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Research article

Medical research

Effect of combination of medical therapy on paracetamol and intervention of warm water compress on maternal body temperature and abnormal repair of FHR in pregnant women with infection fever

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ABSTRACT

Background

Pregnant fever has an impact on fetal well-being, causing abnormal fetal heart rate (FHR). Effects of fever on the fetus in the uterus, depending on the high degree of maternal body temperature and the duration of fever. It has become a clinical procedure to reduce maternal temperature by administering medical paracetamol therapy. To increase the speed and amount of decrease in maternal body temperature by giving a combination of paracetamol and warm water compress (WWC). Paracetamol lowers core temperature. WWC on the periumbilical wall can reduce surface body temperature and can create a lower fetal ambient temperature, thereby facilitating the transfer of fetal body heat to the environment where the fetus lives.

Objective

To see the effect of giving a combination of paracetamol medical therapy and warm water compresses 34-37°C to decrease body temperature and improve the frequency of fetal heart rate.

Research methods

This research is a *True Experimental* type of research, with a *Randomized Control Trial* design with *pre-post test control group design*. Sampling techniques use *probability sampling*. A sample of 26 people in the population of pregnant women aged 22 weeks to 40 weeks who had a fever with abnormal FHR frequency. WWC are performed on the abdominal wall and lower back for 60 minutes with 6 measurements. The control group was only given paracetamol medical therapy and confounding variables (administration of intravenous fluids, maternal oxygenation, and maternal lying position left) were controlled. Statistical tests using *repeated measures ANOVA* tests.

Research result

Analysis results, a combination of medical therapy for paracetamol 500 mg/oral and WWC 34-37 °C on the abdominal wall and lower back can reduce the degree of body temperature fever by 1.3 °C can accelerate the decrease in body temperature 10 minutes faster than the control group that only decreased 0.9 °C. The decrease in maternal body temperature in the intervention group, affects the improvement in the frequency of FHR on average 16x /minute reaching normal within 20 minutes earlier. The decrease in temperature and frequency of FHR occurred

in both groups and the results of the test did not differ significantly between groups, decreasing temperature $p = 0.210$ and improving the frequency of FHR $p = 0.688$.

Conclusion

The combination of paracetamol and WWC medical therapy, clinically reduced the degree of body temperature by a difference of 10 minutes better and returned the normal FHR value 20 minutes earlier than the control group.

Keywords: Compress warm water on the abdominal wall, Pregnant women fever, Reduce body temperature, Abnormal FHR, Reduce surface temperature, FHR on the mother's fever

BACKGROUND

Fetal distress occurs because the fetus does not receive enough oxygen in the uterus, [1,2] with abnormal frequency of Fetal Heart Rate (FHR). This can be caused by fever [3] (body temperature $\geq 37.8^\circ\text{C}$), [4] which is caused by obstetrics and non obstetrics.[5] Fever causes unstable blood flow to the fetus, the needs of the fetus are affected.[6,7] The process of infection, causes the body the fetus has a hypertherm. The high heat supply of the body causes the fetal body heat to be unable to move to the central circulation and to the abdominal wall of the mother. [8] Fever can occur in 10.5% of all pregnant women, [9,11-13] often occurs in the second and third trimesters, [11] most occur in the third trimester (70.8%). [8, 11, 14] Severity due to fever in pregnant women depending on the height of the mother's temperature, the length and time of fever [8, 15] The impact of fever can cause congenital defects, [9, 16] premature rupture of membranes, premature birth, [9, 11] impaired growth, [6, 17] asphyxia, [18-20] errors, fetal health problems to outside the uterus, [20] fetal deaths [21] and infants aged 0-12 months. [3] This contributes to the rate of morbidity and mortality of the fetus. [5, 18]

To reduce the adverse effects of fever in pregnant women, it requires proper and fast management to overcome hypoxia. [22, 23] Fetal distress in pregnant women with fever, managed by administering intravenous intravenous fluid therapy, positioning the mother to lie on her side to the left side, giving oxygenation and antibiotics as cyst eradicators causing infection. [24] In the case of fever in pregnant women, reducing body temperature immediately is the best thing to accelerate improvement in fetal well-being. [18] By creating a lower fetal ambient temperature, the fetal body heat easily expands around the fetus's dwelling.

