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# EFFECTIVENESS OF GIVING WATER TEPID SPONGE AGAINST HYPERTHERMIA POST PENTABIO IMMUNIZATION AT POSYANDU LUWUK VILLAGE, PASURUAN DISTRICT

**Siti Fitriyatul Mubarok*, Raden Maria Veronika Widiatrilupi, Rosyidah Alfitri**
Department of Midwifery, Institute Technology, Science and Health RS Dr. Soepraoen, Malang City, East Java, Indonesia

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## ABSTRAK

**Abstract:**
Children who are given Pentabio immunization often experience an increase in body temperature >37.5°C, this is called Hyperthermia. One therapy to overcome hyperthermia is Water Tepid Sponge. This study aims to determine the effectiveness of giving Water Tepid Sponge on Hyperthermia after Pentabio Immunization in Luwuk Village, Pasuruan Regency. The design of this study used Pre-Experimental with the One-Group Pre-test and Post-test Design approach. The research sample was 17 respondents with water-tepid sponge intervention every 30 minutes for 90 minutes. The researcher used an instrument in the form of a body temperature observation sheet. The sampling technique used was purposive sampling and bivariate analysis using the Friedman Test. The results of the study showed that there was effectiveness in giving Water Tepid Sponge on reducing body temperature of hyperthermia in infants after Pentabio immunization. Judging from the results of the Friedman Test analysis, a p value of 0.000 <0.05 was obtained with an average decrease in body temperature before and after of 1.60°C in 90 minutes of intervention. The conclusion of the study is that there is effectiveness in administering Water Tepid Sponge to reduce hyperthermia body temperature in infants after pentabio immunization.

***Abstrak*:**
*Anak yang diberikan imunisasi Pentabio sering mengalami peningkatan suhu tubuh >37,5°C hal tersebut disebut dengan Hipertermia. Salah satu terapi mengatasi hipertermia adalah Water Tepid Sponge. Penelitian ini bertujuan untuk mengetahui efektivitas pemberian Water Tepid Sponge terhadap Hipertermia pasca Imunisasi Pentabio di Desa Luwuk Kabupaten Pasuruan. Desain penelitian ini menggunakan Pre-Experimental dengan pendekatan One-Group Pre-test and Post-test Design. Sampel penelitian sebanyak 17 responden dengan intervensi water-tepid sponge setiap 30 menit selama 90 menit. Peneliti menggunakan instrumen berupa lembar observasi suhu tubuh. Teknik pengambilan sampel yang digunakan adalah purposive sampling dan analisis bivariat menggunakan Uji Friedman. Hasil penelitian menunjukkan bahwa ada efektivitas pemberian Water Tepid Sponge terhadap penurunan suhu tubuh hipertermia pada bayi pasca imunisasi pentabio. Dilihat dari hasil analisis Uji Friedman, diperoleh nilai p sebesar 0,000 < 0,05 dengan rata-rata penurunan suhu tubuh sebelum dan sesudah sebesar 1,60°Cdalam 90 menit intervensi. Kesimpulan penelitian yaitu ada efektivitas pemberian Water Tepid Sponge untuk menurunkan suhu tubuh hipertermia pada bayi pasca imunisasi pentabio.*



***Corresponding Author:***
Siti Fitriyatul Mubarok,
Department of Midwifery,
ITSH RS Dr. Soepraoen,
Malang, Indonesia
Email: sitifitriyatul@gmail.com

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## INTRODUCTION

Pentabio immunization prevents diphtheria, pertussis, tetanus, hepatitis B, and Haemophilus influenza type b (Hib)[1]. Every immunization, especially pentabio immunization, naturally occurs with specific side effects called Post-Immunization Follow-Up Events (AEFI), one of which is increased body temperature (hyperthermia).

Based on the reporting results, the number of AEFI cases in Pasuruan Regency in 2018 totalled 704 cases, where the lowest case occurred in May, namely 40 cases and the highest case occurred in September, namely 139 cases[2]. Based on a preliminary study that was carried out at the posyandu activities in Luwuk Village, Pasuruan Regency, in November 2022, it was found that 17 mothers had fulfilled their immunization coverage with Pentabio immunization on their babies. Of the 17 mothers whose babies received Pentabio immunization, 11 mothers complained that their babies had a rise in temperature 6-12 hours after Pentabio immunization and were usually only given antipyretic drugs (paracetamol) to reduce fever.

