

# Comparison Of Imd Method, Plastic Wrap, And Conventional Care On Prevention Of Reduction Of Body Temperature Of New Baby

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**Abstract**— Newborns lose heat four times larger than adults, resulting in a decreasing temperature. In the first 30 minutes, the baby can experience a temperature decrease of 3-4 ° C. In a room with a temperature of 20- 25 ° C the baby's skin temperature drops around 0.3 ° C per minute. The temperature reduction is caused by heat loss by conduction, convection, evaporation, and radiation. Various methods of preventing heat loss in newborns include the use of plastic bags and early breastfeeding initiation (IMD) methods which can reduce heat loss in newborns. Early breastfeeding initiation is a simple intervention that has the potential to improve neonatal outcomes significantly and should be universally recommended. In Maternity Room of M. Yunus Hospital in Bengkulu using a fan with a temperature between 26° C - 27° C which caused a significant temperature difference with the temperature in the mother's womb.

Type of research used is quasi-experimental with the design of "One Group Pretest-Posttest." The population in this study were newborns in RSMY Kota Bengkulu. With as many samples as people calculated based on the Frederer formula, totaling 24 people.

In the statistical test, it was found that there was a significant difference between the plastic wrap group and the conventional treatment group (mean difference 0.275, Sig = 0.026), there was no significant difference between the plastic wrap group and the IMD group (mean difference = 0.1, Sig = 0.792)

A wrap can be applied to the immediate treatment of new normal babies to prevent heat loss if the IMD experience obstacles.

**Key points:** Early Breastfeeding Initiation IMD, Plastic Wrap, Decreasing Body Temperature

## I. Introduction

Risk of death in newborns is high at birth and decreases in the following days and weeks. About 50% of infant deaths

occur within the first 24 hours of birth, and about 75% occur during the first week of birth. [1]

Hypothermia in newborns is still a severe problem in developing countries because it significantly increases the risk of mortality and also the morbidity of newborns due to infection, coagulation disorders, acidosis, and hyaline membrane disease. In the first 30 minutes, the baby can experience a temperature decrease of 3-4 ° C. In a room with a temperature of 20-25° C the temperature of the baby's skin drops around 0.3° C per minute. The decrease in temperature is caused by heat loss by conduction, convection, evaporation, and radiation. The ability of a baby that is not yet perfect in producing heat will make the baby very susceptible to hypothermia. [2]

Alasiry's research in 2011 showed that 38.1% of babies were referred to Wahidin Sudiro Husodo Hospital because of hypothermia. [3] In a study conducted by Laptook et al., it was shown that every drop in body temperature of 1° C at hospital admission would increase the mortality rate by 28% and the incidence of sepsis at a late onset by 11%. [4]

Various methods of prevention of loss heat in newborns include the use of plastic bags and early breastfeeding initiation methods which can reduce heat loss in newborns. Research shows that early initiation of breastfeeding can prevent heat loss in newborns, the average-average temperature of newborn infants in the intervention group was 36.7° C whereas in the control group by 36.47° C.[5] Premature babies less than 29 weeks old wrapped in transparent plastic bags have a lower risk of developing hypothermia after birth before being transferred to the Neonatal Intensive Care Unit NICU room. [6] Other research also shows that wrapping premature babies less than 34 weeks using polyethylene plastic can reduce the incidence of hypothermia. [7]

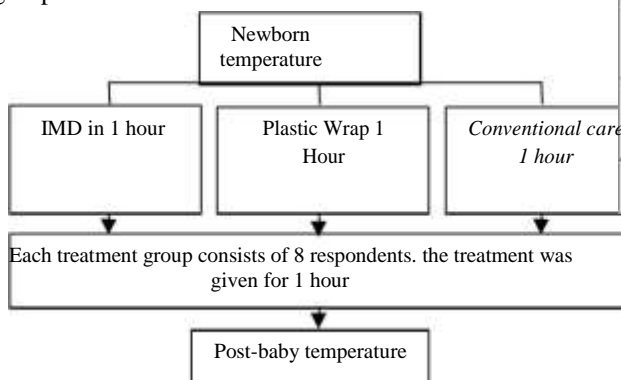
In the M. Yunus Bengkulu Hospital in 2013, there were 808 newborns, of whom 365 were LBW, in 2014 there were 837 deliveries with 195 LBW. LBW has a high risk of heat loss after birth. The delivery room at M. Yunus Hospital uses

which aims to fan provide comfort to the mother during childbirth. This causes the room temperature to be very different from the temperature in the mother's womb. The number of babies with Low Birth Weight is 195 babies (23%). Newborns have to adapt to life outside the uterus where the temperature is much cooler than the temperature inside the uterus relatively warmer around 37<sup>o</sup> C. The temperature of the room, which is usually 25<sup>o</sup> C - 27<sup>o</sup> C means a decrease of about 10<sup>o</sup> C. [8]

**II.METHODS**

Types of research used is a quasi-experiment (Quasi-Experiment) with the "Pretest-Postest" design. Population in this study is newborns in RSMY Bengkulu City in this study the population is not known with certainty so that population estimates are made, who were willing as respondents. Samples were selected purposively with as many samples as many people calculated based on the Freder formula, 24 baby

Random design sampling technique is used in this research. The subject in this research is that 24 respondents were divided into three groups: IMD group, Plastic Wrap group, and conventional care group.