Research on fetal distress due to fever, FHR can return to normal after maternal body temperature is obtained by administration of paracetamol 1000 mg / oral and in cases of fetal distress due to fever due to

chorioamnionitis, after using a single dose 650 mg FHR acetaminophen suppository. Paracetamol is considered for pregnant women [25] and can reduce the temperature within 30-60 minutes, [26] but the function of paracetamol can only affect core temperature.

To reduce the surface temperature of the skin, it can be done by compressing warm water (WWC). The effectiveness of warm air compresses has been tested, as in permatasari studies, with the agreement of WWC 20 minutes can reduce body temperature to 1.2°C , more effective than ordinary air compresses. While in Hartatik's study, body temperature could drop 1.3°C . This reinforces the opinion that every 1 gram of warm air that evaporates, can release 0.58 kilo calories of body heat.[27,28] WWC on the abdominal wall is more effective than axillary[29] and can be done in children and adults.[30] WWC which is done on the abdominal wall, a favorable location for decreasing body temperature and decreasing body temperature closest to the fetus. With intra-uterine resuscitation interventions and handling of maternal infections combined with WWC, it can restore the kejanin blood supply and reduce the temperature around the fetus's residence so that the FHR can return to normal.

RESEARCH METHODS

The type of this research was *True Experiment Design with Randomized Control Trial* with village control group pre and post test with two groups of research subjects who were repeatedly assessed using *Annova's Repeated Measurrement test*. To see the effect of giving a combination of paracetamol medical therapy and warm water compresses $34-37^\circ\text{C}$ to decrease body temperature and improve fetal heart rate frequency.

The intervention was given in the form of a combination medical therapy paracetamol tablet 500 mg/oral single dose combined with Warm Water Compressive (WWC) $34-37^\circ\text{C}$ intervention, to pregnant women with infectious fever lying in the left side oblique position (15°), oxygenated a

maximum of 4 liters and get intravenous fluid therapy (RL) of no more than 500 ml and the research process is carried out at room temperature with a temperature of 23-28 °C. The treatment control group was as the intervention group, but was not given intervention WWC 34- 37°C. Performed on 26 respondents divided into 1 research group, pregnant women with gestational age more than 22-40 weeks with fever infection temperature 37.5 °C in the hospital.

The intervention group received one time repeated dose of paracetamol 500mg /oral tablets and WWC. One time the compress period stretches the compress cloth on the surface of the abdominal wall and the entire surface of the lower back for 2 minutes, lift the cloth and let it dry. Repeat the compress stage until the treatment time is 60 minutes. Immediately treat the treatment after the

first assessment. The duration of treatment is 60 minutes, the assessment is carried out every 10 minutes (1 pre, 6 post) for 60 minutes of treatment time. Measurements of the effect of treatment were carried out by assessing body temperature and FHR frequency. Fever that is included in the exclusion criteria is caused by drugs, critical illness and emergency due to bleeding.

RESULTS

Effect of Combination of Medical Therapy on Paracetamol and Intervention of Warm Water Compress on Mother's Body Temperature and Abnormal FHR Repair in Pregnant Women With Infection Fever.

- Analysis of Prerequisites.

Table 4.1 Test the normality of maternal body temperature data and fetal heart rate

Time Category	P value ^x			
	Mother's Body Temperature		FHR	
	Intervention	Control	Intervention	Control
0	0,012	0,206	0,111	0,031
10	0,015	0,211	0,207	0,159
20	0,015	0,227	0,047	0,024
30	0,031	0,129	0,525	0,028
40	0,674	0,033	0,074	0,118
50	0,692	0,151	0,117	0,087
60	0,901	0,056	0,308	0,000

^xshapiro wilk

Shapiro wilk

Most of the data were normally distributed so that the statistical test used to test the hypothesis of

differences in maternal body temperature and FHR frequency before and after treatment in each group was with *repeated measured*

ANOVA

Univariate Analysis

Characteristics of respondent data

Tabel 4.2 Characteristics of respondent

Characteristics of respondent	Research group (%)					Total P (n = 26)%
	Intervention (n = 13)		Control (n = 13)		(n = 26)%	
	N	%	N	%		
Age						
< 20 years	2	15,4	1	7,7	11,5	0,408*
20 – 35 years	8	61,5	10	76,9	69,2	
> 35 years	3	23,1	2	14,5	19,2	
Total	13	100	13	100	100	

