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Article

Delayed of Umbilical Cord Clamping for Improved Newborn Health (Haemoglobin and Hematocrit Level)

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A B S T R A C T

umbilical cord clamping is a standard procedure in newborn care. extension of time the umbilical cord clamping is able to provide 80-100 ml of extra blood to the newborn baby, containing 75 mg of iron as hemoglobin which is sufficient for iron during the first 3 months of life. The purpose of this study is to find effectiveness of delayed umbilical cord lampingfor improved newborn health at BPM Rita, Bukittinggi City. The research design was Quasy Experiment, with a post test control group design research design. The samples was 16 newborn baby, that divided into two group, 8 samplesfor control and 8 samples for intervention. The intervention was given by delayed clamp of umbilical cord for 3-5 minutes. The results of the statistical test study found that, there was a significant correlation of time delay of umbilical cord clamping to newborn Haemoglobin with a p-value of 0,000 and hematocrit of infants with a p value of 0.001. The conclusion is that the effectiveness of the time delay of the umbilical cord attachment to the baby's output. It is expected that midwives will delay the time of the umbilical cord according to the practice of midwifery evidence.

I. INTRODUCTION

The infant mortality rate is one indicator used to describe a country's health status. Based on UNICEF data, the world infant mortality rate reaches more than 10 million deaths and almost 90% of deaths occur in developing countries. Indonesia is a developing country with a significant contributor to infant mortality. The 2012 IDHS data shows that infant mortality in Indonesia in the three survey periods has decreased, in 2007 it was 35 / 1,000 KH, in 2012 it fell from 35/1000 in 2017 to 34/1000 in 2012, in 2015, there was slighly decreased, 32 / 1,000 KH. (WHO, 2019).

One of the causes of death of infants and toddlers in Indonesia is the problem of iron deficiency anemia which is almost everywhere in developing countries. More than 50% in developing countries are estimated to have anemia in the first year of life. Iron deficiency anemia is anemia that often occurs in infants with the highest incidence at the age of 6-24 months. The high incidence of anemia in infants aged 6-9 months is associated with insufficient storage of iron reserves in infants. it canbe cause growth and development disorders in the first 6 months of life and several postnatal factors that can result in an early decrease in storage of iron reserves depending on several factors such as the status of the maternal iron containing the fetus, birth weight and the length of time delaying the clitoris and cutting of the umbilical cord (Dianty, et al. 2012).

Iron deficiency anemia is a prolonged socio-economic and health problem. Storage of iron reserves at birth is a major factor influencing infant growth and the incidence of iron deficiency anemia. Pregnant women in developing countries often experience iron deficiency anemia and preterm labor or infants with low birth weight often occur, while in the case of this phenomenon is the presence of ICC (Imediettly Cord Clamping) in each delivery (the standard in Indonesia using Asuhan Persalinan Normal) which is 2 minutes after the baby is born. Early umbilical cord clamping will immediately take the baby's blood 54-160 cc, it’s means half more total baby blood volume. Early umbilical cord clamping before the baby breathes resulting in reduced supply of lung blood which effect hypovolemia. Early umbilical clamping also increases the risk of anemia in newborn (Destariyani, 2015).

Based on research conducted by Rafika in 2018 about delayed umbilical cord clamping on hemoglobin levels in newborns by examining 40 control groups and 40 experimental groups with the results, the delayed umbilical cord clamping affects the hemoglobin levels of newborns. The other study from Lili Suryani in 2019 explained the effectiveness of the time delay of umbilical cord clampping on hemoglobin levels in newborns at Anutapura Hospital in Palu City

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by examining 22 control groups and 22 experimental groups with the results, delaying cord clamping was very effective against newborn hemoglobin levels.

II. METHODS

This was an quasi experimental study with post test control group, there are two group of sample : control and intervention group. This study was carried out from September to October 2019. The study population comprised newborn baby in BPM Rita.

Samples were 16 newborn baby whom taken by purposive sampling technique. In this design the intervention was carried out in 2 intervention groups. The control group was carried out by Indonesia standar of childbirth care (clamping umbilical cord after 2 minute of birth) and the intervention group was given treatment extending the umbilical cord clamping time for 3-5 minutes.

III. RESULT

Table 3.1 hemoglobin level in intervention and control group

Haemoglobin	N	Mean	Standard deviation	Min-Max
Intervention	8	18.5	1,06	16,6-19,6
control	8	15.12	1,13	13.8-17.0

Regarding to hemoglobin level, it was found that; the average of hemoglobin level in intervention group was 18.5 and 15.12 in control group.

Table 4.2 hematocrit level in intervention and control group

hematocrit	N	Mean	Standard deviation	Min-Max
Intervention	8	55.2	5.25	49,6-63.5
control	8	46,06	3,07	42.1-50,7

Regarding to hematocrit level, it was found that; the average of haemoglobin level in intervention group was 55.2 and 46.06 in control group.

