THE EFFECT OF MOTHER-TO-BABY SKIN CONTACT ON DECREASING
FEVER AFTER DPT1/HB1/HIB1 IMMUNIZATION IN THE WORK AREA
OF THE BANCAK HEALTH CENTER, SEMARANG REGENCY

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ABSTRACT

One of the immunizations included in the government program is DPT immunization. The side effect of DPT immunization is high fever which can be treated such as giving antipyretic drugs, increasing breast milk, and wiping or in warm water compresses (IDAI, 2011). The purpose of this study was to prove the effect of mother-to-child skin contact on reducing fever after DPT1/Hb1/Hib1 immunization in the Bancak Health Center, Semarang Regency. This research method uses a Quasi Experimental design with a Pretest-Posttest Non Equivalent Control Group Design. The population of this study was the number of infants who were immunized by DPT1/Hb1/Hib1 in the Work Area of the Bancak Health Center, Semarang Regency, as many as 63 babies. The technique used in this research is non-probability sampling with purposive sampling type. The results showed that there was a significant difference in the average decrease in body temperature of infants with fever after DPT1/Hb1/Hib1 immunization in the intervention group and the control group (p-value 0.001). It is hoped that families, health workers and the community can apply skin to skin in handling baby fever.

Keywords: Skin to skin, baby fever, DPT immunization

Introduction

In Indonesia, immunization is one of the most effective prevention methods in eradicating disease. Immunization protects children against several diseases that can be prevented by immunization (PD3I). As one of the groups targeted by the immunization program, every baby is required to receive complete basic immunizations consisting of 1 dose of BCG, 3 doses of DPT-Hb and/or DPT-Hb-Hib, 4 doses of polio, and 1 dose of measles. In infants in 2014 by 36.9% decreased[8].

In 2015 it became 36.54% with a target of 91% for the Strategic Plan (Renstra). The percentage of DPT 1 immunization coverage in Indonesia in 2012 was 86%, while the DPT 3 coverage was 63%. The percentage of immunization in Indonesia based on the type of immunization from the highest to the lowest, namely BCG 77.9%, measles 74.4%, polio4 66.7%, and DPT-Hb3 61.9%. In Indonesia in 2012, 189 cases of diphtheria were found, 158 cases of tetanus and no pertussis cases (Ministry of Health, 2015) DPT immunization is a 3-in-1 vaccine that protects against diphtheria, pertussis and tetanus. DPT immunization is given 3 times, namely when the child is 2 months old (DPT1), 3 months (DPT2) and 4 months (DPT3), with an interval of not less than 4 weeks. Repeat DPT immunization is given 1 year after DPT3 and at preschool age (5-6 years)[8].

According to data from the Semarang District Health Office in 2015, the Bancak Health Center had the second highest number of AEFIs due to DPT immunization with a frequency of 16.67% after the Tengaran Health Center with a total of 19.04%. In 2016, the Bancak Health Center had immunization coverage for DPT1/Hb1/Hib1 as many as 343 infants with a frequency of 103.9%. The Bancak Health Center has a frequency of AEFI due to DPT immunization, including fever 71.42%, fever and swelling 14.28% and fever and redness as much as 14.28%. Fever that occurs in infants is less than 40℃ and disappears in less than 2 days so there are no AEFIs that require hospitalization. Efforts made by parents in dealing with the side effects of DPT immunization are giving Paracetamol to babies according to the dose, giving warm compresses or plain water,

Handling the side effects of DPT immunization can be done by giving more drinking (breast milk or fruit juice), wearing thin clothes, painful injections can be compressed with cold water, given paracetamol 15 mg / kg every 3-4 hours if needed a maximum of 6 times in 24 hours and the baby may take a bath or wipe with warm water (IDAI, 2011). In Irnawati's research (2010), the antipyretic drug paracetamol was able to lower the temperature in the first 15 minutes and had an effect that could last up to 3 hours after giving paracetamol[6,7].

