posttest design. The population in this study were children aged under 3-5 years, male and female who experienced hyperthermia. Before being given a tepid sponge, the average body temperature of 37.6 °C dropped to 36.6. °C The changes in the body temperature of respondents who were given a tepid water sponge compress were as much as 0.99°C. From the results before and after the treatment, it was stated that there was an effect as evidenced by a p value of $0.001 < 0.05$.

In the article The Difference Between the Conventional Warm Compress and Tepid Sponge Technique Warm Compress in the Body Temperature Changes of Pediatric Patients with Typhoid Fever explains that there is an effect of water Tepid Sponge to reduce fever in children. Using quasi-experiment with pre-posttest. The population in this study were children aged 3-6 years, 4 children, 7-12 years, 6 children, 5 boys and 5 girls, who had hyperthermia. Before being given a tepid sponge, the average body temperature was 38.6°C, the water tepid sponge was taken down to 36.8°C. At 5 minutes after compressing, the p value

was 0.01 ($p <$) or $0.01 < 0.05$, which means that the tepid sponge technique has an effect on decreasing body temperature. At the 15th minute, the p value was 0.01 ($p <$) or $0.01 < 0.05$, which means that the tepid sponge technique has an effect on decreasing body temperature within 15 minutes after compressing. At 30 minutes after compressing, the p-value was 0.02 ($p >$) or $0.02 > 0.05$, which means the tepid sponge technique was not statistically significant but was able to reduce body temperature on average by 0.110°C 30 minutes after compressing.

The article Differences in the Effectiveness of Warm Compresses with Water Trepid Sponge in Reducing Fever in Children: A Study Using a Quasi-Experimental Approach explains the effect of a water tepid sponge on reducing fever. Using quasi experiment with pretest-posttest. The population in this study is children who have a fever. The average value of the temperature before the water Trepid Sponge is 38.6°C and after the water Trepid Sponge is taken for 15 minutes it drops to 37.3 . There is an effect before and after the tepid sponge with an average difference of 1.3°C 6 (p -value 0.001).

In the article The Effect of Giving Trepid Sponge on Reducing Body Temperature in Toddler Age Fever Children (1-3 Years) explains that there is a decrease in fever by applying a water tepid sponge compress. Using a quasi-experimental research design with one group pretest-posttest. The population in this study were children under 5 years of age who had a fever. Before the water tepid sponge was performed, the child's body temperature was 38.3°C and after the procedure, it was 37.6°C . Judging from the results of the analysis of the paired t test, the p value of $0.000 < 0.05$ was obtained with an average temperature decrease before and after of 0.643°C .

The article Trepid sponge and sponge bath to change body temperature for children with dengue fever explains the effect of a water tepid sponge that can be used to lower body temperature. Using quasi experiment with pretest-posttest. The population in this study is children who have hyperthermia. The child's body temperature before the tepid sponge technique had the lowest temperature was 37.8°C and the highest temperature was 39°C . While the child's body temperature after the tepid sponge technique had the lowest temperature of 37.5°C and the highest temperature of 38.7°C . The results of the analysis showed that there was a significant difference between the child's body temperature before and after the water tepid sponge ($p < 0.05$).

In the article Trepid Sponge and Plaster Compress Against Toddler Who Has Fever, it is explained that the decrease in body temperature by performing the action of water Trepid Sponge. Using quasi

experiment with pretest-posttest. The population in this research is the age of 1 year 2 children, 2 years 3 children, 3 years 5 children 4 years 5 children and male 8 children, female 7 children who have increased body temperature. The body temperature of 3 children before the tepid sponge technique was 37.6°C after the action was 36.0°C . The temperature of 10 children before the tepid sponge was 38.1°C after the procedure was 37.1°C and the body temperature of the 2 children before the procedure was $>39^{\circ}\text{C}$ after the procedure was $>37.5^{\circ}\text{C}$.