Number of pregnancies						
Primigravida	4	30,8	6	46,2	38,5	0,109*
Multigravida	8	61,5	4	30,8	46,2	
Grande multigravida	1	7,7	3	23,1	15,4	
Total	13	100	13	100	100	
Gestational age						
Trimester II (12-27 week)	6	46,2	4	30,8	38,5	0,188*
Trimester III (28-41 week)	7	53,8	9	69,2	61,5	
Total	13	100	100	100	100	
Disease						
Midwifery	10	76,9	9	69,2	73,1	0,402*
Non- Midwifery	3	23,1	4	30,8	26,9	
Total	13	100	13	100	100	

The characteristics of the mother's age were mostly in the age range of 20-35 years (18 people), multigravida (12 people) and the highest gestational age was the third trimester of pregnancy due to fever due to midwifery infection 19 people (73.1%). From

the Levene variant test, the characteristics of the data distribution are equivalent or homogeneous with a value of $p > 0.05$ so that they do not affect the results of the study.

Basic data characteristics

	Variable	Intervention group	Control groupPz
	Mean \pm SD	Mean \pm SD	
Mother's Body Temperature (pre)	38,34 \pm 0,37	38,28 \pm 0,43	0.299
Frekuensi FHR (pre)	174 \pm 7,07	173 \pm 8,07	0.741

The description of the mother's body temperature and FHR frequency at minute 0 (pre test) / before being given treatment, homogeneous data distribution. The body temperature before treatment in the intervention group averaged mean 38.34 °C (SD \pm 0.37) and the average initial temperature of the control group respondents mean 38,28 °C (SD \pm 0.43) with the second crew difference value group $p =$

0.299. The initial average frequency of FHR in the intervention group was 174 x /minute (SD \pm 7.07) and the control group with an initial FHR rate of 173x /minute (SD \pm 8.67). The difference in initial FHR frequency between groups as much as 1x pulse /minute was higher in the intervention group with a difference value of $p = 0.741$.

Description of changes in maternal temperature based on measurement time

Table 4.4 Description of changes in maternal body temperature based on measurement time

Temperature measurement results (°C)				
Time (Minutes to)	Intervention group		Control group	
	Mean+ SD	P*	Mean+ SD	P*
0	38,34 \pm 0,373	0,012	38,28 \pm 0,430	0,206
10	38,23 \pm 0,307	0,015	38,25 \pm 0,369	0,211
20	38,06 \pm 0,323	0,015	38,12 \pm 0,352	0,227
30	37,87 \pm 0,293	0,031	38,03 \pm 0,307	0,129
40	37,65 \pm 0,263	0,674	37,86 \pm 0,250	0,033
50	37,34 \pm 0,369	0,692	37,65 \pm 0,233	0,151
60	37,01 \pm 0,382	0,901	37,36 \pm 0,243	0,056

*Uji Saphiro Wilk

Decreasing body temperature occurs gradually in both groups. The number of decreases in temperature in the intervention group: 0.11 °C, 0.17 °C, 0.19 °C, 0.22°C, 0.31 °C and 0.33 °C. The amount of the pre-body temperature drop to the 6 th measurement

decreased by 1.33°C. In the control group: 0.03 °C, 0.13°C, 0.09 °C, 0.17 °C, 0.21 °C and finally 0.29 °C. Decreasing body temperature to post decreased by 0.92°C.

Overview of Changes in FHR Frequency Improvement based on measurement time

Table 4.5 Description of changes Improved FHR frequency based on measurement time

Time (Minut to)	Results of measurement of fetal heart rate (pulse/minute)			
	Intervention group		Control group	
	Mean+ SD	P*	Mean+ SD	P*
0	174± 7,07	0,111	173± 8,07	0,031
10	173± 6,60	0,207	172± 7,73	0,159
20	172± 6,47	0,047	171± 7,47	0,024
30	168± 4,55	0,525	169± 7,10	0,028
40	165± 3,59	0,074	166± 5,55	0,118
50	160± 2,28	0,117	163± 4,45	0,087
60	158± 1,96	0,308	160± 03,57	0,000

*Uji Saphiro Wilk

From pre to each post assessment (after the intervention is given) the frequency of reduction in the intervention group can be described: 1 pulse, 1 pulse, 4 pulses, 8 pulses, and 2 pulses. the repair control group for 6 times the depicted rating decreases: 1 pulse, 1 pulse, 2 pulses, 3 pulses, 3 pulses, and 3 pulses at the 6th rating. The decrease in

the frequency of FHR pre-to the post intervention group could decrease by 16x beats /minute, from 174x /minute (SD +7.07) to 158x /minute (SD +1.96). The FHR frequency control group dropped from 173x /minute (SD +8.07) to 160x /minute (SD +03.57), with a decrease of 13 beats per minute.