There are other ways that can reduce body temperature, namely by using the mother's skin contact method and the baby's skin. The assumption that underlies that mother to baby skin contact can reduce the body temperature of a feverish baby is based on the mechanism of heat transfer that occurs from the mother's body temperature to a hypothermic baby. Conversely, a hyperthermic baby can also transfer body temperature to the mother through the conduction process. Skin to skin will also make the mother closer to her baby so that the relationship between the baby and parents is getting closer (Ministry of Health, 2008). Based on the research of Sri Hartini, Dessie W., Widyatuti and Yeni R (2013) entitled "The Effect of Kangaroo Method Care on Body Temperature of Babies with Fever at Telogorejo Hospital and Mardi Rahayu Hospital Semarang" showed a significant difference between body temperature before and after the PMK procedure. In this study, the intervention group received FMD for 60 minutes and was given antipyretics, while the control group was only given antipyretics[5].

Based on the description above, the researcher is interested in examining the effect of mother to baby skin contact on

reducing fever after DPT1/Hb1/Hib1 immunization in the Bancak Health Center Work Area, Semarang Regency.

Methods

This study uses a Quasi Experimental design with the type of Pretest-Posttest Non Equivalent Control Group Design. This research was conducted from May to June 2017 in the Work Area of the Bancak Health Center, Semarang Regency. The target population in this study was the number of infants immunized with DPT1/Hb1/Hib1 at the age of 2 - 3 months from May to June in the Bancak Health Center Work Area. The number of samples is 30 respondents. The technique used in this research is non-probability sampling with purposive sampling type. Univariate analysis was carried out on age and supporting factors, while the bivariate analysis used a dependent T test (paired T test) and an independent T test (independent T test).

Results

This chapter describes the results of research on the effect of mother to baby skin contact on reducing fever after DPT1/Hb1/Hib1 immunization in the Bancak Health Center Work Area, Semarang Regency.

Univariate Analysis
Characteristics of Respondents Based on Infant Age and Supporting Factors in the Intervention Group and Control Group
Table 1 Distribution of Respondents Based on Infant Age and Supporting Factors

Variable	Intervention n(%)	Intervention mean ± SD	Control n(%)	Control mean ± SD	Sig.*
Age	15	2.33± 0.49	15	2.4± 0.51	0.478
Supporting factors					
Mother	14 (93.3)		14 (93.3)		1,000
Grandma	1 (6,7)		1 (6,7)		

*. Levene Homogeneity Test

Based on table 1, the results of the analysis of the baby's age in the intervention group were 2.33 months old with a standard deviation of 0.49 months. The results of the analysis of the baby's age in the control group were 2.4 months old with a standard deviation of 0.51. The results of the homogeneity test of the infant age variable showed that there was no difference in infant age between the two groups.

Distribution of respondents according to supporting factors in the intervention group and control group only one baby (6.7%) was cared for by their grandmother and 14 babies (93.3%) were cared for by their parents. The results of the homogeneity of the supporting factor variables showed that there was no difference in the supporting factors between the two groups.

Description of baby's body temperature before and after in the intervention group and the control group
Table 2 Description of Infant Body Temperature Before and After in the Intervention Group and the Control Group

Temperature	Intervention			Control		
	n	Mean ±SD	Min-Max	n	Mean ±SD	Min-Max
Before	15	38.22 ±0.44	37.7-39.0	15	38.21 ±0.44	37.7-39.2
After	15	37.11 ±0.25	36.8-37.6	15	37.56 ±0.32	37-38

Based on table 4.2, the results of the description of the baby's body temperature in the intervention group before treatment were on average $38.22^{\circ}C$ and standard deviation $0.44^{\circ}C$, while after treatment the average temperature was $37.11^{\circ}C$ and

standard deviation was 0.25°C. In the control group, the average temperature before antipyretics was 38.21°C and standard deviation was 0.4C, while the average temperature after antipyretics was 37.56°C and standard deviation was 0.32°C.

Bivariate Analysis
Differences in Average Body Temperature Before and After in the Intervention Group and the Control Group

Table 3 Analysis of Differences in Average Body Temperature Before and After in the Intervention Group and the Control Group

Group	Before			After		
	n	Mean ± SD	*p-value**	n	Mean±SD	*p-value**
Intervention	15	38.22 ± 0.44	0.001	15	37.11± 0.24	0.001
Control	15	38.21 ± 0.44	0.001	15	37.56± 0.32	0.001

*Test Paired Sample T-Test

From the analysis of table 3, it was found that the average body temperature of infants before treatment was 38.22° C and standard deviation was 0.44° C. Then the average body temperature of infants after treatment was between 37.11° C and standard deviation was 0.31° C. Results statistical test found a significant difference between body temperature before and after in the intervention group with p-value <0.05.