Article Effectiveness Of Trepid Sponge Compresses And Plaster Compresses On Child Typhoid Patients with Fevers explained that there was a reduction in fever with a water tepid sponge compress. Using quasi experiment with pretest-posttest. The population in this study were children aged 6-12 years who had a fever. The average body temperature before and after being given a tepid sponge compress for 20 minutes was 38.75°C and 38.08°C with a temperature difference of 0.67°C .

DISCUSSION

Based on the results of the analysis in article 1, it was found that Water Trepid Sponge can reduce body temperature in children so that a decrease in temperature in children is obtained. According to research conducted by Susanti (2012) in an article (Hendrawati & Elvira, 2019) by giving the Trepid Sponge will allow the flow of moist air and help the release of body temperature through convection. Body temperature that is hotter than the temperature of air or water will make heat transfer to air molecules through direct contact with the skin surface. The giving of Trepid Sponge can be done by rubbing warm water all over the client's body. According to the author's assumption, there is a significant effect by giving a tepid sponge to changes in body temperature because this action can cause evaporation and body temperature to become one with room temperature.

Based on the results of the analysis in article 2, the water tepid sponge has an effect and can reduce body temperature in children with hyperthermia. According to research conducted by Hamid (2011) in an article (Suntari et al., 2019) the tepid water sponge technique has an effect on decreasing body temperature because block compresses are directly carried out in several places that have large blood vessels, resulting in increased circulation and increased capillary pressure. . The pressure of O_2 and CO_2 in the blood will increase and the pH in the blood will decrease. According to the author's assumption, there is the effectiveness of the tepid water sponge method on reducing body temperature

in children aged under five with fever but must be repeated in order to reduce body temperature by 100%.

Based on the results of the analysis in article 3, it was found that with the tepid water sponge there was an effect on decreasing body temperature in children. According to research conducted by Kurniati (2016) in an article (Lestari et al., 2019) giving a tepid sponging compress can signal the hypothalamus and stimulate peripheral vascular vasodilation. This causes heat dissipation, giving compresses through the skin increases so that there is a decrease in body temperature to normal again. According to the author's assumption, there is an effect on decreasing body temperature in hyperthermic toddlers by using a water tepid sponge, but in this article there is a collaboration by taking the drug paracetamol.

Based on the results of the analysis in article 4, it was found that the tepid water sponge compress was effective in reducing body temperature in children with fever. According to research conducted by Wardiyah et al (2016) in the article (Rivaldi et al., 2020) the tepid water sponge can reduce body temperature through the evaporation process so that it can accelerate blood circulation then blood will flow from internal organs to the body surface by carrying heat. The skin has many blood vessels, especially the hands, feet, and ears. Blood flow through the skin can reach 30% of the blood pumped by the heart, then heat is transferred from the blood through the skin and lost to the environment, resulting in a decrease in body temperature. According to the author's assumption that compressing the water tepid sponge is effective for reducing children who have hyperthermia, by doing this action can make the body temperature evaporate into the air and accelerate the decrease in body temperature. In this article, there is also a collaboration on taking paracetamol 4 hours before the compress action is carried out.

Based on the results of the analysis in article 5, it was found that the use of water tepid sponges can reduce fever. According to research by Djuwariyah (2011) in an article (Karra et al., 2020) one of the efforts to reduce fever is the tepid sponge which causes the body temperature to warm. The body will interpret that the temperature is hot enough and eventually the body will lower the temperature control in the brain so as not to increase the body temperature further. Warmer temperatures make the vessels that carry peripheral blood widen and experience vasodilation, so that the skin pores will open and facilitate heat dissipation. According to the author's assumption, statistically, the tepid sponge compress technique is more meaningful and qualitatively the temperature change is better after

compression because of the evaporation of body temperature to room temperature which can accelerate the temperature down to normal.