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Table 4.3 Effect of delayed umbilical cord on improving hemoglobin level

Hemoglobin level	n	mean	P-Value
intervention	8	18,05	0,000
control	8	15.12	

Average ofhemoglobin level in control group is 15.12 while the average of hemoglobin level in intervention group is 18,05, Dependent T-test results p value of 0.000 <0.05 indicates that there was delayed umbilical cord clamping effect on increasing hemoglobin level in newborn

Table 44 Effect of delayed umbilical cord on improving hematoctit level

Hematocrit level	n	mean	P-Value
intervention	8	55.2	0,001
control	8	46,06	

Average of hematocrit level in control group is 46.06 while the average of hematocrit level in intervention group is 55.2, Dependent T-test results p value of 0.001 <0.05 indicates that there was delayed umbilical cord clamping effect on increasing hematocrit level in newborn

IV. DISCUSSION

Hemoglobin is a red blood molecule or pigment in erythrocytes (red blood cells) which bind and carry oxygen from the lungs to the tissues and also CO2 from the tissues to the lungs. The quality of blood and the red blood are affected by hemoglobin levels. Hemoglobin level is influenced by several things including age, gender, neighborhood (height of residence), and so on. Infants who have sufficient levels of hemoglobin, then the optimal level of oxygenation and provides a source of Fe which is very beneficial for babies. The brain needs a lot of iron because of its high oxidation metabolism compared to other organs. Lack of iron levels in the post-natal period causes mental and motor disorders that will persist into adulthood (Irsa, 2014).

The delay time the umbilical cord clamping is able to provide 80-100 ml of extra blood to the newborn. Delay time of the umbilical cord about 2-3 minutes can provide blood redistribution between the placenta and the baby, provide placental transfusion assistance obtained by infants as much as 35-40 ml / kg and contain 75 mg of iron as hemoglobin, which is sufficient for the baby's iron needs in First 3 months of his life.

Based on result of this study, ther was the difference in the average value of hemoglobin in newborns with delayed cord and early cord clamping in 16 infant samples. Based on the

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results of the statistical test, the value of P = 0,000 means that the statistical test results <0.05 obtained a significant difference between the average value of newborn hemoglobin which is delayed cord clamping .

This study is in line with research conducted by Jemima et al (2014), on the effect of cord clamping time on hemoglobin neonatal levels in Tanggerang Regional Hospital in 2014, it is known that the average newborn hemoglobin is 19.66 gr / dl that the longer the delay of cord clamping, it will increase the baby's hemoglobin levels and reduce the risk of anemia in newborns.

The same research was also carried out by Riris Andriani (2013), on the Literature Study of the Effect of Delaying Cord Clamping in 4 Newborns and Haemoglobin found: 19.9 g / dl and this proves that delaying cord clamping can reduce the risk of anemia in new born baby.

Hematocrit (micro) is the volume of erythrocytes separated from plasma by turning it in a special tube whose value is expressed in percent. A normal hematocrit value is called%, the value for men is 40-48 vol% and for women 37-43 vol%.(Gandasoebrata, 2010) Hematocrit examination is useful for measuring the degree of anemia and polycythemia. To find the jaundice that can be observed from the color of plasma, where the color formed is yellow or dark yellow. Can also be used to determine the average volume of erythrocytes, a screening test in detecting the presence of hyper bilirubinemia.

Based on result of this study which showed that the difference in the average value of hematocrit of newborns with delayed delay of umbilical cord and early cord clamping in 16 samples of newborns. Based on the results of the statistical test, the value of P = 0.001 means that the statistical test results <α have a significant difference between the average value of hematocrit of newborn babies by delaying the time of the umbilical cord clamping and the immediate umbilical cord clamping.

This study is in line with the Muara P Lubis Research (2008) with the title "The Impact of Delaying Umbilical Cord to the Increased Hemoglobin and Hematocrit of Infants in Normal Labor in General Hospital. H. Adam Malik - RSUD Dr. Pirngadi Medan "by using a cross sectional design, a sample of 60 people, data analysis with chi-square and independent t-test, the Chi-square test obtained an insignificant relationship between age, education, gestational age, number of parity with the time of the umbilical cord on both research groups. In the independent t-test obtained a significant relationship between the value of hemoglobin levels and infant hematocrit with umbilical cord time in both study groups.

According to the assumptions of researchers in the group that carried out the time delay of the umbilical cord, the average hematocrit level was 55.2%, with a minimum hematocrit level

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that was 49.6.6%, the maximum hematocrit level was 63.5%. If we look at the hematocrit levels of 16 respondents varied, where we know in theory that the hemoglobin level in infants aged 6 months - 6 years is 44% - 65%, where in theory it is stated that the decrease in the hematocrit value is caused by one of the decreasing hemoglobin values. In the opinion of researchers with the results of this study in accordance with the theory because of the delay in time the umbilical cord binding will increase the value of hemoglobin in infants.

V. CONCLUSION

The chemical content of papaya leaves is known to have a variety of chemical properties. Among others bromelin enzymes, alkaloids, karpaina, papain enzymes, pseudocarpain, carposid, glycoside saponin, calcium and many contain vitamin B, vitamin B, vitamin C. Papaya leaves is contain many substances which needed by the body and various kinds of vitamin content, one of them is vitamin A which can help the hypophise of prolactin in in the epithelium of the brain so that prolactin will increase. It is crucial to educate postpartum mother to consumpt papaya leaf to increase their breastmilk

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