Number of Subjects picture reaches normal body temperature based on measurement time

Table 4.6 Description of the Number of Subjects reaching normal body temperature based on the time of measurement

Time of assessment	Control group		Intervention group		P
	N	%	N	%	
Minute to 10	0	0	0	0.0	1.000
Minute to 20	0	0	0	0.0	
Minute to 30	1	7.7	2	15.4	
Minute to 40	1	7.7	8	61.5	
Minute to 50	5	38.5	2	15.5	
Minute to 60	4	30.8	1	7.7	

levene test

The highest number of subjects in the intervention group reached normal temperatures at the 40th minute measurement (8 people / 61.5%) and at the 60th minute had 100% normal labeling. In the control group, the highest number of subjects became normal temperatures in the 50th minute (5 people (38.5%)). The difference in

the number of subjects reached the normal temperature of the two groups, occurred in the 40th minute in the intervention group, and in the 50th minute in the control group. a difference of 10 minutes but with the weight of the number of intervention groups, more.

Description of Number of Subjects achieved improvement in normal FHR frequency based on measurement time

Table 4.7 Total Number of Subjects achieving normal FHR frequency based on the measurement time

Time of assessment	Control group		Intervention group		P
	N	%	N	%	
Minute to 10	0	0.0	0	0.0	1.000
Minute to 20	0	0.0	0	0.0	
Minute to 30	0	0.0	1	0.0	
Minute to 40	0	0.0	4	30.8	
Minute to 50	1	7.7	5	38.5	
Minute to 60	10	76.9	3	23.1	
>60 menit	2	15.4	0	0.0	

levene test

In the intervention group the subjects had reached a normal FHR frequency since the 30th minute. The number of subjects reached a normal FHR of 38.5% in the 50th minute. In the control group, the first

control group experienced improvement in the normal FHR frequency, in the 50th minute (1 person) and the most in the 60th minute (76.9%) and could not reach 100% normal at 60 minutes.

RESULTS OF BIVARIATE ANALYSIS

Effect of treatment on mother's body temperature

Analysis of differences in body temperature between groups.

Table 4.8 Results of Repeated Measure Anova Analysis (Test of Between Subject Effect): Differences in Body Temperature Between Control Groups and Intervention Groups

Source	Type III Sum of Squares	Df	Mean Square	F	p value
Suhu Badan	1.046	1	1.046	1.660	0.210

The difference in maternal body temperature between the control group and the intervention group

with a value of $p > 0.05$ (SD 1), which means there is no significant difference, mean square 1.046. Analyze body temperature differences in each group.

Table 4.9 Analysis of Body Temperature Differences in each group

Body temperature	Variable group	Mean±SD	*P
Temperature Pre Test	Intervention	38,34 + 0,373	0.700
	Control	38,28 ± 0,430	
Minute temperature to 10	Intervention	38,23 + 0,307	0.864
	Control	38,25 ± 0,369	
Minute temperature to 20	Intervention	38,06 + 0,323	0.646
	Control	38,12 ± 0,352	
Minute temperature to 30	Intervention	37,87 + 0,293	0.182
	Control	38,03 ± 0,307	
Minute temperature to 40	Intervention	37,65 + 0,263	0.043
	Control	37,86 + 0,250	

Minute temperature to 50	Intervention	$37,34 + 0,369$	0.018
	Control	$37,65 \pm 0,233$	
Minute temperature to 60	Intervention	$37,01 + 0,382$	0.010
	Control	$37,36 \pm 0,243$	

The body temperature of the control group was higher than the intervention group. there was no difference in body temperature between groups but more intervention groups reached since the 10th minute measurement had reached a better

temperature reduction than the control group. On measurements to 4-67 the second body temperature difference between groups: 0.33 °C, 0.21 °C, 0.32 °C, 0.035 °C.

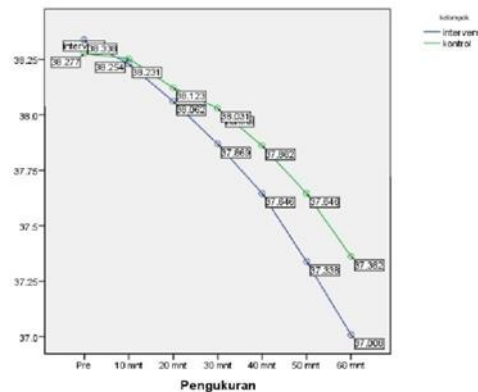
The results of the analysis of different body temperature tests before and after being treated.