Giving Pentabio immunization often has a side effect, namely an increase in body temperature or Hyperthermia. However, this happens naturally, so parents don't have to worry or worry [1].

Hyperthermia after immunization is the body's reaction to exposure to a tamed virus to form immunity against the virus. When the body forms a new immune system with the injected vaccine, it causes an increase in body temperature/ hyperthermia. Hyperthermia in children requires separate handling, which is different from adults. This is because if the action is inappropriate, it will disrupt the child's growth and development of the child being disrupted [2].

There are two kinds of alternatives to reduce body temperature post-immunization hyperthermia: pharmaco-logical and non-pharmacological. Non-pharmacological therapy is usually done at home, among others, by giving warm compresses. Compressing is an action someone takes to lower body temperature, and it can be done independently [1].

An effective warm compress method is the Water Tepid Sponge. Water Tepid Sponge is a method that uses a combination of block compression techniques and wiping techniques. Many parents don't know about the Water Tepid Sponge method even though Water Tepid Sponge is very different from warm compresses in general. Water Tepid Sponge has the advantage of working by utilizing body parts that have superficial blood vessels, including the forehead, neck, right and left armpits, as well as the right and left thigh folds simultaneously combined with the wiping technique on the chest, abdomen, and back. With this method, the temperature is expected to decrease rapidly [3].

Compress Water Tepid Sponge is very useful for parents in minimizing the use of drugs and avoiding dependence on drugs. This method can be the main alternative when a child experiences an increased body temperature Hyperthermia. Based on the background above, the authors are interested in conducting research titled "Effectiveness of Giving Water Tepid Sponge Against Hyperthermia After Pentabio Immunization in Luwuk Village, Pasuruan Regency." This study aims to learn more about water-tepid sponges and how they are applied to reduce heat.

## RESEARCH METHOD

This study uses the pre-research design Experimental with the one-group approach and pre-test and post-test design. The subject group was observed before and after the action intervention. This study will determine the effectiveness of giving a water-tepid sponge to reduce hyperthermia body temperature after pentabio immunization in infants (2-6 months) at Posyandu Luwuk Village in 2023.

The population in this study consisted of infants aged 2-6 months who received Pentabio immunization at the Posyandu in Luwuk Village, Pasuruan Regency, totaling 21 respondents in April 2023. The population was used to determine the number of samples in this study. Purposive Sampling is a sampling technique with specific considerations[4]. The sample of this study were infants aged 2-6 months who experienced hyperthermia after receiving Pentabio immunization at Posyandu Luwuk Village, Pasuruan Regency, totaling 17 respondents.

To find out whether there is a change in body temperature, tabulation and analysis of bivariate data were carried out with the data normality test using the Shapiro-Wilk test. The Friedman Test was used to compare the data before and after the intervention with a significance level of 0.05

Data collection was carried out through observation techniques using research instruments in the form of observation sheets that had been prepared. Filling in the observation sheet was carried out four times, namely before the water-tepid sponge intervention and after the water-tepid sponge intervention was carried out. The study began by determining the samples taken based on predetermined inclusion criteria. After the sample was obtained, informed consent was given to the respondent's family by explaining the meaning, purpose, benefits, and procedure of giving the water-tepid sponge. After the respondent's family received an answer, the researcher asked for his consent to be involved in the study. If the respondent's family is willing, then the respondent's family fills in and signs the consent form that has been provided.