Based on the results of the analysis in article 6, there is a decrease in fever in children carried out by compressing the water tepid sponge. According to Bardu's research (2014) in an article (Putri et al., 2020) tepid sponging is an action to lower body temperature during a fever, namely by soaking the child in warm water, wiping the whole body with warm water using a washcloth, and by compressing the body. Some have large blood vessels. According to the author's assumption, the effect of giving warm tepid sponge compress therapy to decrease body temperature in patients with hyperthermia has been proven to be effective in lowering body temperature in children with hyperthermia due to block compresses on the part of the large blood vessels and accelerate the decrease in body temperature.

Based on the results of the analysis in article 7, it was found that using a water tepid sponge compress could reduce fever in children. According to Hamid's research (2011) in an article (Hijriani, 2019) the tepid sponge is a combination of block technique with swabs in several areas of the body so that the treatment given to clients in this technique will be more complex than other techniques, but with direct block compresses in various places. will facilitate the signal to the hypothalamus more vigorously. In addition, doing wiping will accelerate the dilation of peripheral blood vessels and will facilitate heat transfer from the surrounding environment which will further accelerate the decrease in body temperature. According to the author's assumption, giving a tepid sponge compress is proven to reduce the patient's body temperature due to the evaporation of body temperature into air temperature. The time required in the study is relatively short, namely 15 minutes.

Based on the results of the analysis in article 8, it is found that the water tepid sponge can reduce body temperature. According to research conducted by Hockenberry in the article (Hastuti et al., 2020) that the benefits of the tepid sponge can provide comfort and reduce body temperature in handling cases of clients who have fever. The skin is an effective radiator of heat to balance body temperature, so wiping the entire body/skin causes the skin to release heat by sweating, and by sweating the body temperature initially rises to fall even to normal temperatures. According to the author's assumption, this water Tepid Sponge is effective and has an effect on body temperature above normal to return to normal.

Based on the results of the analysis in article 9, it was found that there was a decrease in body temperature with the action of a water tepid sponge.

According to research conducted by Carlson et al (2019) in an article (Karin et al., 2022) giving tepid sponging using warm compresses in areas with large blood vessels is an effort to provide stimulation to the preoptic area of the hypothalamus to lower body temperature. According to the author's assumption, that the water edged sponge compress is effective in reducing the body temperature of those experiencing hyperthermia. This method can compress the large blood vessels that can stimulate the hypothalamic area and accelerate the decrease in body temperature.

Based on the results of the analysis in article 10, there is an effectiveness of the water tepid sponge in reducing children with typhoid fever. According to research conducted by Tamsuri (2012) in an article (Hastuti et al., 2021) the tepid sponge compress is more effective in lowering body temperature in fever patients diagnosed with typhoid fever. Caused by other factors, one of which is room temperature, where body temperature can exchange with the room or environment, meaning that body heat can be lost or reduced due to a cooler room temperature or environment, and vice versa. According to the author's assumption, the water tepid sponge compress can reduce body temperature caused by typhoid fever, but it must be done gradually so that the body temperature returns to normal. With the action of this water tepid sponge, which is wiping the whole body which causes body temperature to evaporate into the room and accelerates the decrease in body temperature.

Based on the results of the analysis in articles 1-10, there is an effect of decreasing body temperature in children by using a water tepid sponge. Performing these actions can provide comfort to the child, compressing the block of large blood vessels to reach the hypothalamus area and wiping the body can cause evaporation, namely body temperature evaporates into the room so that it accelerates the decrease in body temperature to normal again even though it is done not only once to return to normal. 100%.

CONCLUSION

Based on the results of a review of 10 literatures reviewed, based on the characteristics of study respondents aged 1-12 years. Respondents who experienced hyperthermia/increased body temperature there was an influence of changes/decreased body temperature by giving an average of water tepid sponge for 20-30 minutes, but by doing only 20-30 minutes the body temperature did not return to normal 100% must be done gradually/ repeated so that the body temperature becomes 100% normal. The average temperature of children with fever in the 10

literatures is 38.5°C, the result is p value = 0.001 on the Tepid Water Sponge Compress, which means that there is an effect of decreasing body temperature with the Water Tepid Sponge.

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