Table 4.10 Results of analysis of different body temperature tests before and after being treated

Intervention group				Control group				<i>p value</i>
Intervals of measurement		Mean Difference	<i>p value</i>	Intervals of measurement		Mean Difference		
<i>Pre Test</i>	Minute to 60	1.331	0.000	<i>Pre Test</i>	Minute to 60	0.915	0.000	
<i>Pre Test</i>	Minute to 10	1.108	0.059	<i>Pre Test</i>	Minute to 10	0.023	1.000	
Minute to 10	Minute to 20	0.169	0.000	Minute to 10	Minute to 20	0.131	0.000	
Minute to 20	Minute to 30	0.192	0.000	Minute to 20	Minute to 30	0.92	0.239	
Minute to 30	Minute to 40	0.223	0.000	Minute to 30	Minute to 40	0.169	0.001	
Minute to 40	Minute to 50	0.308	0.17	Minute to 40	Minute to 50	0.215	0.000	
Minute to 50	Minute to 60	0.331	0.000	Minute to 50	Minute to 60	0.285	0.000	

The intervention group before being given an average treatment of 38.34°C, and after being given treatment, became 37.01°C with a *mean difference* of 1.331. The *mean* decrease in body temperature occurs in the assessment of temperature decrease from the 10th minute to the 20th minute with a mean of 0.169. While

the control group with an initial temperature of 38.28°C becomes 37.36°C, the difference in decreasing body temperature at each measurement time with the highest mean value on the 20th minute to the 30th minute. The following graph of temperature decrease between groups.



In the Intervention group, body temperature since the first 10 minutes has decreased. The normal temperature was mostly achieved in the 50th minute, while in the new control group it was reached in the

60th minute. The difference in temperature reduction was not significant between the intervention group and the control group ($p = 0.210$).

Effect of treatment on improvement of Fetal Heart Rate frequency

The test results of the analysis of differences in FHR frequency between groups.

Table 4.11 Results of Repeated Measure Anova Analysis (Test of Between Subject Effect): Differences in Frequency of Fetal Heart Rate Between Intervention

Source	Type III Sum of Squares	Df	Mean Square	F	p value
Frekuensi FHR	31.736	1	31.736	0.165	0.688

The mean squer of FHR frequency between groups was 31,736 (Df 1) and $p = 0,688$ ($p > 0,05$), which meant that there were no significant differences between groups.

Analyze the difference in FHR frequency between each group

Table 4.12 Analyze the difference in FHR frequency between each group

FHR frequency	Variable Group	Mean±SD	*P
FHR Pre Test	Intervention	173,77 + 7,07	0.798
	Control	173,00 + 8,07	
FHR Minute to 10	Intervention	173,46 + 6,60	0.686
	Control	172,31 + 7,73	
FHR Minute to 20	Intervention	171,69 + 6,47	0.781
	Control	170,92 + 7,47	
FHR Minute to 30	Intervention	167,77 + 4,55	0.538
	Control	169,23 + 7,10	
FHR Minute to 40	Intervention	164,69 + 3,59	0.344
	Control	166,46 + 5,55	
FHR Minute to 50	Intervention	160,00 + 2,28	0.026
	Control	163,46 + 4,45	
FHR Minute to 60	Intervention	157,77 + 1,96	0.116
	Control	159,62 ± 03,57	

The difference in the difference in FHR frequency between groups, the difference in the difference in the control group was higher than the intervention group. The difference is at most 3 times the pulse in the 5th

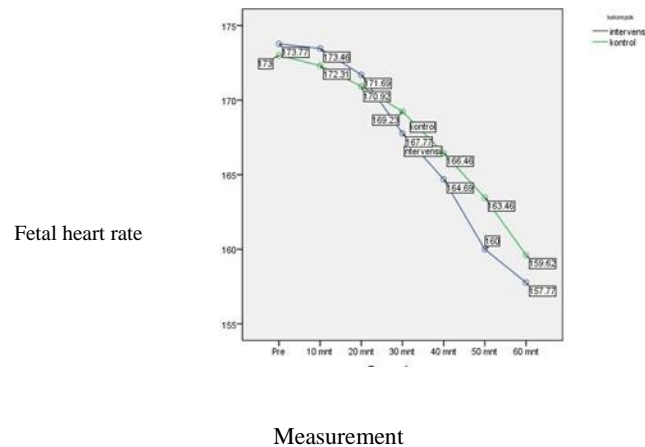
minute measurement. The intervention group can decrease to 16x beats / minute, from 174x / minute (SD ± 7.07) to 158x / minute (SD ± 1.96). In the control group the frequency of FHR dropped from 173x /

minute (SD ± 8.07) to 160x / minute (SD ± 03.57), with a decrease of 13 beats / minute.