In the control group, the average body temperature of infants before antipyretic administration was 38.21°C and standard deviation was 0.44°C. The average body temperature of infants after receiving antipyretics was between 37.56°C and standard deviation was 0.32°C. Statistical test results there was a significant difference between body temperature before and after in the control group with p-value <0.05.

Average Differences in Infant Body Temperature Decrease in Control and Intervention Groups

Table 4 Average Differences in Infant Body Temperature Decrease in Control and Intervention Groups

Variable Temperature	Group	n	Mean±SD	*p-value**
Body temperature	Intervention	15	1.11±0.26	0.001
	Control	15	0.65±0.21	

*Test Independent Sample T-Test

Based on table 4, it is known that there is a difference in the difference in the decrease in body temperature in the control group is 0.65° C and the intervention group is 1.11° C. From the analysis of the table above, it is found that there is a significant difference between the baby's body temperature in the control group and the intervention group. From further statistical testing, it was obtained p-value <0.001, meaning that there was a significant difference in the average decrease in body temperature of infants in the intervention group and the control group.

Discussion
Description of Body Temperature of Infants with Fever Post Immunization DPT1/Hb1/Hib1 in the Control and Intervention Groups

Respondents in this study were infants who were immunized with DPT1/Hb1/Hib1 in the Bancak Health Center, Semarang Regency. In the analysis of the body temperature of infants with fever before and after in the intervention group, it was found that there was a difference in the average difference in body temperature reduction of 1.11°C, meaning that there was a significant difference between the baby's body temperature before and after skin contact and antipyretic administration.

According to Maryunani (2013), the benefits of skin to skin for infants are reduced calorie consumption, there is stabilization of breathing and heart rate,

temperature stabilization (36.5C-37.5C), reduced incidence of infection so as to reduce the risk of premature death in infants, baby sleep time is longer so babies can rest/sleep more comfortably, babies feel safe and comfortable thereby reducing stress on babies, very premature babies seem to have endogenous mechanisms in reducing pain responses, breast milk is always available and easy to get so that it strengthens the baby's immune system because increased milk production, better infant behavior is indicated by reduced crying, LBW suckling well and longer, and baby's weight gain is better and faster[10.]

In a study by Sri Hartini et al (2013) it was stated that making skin-to-skin contact for 60 minutes and using an antipyretic could significantly reduce the baby's body temperature. Compared to a decrease in temperature in infants with fever who only used antipyretics. PMK is very effective in lowering the baby's body temperature and babies with parents are more comfortable. From the theory and research results above, it can be said that skin to skin can reduce fever due to minor infections and also the side effects of DPT/Hb/Hib immunization[3].

The results of the study in the control group showed that the average difference in temperature before and after administration of antipyretics was 0.65 C. The results of statistical tests in this study obtained a p value of 0.001 meaning that there was a significant difference in temperature between body temperature before and after administration of antipyretics for the next 60 minutes.

In this study, the antipyretic used was paracetamol type antipyretic with a dose of tablet which was given every 4 hours if the fever persisted. According to IDAI (2011), the handling of side effects of DPT immunization can be done by giving more drinking (breast milk or fruit juice), wearing thin clothes, painful injections can be compressed with cold water, given paracetamol 15 mg/kgbw every 3- 4 hours if needed a maximum of 6 times in 24 hours

and the baby can be bathed or wiped with warm water. In Irnawati's research (2010), the antipyretic drug paracetamol was able to lower the temperature in the first 15 minutes and had an effect that could last up to 3 hours after giving paracetamol[6].

Differences in Body Temperature of Infants with Fever Post Immunization DPT1/Hb1/Hib1 in the Control and Intervention Groups

There are several ways to deal with the side effects of DPT immunization, among others, parents are advised to give more water (breast milk or fruit juice), cold water compresses can be applied to the injection site, if the baby has a fever, wear thin clothes and give paracetamol 15 mg. /kg/BW every 3-4 hours (maximum 6 times in 24 hours), then the baby can take a bath or simply wipe with warm water. If there is a severe and persistent reaction, take the baby to the doctor[5].