## RESULTS AND ANALYSIS

### Univariate analysis

The variables measured in this study were temperature before the action, temperature 30 minutes after the action, temperature 60 minutes after the action, and temperature 90 minutes after the action. The research results can be described as follows:

**Table 1.**
**Frequency Distribution of Respondents by Age at Posyandu Luwuk Village, Pasuruan Regency April 2023**

| Age | Frequency | Percentage (%) |
|---|---|---|
| 2 months | 5 | 29.4 |
| 3 months | 4 | 23.5 |
| 4 months | 3 | 17.6 |
| 5 months | 2 | 11.8 |
| 6 months | 3 | 17.6 |
| **Total** | **17** | **100.0** |

Based on table 1 shows that the age of the research respondents was mainly at the age of 2 months, namely as many as five people (29.4 % )

**Table 2.**
**Average body temperature of toddlers after Pentabio immunization before and after being given the water tepid sponge intervention at Posyandu Luwuk Village, Pasuruan Regency, April 2023**

| | Mean | Min | Max | N |
|---|---|---|---|---|
| Before being given WTS | 38.57 | 38.2 | 38.9 | 17 |
| After 30' given WTS | 38.20 | 37.8 | 38.7 | 17 |
| After 60' given WTS | 37.70 | 37.2 | 38.2 | 17 |
| After 90' given WTS | 36.92 | 36.5 | 37.5 | 17 |

Based on Table 2, the average body temperature of infants before being given the water-tepid sponge intervention is 38.571, with a minimum body temperature value of 38.2°C and a maximum value of 38.9°C. In comparison, the average body temperature of infants after Pentabio immunization after 30 minutes of the water-tepid sponge intervention was 38.206, with a minimum body temperature of 37.8°C and a maximum body temperature of 38.7°C. The average body

temperature of babies after Pentabio immunization after 60 minutes of the water-tepid sponge intervention is 37.700, with a minimum body temperature value of 37.2°C and a maximum body temperature of 38.2°C. The average body temperature of babies after Pentabio immunization after 90 minutes of the water-tepid sponge intervention is 36.924, with a minimum body temperature value of 36.5°C and a maximum body temperature of 37.5°C.

### Bivariate Analysis

**Table 3.**
**Results of Analysis of the Effectiveness of Reducing Respondents' Body Temperature Before and After the Tepid Water Sponge Action with the Friedman Test**

| | N | Ieans | SD | Min | Max |
|---|---|---|---|---|---|
| Temperature Before Intervention | 17 | 38.571 | 0.2054 | 38.2 | 38.9 |
| Temperature 30 minutes Intervention | 17 | 38.206 | 0.2487 | 37.8 | 38.7 |
| Temperature 60 minutes Intervention | 17 | 37.700 | 0.2550 | 37.2 | 38.2 |
| Temperature 90 minutes Intervention | 17 | 36.934 | 0.3212 | 36.5 | 37.5 |

Based on Table 3, the results of the Friedman Test showed that the average decrease in body temperature after 30 minutes of being given the water-tepid sponge intervention was 0.3 °C. The average reduction in body temperature after 60 minutes is 0.8 °C, while the average decrease after 90 minutes is 1.6 °C. The results of the analysis obtained p (0.000) < α (0.05), so it can be concluded that H1 is accepted and H0 is rejected. This means there is a significant difference before and after the intervention, so the water-tepid sponge effectively reduces hyperthermia body temperature after pentabio immunization.

## DISCUSSION

### Body Temperature in Infants After Pentabio Immunization Before Being Given Water-Edged Sponge

The water-tepid sponge method is a warm compress method that is effectively used to reduce hyperthermia body temperature by using a combination of block compression techniques and wiping techniques. Water Tepid Sponge has the advantage of working by utilizing parts of the body that have superficial blood vessels, including the forehead, neck, right and left armpits, as well as the right and left thigh folds simultaneously combined with the technique of wiping the chest, stomach, and back[4].

After 5-6 hours after pentabio immunization, a body temperature check is carried out. The results showed that most babies experienced an increase in body temperature. Based on the study results, 17 respondents had a minimum body temperature of 38.2°C and a maximum body temperature of 38.9°C. Most (23.5 %), or as many as four respondents, had a body temperature of 38.6°C. Meanwhile, respondents with the highest body temperature reached 38.9°C (11.8%) or only 2.

### Body Temperature in Infants After Pentabio Immunization After Being Given Water Tepid Sponge

During the study, the intervention was given 5-6 hours after pentabio immunization for 1 hour 30 minutes (90 minutes) divided into three sessions every 30 minutes. After the intervention, observations were made to check body temperature to evaluate the temperature decrease, namely at 30 minutes, 60 minutes, and 90 minutes.