The results of the FHR frequency difference test before and after treatment.

Table 4.13 FHR frequency test results before and after interventions in the control group and intervention group

Intervention group				Control group			
Intervals of measurement		Mean	<i>p value</i>	Intervals of measurement		Mean	<i>p value</i>
		Perbedaan				Perbedaan	
<i>Pre Test</i>	Minutes to 60	16.000	0.000	<i>Pre Test</i>	Minutes to 60	13.385	0.000
<i>Pre Test</i>	Minutes to 10	0.308	1.000	<i>Pre Test</i>	Minutes to 10	0.692	1.000
Minutes to 10	Minutes to 20	1.769	0.005	Minutes to 10	Minutes to 20	1.385	0.158
Minutes to 20	Minutes to 30	3.923	0.006	Minutes to 20	Minutes to 30	1.692	0.012
Minutes to 30	Minutes to 40	3.077	0.000	Minutes to 30	Minutes to 40	2.769	0.048
Minutes to 40	Minutes to 50	4.692	0.000	Minutes to 40	Minutes to 50	3.000	0.009
Minutes to 50	Minutes to 60	2.231	0.042	Minutes to 50	Minutes to 60	3.846	0.006



In the intervention group, the effect of the treatment given to FHR between the pre test to the first measurement has not yet decreased $p = 0.158$. DJJ experienced improvements occurring from the 20th minute onwards. In the intervention group, the normal value of FHR was reached in the 50th minute, while in the new control group it was reached in the 60th minute.

DISCUSSION

Characteristics of Respondents Against Research Variables

Age of pregnant women with infectious fever in the age range of 21-35 years, pregnant women with many ages, trimester of pregnancy 16 people from 26 respondents (69.2%). many consider pregnancy disease (73.07%). The results of this study are supported by the results of a study of 31 of the 103

pregnant women studied 99.2% of fever infections and 19.4% of these increased tachycardia. Rupture of the bag increases the reserve of infection during pregnancy pregnant women improve fever. So with the largest number of respondents with midwifery infections,[8,11,14] supporting the theory of microorganisms reaching the amniotic cavity and fetus, so that the highest number of respondents is due to fever infection.

A decrease in body temperature and FHR Frequency Repair reaches normal

The decrease in body temperature of both groups reached normal occurred at the same time in the 30th minute but the number of intervention groups was more. The intervention group 10 minutes earlier experienced a decrease in body temperature compared to the control group. This illustrates that the combination of WWC and paracetamol is better than

only with paracetamol alone. paracetamol can affect core temperature.[32] The use of paracetamol in pregnant and nonpregnant mothers has the same effectiveness.[33] So that in the control group, body temperature became normal at the time of the last assessment because only medical therapy for paracetamol tablets 500 mg was given.

Expansion of the FHR frequency during the 60 minute research process, the average improvement in the frequency of FHR can return to normal first time in the intervention group. Occurs in the 3rd assessment after the treatment was started and achieved improvement to normal at the 5th assessment of 5 people (38.5%). Whereas in the control group, the first time the FHR frequency became normal in the 50th minute amounted to 1 person and the most in the 60th minute amounted to 10 people (76.9%) and there were 2 respondents who had not experienced improvement after the treatment was completed. the intervention group experienced better improvement than the control group. With a decrease in body temperature, it will affect the uteroplacental blood flow system.[10] So that after the temperature decreases, blood flow to the fetus becomes smooth again and affects the repair of FHR.[34]

Differences in the decrease in the degree and timing of maternal body temperature recovery between the intervention group and the control group

In the intervention group the initial temperature was 38.34 °C and reached an average of 37.01 °C (up to 0.387) in the 60th minute, with a decrease in the amount of body temperature of approximately 1.3 °C. While in the control group who gave 500 mg/ oral paracetamol tablets and 3 other fetal distress treatments, until the end of the 60th minute the initial temperature treatment was 38.28 °C and the body temperature decreased 0.9 °C to 37.36 °C (to 0.243) The difference in the degree of decline of the two groups is 0.3 °C. Both groups experienced a gradual decline with an analysis test to calculate the difference using *Repeated Measure Annova* test, the difference between these two groups was not significant with $p = 0.210$. However, clinically, the temperature reduction in the intervention group was higher than the control group.