**Figure 1. Experiment Design Scheme**

The research was conducted in RSMY Bengkulu on Juni to December 2016. Data collection conducted in this study using primary data obtained by using observation sheets that have been modified by researchers The data were analyzed using ANOVA Test and Linear Regression Test Result

**TABLE I. AVERAGE BABY'S BODY TEMPERATURE IMMEDIATELY AFTER BIRTH IN M.YUNUS CITY HOSPITAL, BENGKULU CITY**

Group	hypothermia	Not hypothermia	Mean	SD	P Value
Plastic Wrap	1	7	36.925	0.33354	0.945
IMD	1	7	36.9125	0.32075	
conventional	0	8	36.9750	0.4629	

Table I showed the results of statistical tests showed p = 0.945 so that there was no temperature difference immediately after birth.

**TABLE II. RESULTS OF AVERAGE BODY TEMPERATURE AFTER TREATMENT**

Group	Mean			SD		D F	F	P Value
	0'	30'	60'	30'	60'			
Plastic Wrap	36.925	37.137	37.112	0.1767	0.1885	1	0.787	0.408
IMD	36.912	37.025	37.012	0.49	0.23	1	0.737	0.419
Conventional	36.975	36.950	36.830	0.2070	0.1589	1	7.631	0.028

Table II showed conventional treatment groups with bedong that have significant differences in temperature of newborns after 60 minutes receiving treatment.

**TABLE III . RESULTS OF COMPARISON OF INFANT BODY TEMPERATURE AFTER GETTING TREATMENT**

Group		Mean Difference	SE	SIG	95%CI
Plastic Wrap	IMD	0.100	0.82	0.792	-0.158-0.358
	Conventional	0.275	0.80	0.032	0.24 -0.511

Table III showed there is a difference in average temperature the body of a newborn baby in a group of plastic wrap with bedong treatment (mean difference 0.275, Sig = 0.032) there is no significant average difference between the plastic wrap and IMD groups (mean difference 0.100, Sig = 0.792)

**III.DISCUSSION**

Normal baby body temperature when immediately after born was in the range of 36.5 to 37. Based on the results of the study, newborns in the M. Yunus Hospital of Bengkulu City had an average body temperature immediately after birth was 36.9<sup>o</sup> C, with two babies experiencing hypothermia. Research conducted by Takayama JI et al. showed that newborns have an average newborn body temperature amounting to 36.5<sup>o</sup> C[9], while research conducted by Li MX et al. obtained the results of the average temperature of a newborn baby at 37.19<sup>o</sup> C.[10]

Newborns do not have the right temperature settings, and still, it is essential to keep the newborn baby from losing body temperature at birth. Newborns can experience heat loss through the evaporation process such as evaporation of amniotic fluid by the baby's body heat because it is not drained immediately, conduction such as direct contact with the baby's body

with a lower temperature, and convection such as exposure to lower maternity air temperature and radiation of objects around the place of delivery which have lower temperatures such as tools made of metal used during labor. The average body temperature of the baby is around 36.5-37 °C. Therefore it can be concluded that most infants (86%) have normal newborn body temperature.

The baby's body temperature changes at the 30th and 60th-minute measurements in the three treatment groups. In the group of experienced plastic wrap increased the average baby's body in minute 30 and minute 60. The temperature immediately after birth on a group of 36 925 plastic wrap °C increased by the 0.2125° C minute to 30 minutes and in 60 minutes the difference in temperature increases of 0.1875° C.

The results of this research are in line with research by Robin et al. [5] that the baby wrapped in a plastic bag use will have a higher body temperature of 0.5° C when compared to the control group while measuring one hour after birth. Systematic Review conducted by Cramer K et al. also showed similar results, where the use of plastic wrap in premature babies can prevent heat loss of newborn babies.[11]

In the IMD group experienced an increase in the average body of the baby at minute 30 and minute 60. The temperature immediately after birth in the IMD group was 36.9125° C increased by 0.09° C at minute 30 minutes and in the 60th minute, the difference in temperature increased by 0.0995° C compared to the measurement immediately after birth. The results of this study are similar to the research of Srivastava S et al. which states that new skin to skin contact / IMD can have a better average temperature.[12]

In conventional treatments, there is a decrease in body temperature at minute 30 and minute 60. This is presumably because the baby has heat loss through the conduction and radiation processes, because after the baby is born the baby is dried and replaced with clothes and beds that have a low temperature and are placed a room that has a room temperature lower than the temperature of a newborn. This is in line with research conducted by Li MX that infants will experience the lowest body temperature decrease in the 60th minute. [10]

Comparison of the average body temperature of infants in 3 treatment groups experienced a significant difference compared to the temperature in the control group (bedong treatment conventional) has an average temperature after 60 minutes of 36.8 with plastic wrap groups (3,712) and IMD groups (37,012). In the statistical test, it is found that there is a significant difference between the plastic wrap group and the conventional treatment group (mean difference 0.275, Sig = 0.026), there is no significant difference between the plastic wrap group and the IMD group (mean difference = 0.1, Sig = 0.792)

It is proven that plastic wrap and IMD can prevent heat loss in newborns. The use of plastic wrap has the highest average temperature in the 60th-minute measurement. The IMD process can keep the baby from the risk of losing heat, only in the implementation,

there are still some families who refuse to do IMD for various reasons. One of the inhibiting factors in carrying out IMD is the lack of knowledge of the mother of the benefits of IMD, and after giving birth, the mother is too tired to breastfeed her baby or the immediately the mother experiences complications at the time of delivery, so in this situation, the use of plastic wrap can be one of the solutions in preventing loss of the hot newborn baby.

#### IV.CONCLUSION

Plastic wrap method can be applied to the immediate treatment of normal new baby to prevent heat loss if the implementation of IMD experiences obstacles.

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