In Irnawati's research (2010), the antipyretic drug paracetamol was able to lower the temperature in the first 15 minutes and had an effect that could last up to 3 hours after giving paracetamol. In this case, the antipyretic paracetamol functions as a fever reducer by inhibiting the production of prostaglandins and causing vasodilation in the baby. This theory is supported by research by Sri Hartini, et al (2013) which states that giving antipyretics in 60 minutes can reduce the average temperature to 37.54 C, but the results are still slightly above normal (36.5-37.5C)[7].

According to Thukral, the skin-to-skin method can also help control the baby's body temperature and may be associated with a reduced risk of hyperthermia. Skin contact (skin to skin) is a treatment for newborns by placing the baby between the mother's breasts so that there is direct contact of the mother's skin with the baby's skin (Arora, 2008). Various studies have shown that skin to skin can stabilize the temperature, respiratory rate, and heart rate of babies faster than babies who are cared for in incubators. Babies who do skin to

skin will feel comfortable in the mother's arms so that vital signs stabilize more quickly. Babies drink enough and in skin-to-skin contact, can easily maintain their normal body temperature ($36.5°C – 37.5°C$) when in a skin-to-skin position (Depkes, 2008).

According to Maryunani (2013), the success criteria for FMD/skin to skin include a stable and optimal baby's body temperature, being able to suckle, sufficient milk production, stable baby weight gain, and optimal growth and development of the baby. In a study by Sri Hartini et al (2013) it was stated that making skin-to-skin contact for 60 minutes and using an antipyretic could significantly reduce the baby's body temperature. Compared to a decrease in temperature in infants with fever who only used antipyretics. PMK is very effective in lowering the baby's body temperature and babies with parents are more comfortable[10].

This is in accordance with what was stated by Endyarni, et al., (2010), showing that PMK is an alternative to the incubator, while its advantages include being an effective way to meet the most basic needs of babies, namely the existence of baby skin contact with the mother's skin, where the mother's body will be a thermoregulator for the baby[3].

In this study, the results showed that the average decrease in body temperature before and after administration of antipyretics in the control group was $38.21°$ C to $37.56°$C. The average difference in the decrease in body temperature of infants who were given antipyretics in the control group was 0. ,$65°$ C. Then the average decrease in body temperature before and after skin contact with the administration of antipyretics in the intervention group was $38.22°$C to $37.11°$C. The average difference in the decrease in body temperature of infants who made skin contact with antipyretics was given to the intervention group is $1.11°$ C. From the theory and research results, it can be seen that there is a significant difference between the baby's

body temperature with fever before and after in the intervention group and the control group.This study can also show that there is a significant difference in the average decrease in body temperature of infants with fever after DPT1/Hb1/Hib1 immunization in the intervention group and the control group.

Constraints that may affect the measurement results are because only one temperature measurement is carried out, the baby's axilla is not wiped, the ambient temperature and the baby moves a lot. Referring to this temperature, it shows that administration of antipyretics with skin contact is more effective in reducing fever compared to administration of antipyretics alone. Researchers suggest that by making skin contact and giving antipyretics for 60 minutes, the baby's body temperature can drop to the normal range of $37.11°$C. So that skin-to-skin treatment is very useful in lowering body temperature in feverish babies.

Conclusion

From the results and discussion of the research that has been obtained, the researchers make the following conclusions:

a. The average body temperature of infants after DPT1/Hb1/Hib1 immunization before and after skin contact with antipyretic administration in the intervention group was $1.11°$ C. The average temperature reduction in the intervention group was greater than the control group.

b. The average body temperature of infants after DPT1/Hb1/Hib1 immunization before and after administration of antipyretics in the control group was $0.65°$ C. The average temperature reduction in the control group was lower than the intervention group.

c. There was a significant difference between the baby's body temperature after DPT1/Hb1/Hib1 immunization before and after the skin contact procedure accompanied by antipyretic

administration in the intervention group with a p-value of 0.001.

d. There was a significant difference between the body temperature of infants with fever after DPT1/Hb1/Hib1 immunization before and after being given antipyretics in the control group with a p-value of 0.001.

e. There was a significant difference in the average decrease in body temperature of infants with fever after DPT1/Hb1/Hib1 immunization in the intervention group and the control group with a p-value of 0.001.

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