The description of the time of temperature drop between groups began to occur in the 40th minute until the 60th minute of the two groups. the earlier

intervention group reached an average of normal temperature in the 50th minute while in the control group it occurred in the 60th minute. The two groups differed by 10 minutes to decrease the body temperature of the fever. ANOVA repeat test analysis results (Test of Between Subject Effect) between groups showed the results of $p > 0.05$, which means there was no significant difference between the FHR frequency between groups on each measurement.

The results of this study are in line with Permatasari's research, that WWC is more effective than if it reduces the body temperature of external techniques using ordinary water. [35] Although the study did not use paracetamol. While in the Mahdiyah study, et al., [27] strongly supported this study, the temperature declined faster by giving a combination of paracetamol with a WWC combination. The results of the muthalib study strongly support this study, where WWC on the abdominal wall is more effective considering the compressed surface area that supports more evaporation processes [30] and WWC carried out in adults as in the Wideasih study, supporting this study.[30] However, the results of the Maya case study , not in line with this study, WWC on the abdominal wall is no more effective than WWC in the axilla.[36]

A decrease in temperature of 1.33 in the combination group of paracetamol and WWC from the results of this study, with the support of giving intravenous fluids, at room temperature 23-28 °C, the mother's body temperature can reach normal temperatures 10 minutes earlier than the control group.

Differences in FHR Frequency Improvement and Time of FHR Frequency Repair Between Groups

After being given treatment for 60 minutes, in both groups the improvement of FHR frequency was gradual, 16 beats/ minute, from 173.44x/ minute to 157.77x/ minute in the intervention group and decreased 13x beats/ minute from 173x/ minute to 159.62x/ minute in the control group. The difference in the decrease in body temperature of both groups from the results of the analysis of Repeated Measure Anova (Test of Between Subject Effect) shows the value of $p = 0.688$ ($p > 0.05$), meaning that there is no significant difference. However, clinically, the combination-intervention group showed more rapid decreases of 20 minutes

earlier reaching normal and with the most normal FHR on the 50th minute, with 100 respondents reaching the normal limit.

Whereas in the control group, the decrease in FHR was 3 times the rate with the control group with the average decline occurring in the 60th minute with 2 respondents not yet achieving normal values at the 7th assessment (60th minute after treatment). The time difference in the average of achieving a normal difference of 10 minutes first reached normal in the intervention group. With a decrease in the mother's body temperature, it will be followed by repair of FHR,[37,38] and lying on her side to the left side, with a slope of 15, can contribute to the improvement of FHR frequency,[39] and fetal oxygenation can improve FHR if it is not caused by a blocked blood flow. [40]

The act of accelerating the decrease in body temperature from the inside by using medical therapy paracetamol whose mechanism of action can reduce core temperature[41] and by using WWC intervention on the stomach wall of pregnant women with fever, besides being able to reduce surface body temperature, and cool the temperature around the fetus's residence. So that the higher fetal temperature due to increased maternal temperature and the process of infection can be transferred around the fetus of the abdominal wall. To see the correlation between the effect of decreasing the temperature of the skin surface of the abdominal wall and the improvement of FHR frequency after the temperature has decreased, it still needs further research.

CONCLUSION

From the results of this study, the combined group of paracetamol and WWC medical therapies could reduce body temperature more and improve abnormal FHR frequency even though the differences between the two groups were not significant, lowering the average body temperature level and faster body

temperature reduction than the control group. The intervention group, lowering the average FHR frequency and earlier 20 minutes can achieve improvement in the frequency of FHR to normal.

RECOMMENDATION

For health services

It is hoped that it can be used as an input material in developing clinical procedures to improve the quality of care for pregnant women with fever.

For the community

In clinical application, this WWC intervention can be carried out by patients and families at home if there is a fever in pregnant women to create a lower ambient temperature than the mother's temperature before receiving doctor therapy. With WWC in the abdominal area, starting from the lower part of the mother's breast to the lower abdomen (the area where the fetus lives in the abdominal cavity), use a small towel soaked in warm water then squeeze and cover the entire abdomen and lower back (back of the stomach area) for 1-2 minutes. Then left until the water on the surface of the stomach and lower back evaporates.