The results of this study stated that there was an average decrease after compressing the water-tepid sponge. Based on the research results, 17 respondents, after 30 minutes of intervention, experienced a decrease in body temperature. Where the minimum value of

body temperature is 37.8°C and the maximum value is 38.7°C. Most respondents had a body temperature of 38.4°C after 30 minutes of intervention.

From the study results, after 60 minutes of giving the water-tepid sponge intervention, the results obtained from 17 respondents showed a decrease in body temperature again. After 60 minutes of giving water to a tepid sponge, the minimum body temperature value is 37.2°C for one respondent, and the maximum value for body temperature is 38.2°C for two respondents. Most respondents had a body temperature close to normal, namely 37.6°C, as many as 6 out of 17 respondents.

From the study results, after 90 minutes of giving the water-tepid sponge intervention, 17 respondents showed a decrease in body temperature again. Most of the respondents have returned to average body temperature. Where is the minimum body temperature value after 90 minutes of giving water to a tepid sponge, namely 36.5°C by 11.8% or by two respondents, and the maximum value of body temperature is 37.5°C by 5.9% or by one respondent? Most respondents had an average body temperature of 36.8°C by 23.5% or as many as 4 out of 17 respondents.

**Effectiveness of Administering Water Tepid Sponge Against Post-Pentabio Immunization Hyperthermia**

Based on the research results that have been obtained, it is known that the average value of decreasing body temperature before intervention and after 30 minutes of intervention is 0.3°C. The body temperature decrease before and after 60 minutes of intervention was 0.8°C. At the same time, the most significant decrease in temperature between before and after the intervention was 90 minutes, with a decrease in body temperature of 1.6°C.

A Water-edged sponge is a procedure For increasing control and loss of body heat by evaporation and conduction, usually done in patients with high fever. Giving water to the sponge on the area's body will result in the child sweating. Water Tepid sponges aim To push blood to t h e surface of the body so that blood can flow fluently. When the body's temperature increases the tepid sponge, the anterior hypothalamus signals the gland to release sweat. Action This expected will happen to decline the body's temperature so that the normal circumstances regular back.

The study's results also showed that the decrease in body temperature depended on the duration of the intervention. The longer the intervention is given, the greater the chance of a decrease in body temperature. However, providing water tepid sponges must be stopped when the temperature is near normal so the child does not experience hypothermia. The water-tepid sponge compress can be given again 60 minutes later. The body is left open, and thin clothes are worn, giving enough fluids to the child so that the temperature decreases quickly.

Based on the research that has been done, it was found that the level of effectiveness of the water-tepid sponge compress is greatly influenced by the length of time the compress is given; the longer it is given, the more influential the water-tepid sponge compress works. This research is supported by the Jannah theory, 2020, which says that applying water tepid sponge to the body area causes the child to sweat. This is influenced by the push of blood to the body's surface so blood can flow smoothly. When the body temperature rises, the anterior hypothalamus signals the sweat glands to release sweat. This action is expected to cause a decrease in body temperature so that it reaches a normal state again.

The results of statistical tests using the Friedman Test obtained a significant value or p (0.000) < α (0.05), then H1 is accepted, and H0 is rejected. It is said that there is a significant difference between the mean before the administration of a water-tepid sponge and after the administration of a tepid sponge. So, it can be concluded that

giving water to a tepid sponge effectively reduces hyperthermic body temperature after pentabio immunization.

From the results of these statistical tests, it can be concluded that water-tepid sponges are more effective in reducing body temperature when given for 90 minutes of intervention.

## CONCLUSION

Based on the research and discussion results, the researchers concluded that the 17 respondents, before being given the water-tepid sponge intervention, mostly had a body temperature of 38.6°C. After 30 minutes of intervention, the average temperature decrease was 0.3°C**.** After 60 minutes of intervention, the average temperature decrease was 0.9°C**.** After 90 minutes of intervention, the average temperature decrease was 1.6°C**.** From the results of the Friedman Test, there was a difference in body temperature before and after giving the tepid water sponge intervention, namely a significant value of p=0.000, which means p < 0.05, so Ho was rejected. From the three results of the study, it can be concluded that water-tepid sponges effectively reduce body temperature by 90 minutes. This water-tepid sponge therapy can be given to children of all ages with a fever.

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