



Effect of Tepid Sponge on changes in body temperature in children under five who have fever in Dr. Achmad Mochtar Bukittinggi Hospital[☆]

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KEYWORDS

Body temperature;
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Abstract

Objective: The purpose of the study was to determine the effect of Tepid Sponge on changes in body temperature in children aged under five who had a fever in Dr. Achmad Mochtar Bukittinggi Hospital.

Method: This research is Quasi Experiment with one group pretest–posttest research design. Done at Dr. Achmad Mochtar Bukittinggi Hospital in April 2018. Respondents of children under five who suffered from fever were 12 people. Samples in Non-probability Sampling with Systematic Sampling. The kind of systematic sampling is type of sample based on the order of members of the population who have been given an even number starting from number 2. The statistical test used is paired sample *T*-test.

Results: Before being given Tepid Sponge all children under five experience high temperatures (100%) of 12 respondents, after being given Tepid Sponge one time gift, the temperature of all respondents becomes normal (100%). Statistical test results showed a significant effect of giving Tepid Sponge to changes in body temperature with $p=0.000$ (≤ 0.05).

Conclusion: It can be concluded that there was effect of Tepid Sponge on changes in body temperature. Health workers are expected to provide Tepid Sponge for children under five who have increased body temperature.

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Introduction

Fever is a condition of body temperature above normal as a result of increase in temperature regulator in the hypothalamus. Most of fever child, fever was a result of the change of heat center (thermoregulation) at hypothalamus. The diseases followed by fever could attack the system increasing the development of specific and nonspecific

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immunity in recovering toward infection.¹ Fever in condition of rectal temperature development $>38^{\circ}\text{C}$ (100.4°F) or oral temperature $>37.8^{\circ}\text{C}$ or axillary temperature $>37.2^{\circ}\text{C}$ (99°F).²

The fever handling could be done with pharmacological action non-pharmacological or both of them. Pharmacological action was giving antipyretics medicine³. One of non-pharmacological action is Tepid Sponge. Tepid Sponge is a procedure to increase the control of body temperature through evaporation and conduction which is usually conducted to the high fever client. The purpose of this action is to decrease the body temperature of hyperthermia clients.⁴ By giving Tepid Sponge, it would be possible to have moist air flow and to help the release of body temperature through convection. The body temperature, which is hotter than air or water temperature will make the heat move to air molecules through direct contact with the skin surface.⁵

The giving of Tepid Sponge could be done by wiping of warm water to all clients body. The effect of giving Tepid Sponge are as follow: making vasodilatation of blood vessel, pores of skin, reduction of blood viscosity, improving metabolism, and stimulating impulse through skin receptor which sent to hypothalamus posterior to decrease the body temperature. The giving of Tepid Sponge could reduce 1.4°C in 20 min.⁶

In Indonesia, till mid of December 2014, there were 2852 children who got fever in 34 provinces, 641 of them were dead, which lower than the previous year in 2013, namely 112,511 people and 871 of them were dead⁷. In 2015, there were 126,675 of children who got fever and 1229 were dead, which is higher than the previous year. The causes of these are the climate change and low attention to environmental cleanliness⁸.

In West Sumatera, it was reported that there were 2282 cases and 12 children were dead (IR = 45.75 per 100,000 people and CFR = 1%) in 2014. At Dr. Achmad Mochtar Bukittinggi Hospital there were 104 children who got fever per year, 10 of them were dead in 2015, and in 2016 there were 301 children who got fever and 13 of them were dead⁶.

Based on the previous survey conducted on December 7, 2017 at Dr. Achmad Mochtar Bukittinggi Hospital, it was found that there were 301 children who got fever in 2016, there were 25 children who got fever per month. Based on interview result with 6 parents, it was found that they used warm compress by fever. They admitted that they did not know how to handle the fever with Tepid Sponge, researcher would like to introduce the Tepid Sponge as the instruments to decrease the body temperature effectively.

Method

This research is Quasi Experiment with one group pretest-posttest research design. Done at Dr. Achmad Mochtar Bukittinggi Hospital in April 2018. Respondents of children under five who suffered from fever were 12 people. Samples in Non-probability Sampling with Systematic Sampling. The kind of systematic sampling is type of sample based on the order of members of the population who have been given an even number starting from number 2. This Tepid Sponge has been done by wiping the entire body of the client with warm water.

The statistical test used is paired sample *T*-test. Before being given Tepid Sponge all children under five experience high temperatures (100%) of 12 respondents, after being given Tepid Sponge one time gift, the temperature of all respondents becomes normal (100%).

Result

Statistical test results showed a significant effect of giving Tepid Sponge to changes in body temperature with $p = 0.000$ (≤ 0.05).

Variable	Mean	SD	SE	p-value	N
Before Tepid Sponge	38.31	0.436	0.12	0.000	12
After Tepid Sponge	37.17	0.46	0.13		

Discussion

The research result using paired sample *T*-test showed that there was 38.31°C of body temperature with deviation standard of 0.436 before giving Tepid Sponge. After giving Tepid Sponge, there was a decrease of body temperature namely 37.17°C with deviation standard 0.46 and p -value 0.000 (p -value < 0.05). The result showed that there was significant difference of body temperature before and after giving Tepid Sponge toward the decrease of body temperature (p -value = 0.000). H_0 was rejected and H_a was accepted, it means that there was significant effect of giving Tepid Sponge toward the change of body temperature.⁹

The research result was also in accordance with research conducted entitled "The effect of Tepid Sponge toward the preschool child's body temperature who got fever at RSUD Sultan Syarif Muhammad Al Kadrie Pontianak"¹⁰ with 16 respondents, using paired sample *T*-test and bivariate analysis result. The research result showed that there was the change of body temperature before and after intervention. The average body temperature before intervention was 38.288 , while after intervention was 37.763 .

The research conducted by Tito, 2014 entitled "The comparison of tepid sponging and plaster compress in decreasing body temperature the child below 5 year who got fever at Puskesmas Salaman 1 Kabupaten Magelang, using independent *T*-test. The research with 15 children under 5 year who got fever showed that there was the average body temperature before giving plaster compress was 38.06°C , while after giving plaster compress was 37.46°C , with average body temperature decrease was 0.6°C . The calculating using independent *T*-test, with p -value 0.002 and α (0.05) showed that there was a difference of body temperature of children under who got fever after giving tepid sponging and plaster compress. The average decrease of body temperature using tepid sponging was 1.09°C while plaster compress was 0.06°C . It was found that using tepid sponging was more effective in decreasing body temperature, because it gave large effects on human skin compared to plaster compress which focused on one point.¹¹

Based on above theories and research result, the researcher analyzed that Tepid Sponge could influence the body temperature of children under five. The effects of giving Tepid Sponge were making vasodilatation of blood vessels, pores, of skin, reducing of blood viscosity,

improving metabolism, and stimulating impulse through skin receptor sent to hypothalamus posterior to decrease the body temperature through evaporation technique namely, to facilitate the displacement of body temperature. Each gram of evaporated water cause the loss of body temperature about 0.58kcal units. In condition of individual without sweat, evaporation mechanism exists about 450–600 ml/day. In this condition, one of the ways of releasing the temperature was through evaporation.

Conclusions

It can be concluded that there was effect of Tepid Sponge on changes in body temperature. Health workers are expected to provide Tepid Sponge for children under five who have increased body temperature.

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