For educational

Can contribute to the development of midwifery and nursing theories in high-temperature management due to fever infections in pregnant women.

For further researchers

Suggestions for subsequent research, limiting the types of causes of infectious fever, comparing core temperatures and surface temperatures, changing different types of water, involving labor fever, and increasing the allocation of time for research.

BIBLIOGRAPHY

- [1]. Maritalia D. Care for Postpartum and Breastfeeding Midwifery. Yogyakarta: Learning Library; 2012.
- [2]. Republic of Indonesia Ministry of Health. 2014 data and information (Indonesian Health Profile). Jakarta:
- [3]. Ministry of Health of the Republic of Indonesia. 2015 Sutarjo US. Indonesia Health Profile 2015. Jakarta: Ministry of Health of the Republic of Indonesia. 2016

- [4]. Republic of Indonesia Ministry of Health. Indonesian Health Profile Data and Information in 2016. Ministry of Health of the Republic of Indonesia, Pusdatin Ministry of Health of the Republic of Indonesia. 2017.
- [5]. Central Java Provincial Health Office. Health Profile of Central Java Province. 2014. Semarang: Central Java Provincial Health Office.
- [6]. Central Java Provincial Health Office. Health Profile of Central Java Province. 2015. Semarang: Central Java Provincial Health Office.
- [7]. Central Java Provincial Health Office. Central Java Province Health Profile 2016. Semarang: Central Java Provincial Health Office.
- [8]. Demak District Health Office. Demak District Health Profile. 2016. Demak: Demak District Health Office.
- [9]. Republic of Indonesia Ministry of Health. Exclusive breastfeeding situation and analysis. 2014. Jakarta: Ministry of Health of the Republic of Indonesia.
- [10]. Nainggolan M. Knowledge of primigravida mothers regarding the factors that affect the quality and quantity of breast milk in Simalingkar health center Medan. Knowledge of Primigravida Concerning Factors Affecting Quality and Quantity of Breast Milk at Simalingkar Health Center Medan. 2009
- [11]. Wahyuni E, Sumiati S, Nurliani N. Effect of Rock Banana Heart Consumption on Increased Asi Production in Srikuncoro Health Center Area, PondokKelapa District, Bengkulu Middle 2012. Health System Research Bulletin. 2013; 15 (4 Oct).
- [12]. Mutika WT. Effectiveness of Breastcare Combination and katuk leaf administration on breast milk production in Normal Postpartum Mothers. 2014
- [13]. Afianti S. Effectiveness of breast massage with breast gymnastics on the smooth flow of breast milk in post partum mothers. Purwokerto: FKIK Jenderal Soedirman University. 2012.
- [14]. Yudrik J. Developmental Psychology. 4 Ek, editor. Jakarta: Prenadamedia Group; 2015
- [15]. Lestari D, Zuraida R, Larasati T. Relationship between Mother's Knowledge Level on Mother's Milk and Mother's Work with Exclusive ASI Giving in Kelurahan Fajar Bulan. Journal of Majority. 2013; 2 (4).
- [16]. Indriyani D. Effect of early and regular breastfeeding on breast milk production in post partum mothers with sectio caesarea in Dr. RSUD Soebandi Jember and Dr. H. Koesnadi Bondowoso. Depok: FIK UI; 2006.
- [17]. Mardiyarningsih E, Sabri L. Effectiveness of the combination of marmet technique and oxytocin massage on breast milk production in post-section mothers at Central Java Regional Hospital. Sudirman Nursing Journal. 2011; 6 (1): 31-8.
- [18]. Kent JC, Prime DK, Garbin CP. Principles for maintaining or increasing breast milk production. Journal of Obstetric, Gynecologic, & Neonatal Nursing. 2012; 41 (1): 114-21.
- [19]. Saryono. Breast Care. Jogjakarta: Mitra Cendikia Press; 2008
- [20]. Public Health Nutrition Section F U, Medan. banana heart as laktogogum. 2012.
- [21]. Saribu HJD, Pujiati W. Oxytocin Massage and Breast Care Against the Smooth Release of Breast Milk in Post Partum Mothers. Medisains. 2017, 13 (1).
- [22]. Wambach K, Riordan J. Breastfeeding and human lactation: Jones & Bartlett Learning; 2014

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