



## RELATIONSHIP OF TYPES OF LABOR AND BIRTH WEIGHT WITH ICTERIC EVENTS IN NEONATES

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### ABSTRACT

Jaundice is a problem in newborns that is often faced. About 25% - 50% of newborns suffer from jaundice in the first week. The research objective was to determine the relationship between type of delivery and birth weight with the incidence of icteric in neonates in the perinatology room of the Padang Panjang City Hospital in 2019. This type of research was *descriptive analytic* with a *cross sectional* approach. Data collection was carried out in the Perinatology Room of the Padang Panjang City Hospital. The population in this study were all babies treated in the perinatology room of the Padang Panjang City Hospital and the sample was taken using *accidental sampling technique*. namely 50 respondents. Data were collected using observation sheets, then processed through a computerized system with the *chi square* test. The results showed that less than half of the respondents (46%) were born with action and more than half of the babies were born with normal weight (74%). The results of the bivariate study showed that there was a significant relationship between the type of delivery and the incidence of icteric with p value <0.001 and there was a relationship between birth weight and the incidence of icteric with p value <0.003. Based on the results of this study, it can be concluded that there is a significant relationship between the type of delivery and birth weight with the incidence of icteric disease.

**Keyword:** *Type of Labor, Birth Weight, Jaundice*

### INTRODUCTION

Jaundice is a problem in newborns that is often faced. About 25% - 50% of newborns suffer from jaundice in the first week. Jaundice itself is a problem that often arises in neonates that occurs due to excessive accumulation of bilirubin in the blood and tissues (MOH, 2012).

Jaundice in newborns occurs 50% - 60% of all babies in the first week of life. Jaundice is the yellow color of the *sclera of the eyes* and face, then extends to the chest, and makes the newborn always sleep and lazy to suckle. Severe events are when the whole body to the extremities is yellow which can cause icteric kern (Batabyal, 2016). Neonatal jaundice may occur due to physiological

symptoms and pathological symptoms. Physiological symptoms appear on the second and third days after the baby is born, while pathological jaundice appears within the first 24 hours (Prawiroharjo, 2016).

To determine the degree of jaundice, laboratory tests can be carried out, namely checking the levels of bilirubin in the blood. Indirect bilirubin levels in physiological jaundice reach a peak of 10-12 mg / dl in term infants while in preterm infants it reaches 15 mg / dl. In pathological jaundice, the increase in indirect bilirubin is more than 5 mg / dl / day and direct bilirubin is more than 1 mg / dl. Bilirubin levels In physiological processes it can disappear by itself. Initially the bilirubin level will increase rapidly in the first week followed by a



slow decrease of 1 mg / dl for one to two weeks thereafter. In the pathological process the symptoms are not much different from the physiological ones. It should be noted that the symptoms can appear within the first 24 hours after delivery and vomiting and weight loss are found in infants (Dewi, 2012).

Infant Mortality Rate (IMR) is the number of infant deaths within the first 28 days of life per 1000 live births. Infant Mortality Rate according to WHO (World Health Organization) (2015) in ASEAN (Association of South East Asia Nations) countries such as in Singapore 3 per thousand live births, Malaysia 5.5 per 1000 live births, Thailand 17 per 1000 live births, Vietnam 18 per 1000 live births, and Indonesia 27 per 1000 live births. According to the World Health Organization (WHO, 2017) states that the infant mortality rate is mostly caused by asphyxia (20-60%), infection (25-30%), babies with low birth weight (25-30%), babies with birth weight. low (25-30%), and icteric (5-10%).

The infant mortality rate in Indonesia is still high compared to other ASEAN countries, when compared to the 2015 SDGS (Millennium development Goals) target of 23 per 1000 live births. The main cause of infant mortality in Indonesia is 26% LBW, 9% jaundice, 0.8% hypoglycemia and 1.8% neonatal infection (Kemenkes RI, 2015). Based on the cause, there are two kinds of infant mortality, namely in the womb and outside the womb. Infant mortality in the womb is the death of an infant that is carried by a baby from birth such as asphyxia. Meanwhile, infant deaths outside the womb or post-natal deaths are caused by factors related to external influences (Vivian, 2014).

Based on regional Health Research data (Riskesdas, 2018), the incidence of icteric in newborns in Indonesia is 51.47%, in West Sumatra 47.3% with

contributing factors including 51% Asphyxia, 42.9% LBW, type of delivery 18 , 9%, Premature 33.3%, congenital abnormalities 2.8%, sepsis 12%. This condition occurs due to a continuous increase in bilirubin resulting in damage to the brain which will cause kern jaundice. Kern jaundice is a condition in which the brain is chronically permanently damaged and can result in cerebral palsy, mental retardation, hearing loss and even death. Therefore every baby with jaundice should receive attention, especially if jaundice is found within the first 24 hours of the baby's life or if the bilirubin level increases > 5 mg / dl (more than 86 umol / L) in 24 hours. The process of blood hemolysis, severe infection, jaundice that lasts more than 1 week and direct bilirubin > 1 mg / dl, are also conditions that indicate the possibility of pathological jaundice. The distribution of yellow indicates the degree of jaundice.

One of the causes of mortality in newborns is icteric kern (biliary encephalopathy) which is the most severe complication of neonatal jaundice. A damage to the brain due to indirect bilirubin adhesion to the brain which is characterized by the baby not wanting to suck, lethargy, erratic movements, seizures, stiff muscle tone, stiff neck and can lead to death in infants or disability later in life (Wijayaningsih, 2013).

According to Mansjoer (2002), neonatal jaundice is influenced by several factors, including neonatal factors (gender, gestational age, birth weight), perinatal factors (type of labor and delivery complications) and maternal factors (frequency of breastfeeding and ABO incompatibility). At <36 weeks' gestation (premature) it is caused by the immature function of the baby's liver to process erythrocytes. At birth the baby's heart is not good enough to do its job. The remainder of the erythrocyte breakdown is called



bilirubin, this bilirubin which causes yellow in babies and when the amount of bilirubin accumulates in the body it causes the baby to look yellow (IDAI, 2008).

In connection with breastfeeding, babies who experience jaundice occur because the mother does not provide breast milk according to their needs and the frequency is less, namely <8 times / day. Jaundice occurs due to insufficient content and depends on the baby's ability to change indirect bilirubin. It is rarely life-threatening and occurs after the first 4-7 days and lasts longer than physiological jaundice, namely 3-12 weeks (Myles, 2013).

Labor complications are conditions that threaten the mother or the fetus because of interference / direct consequences of childbirth. There are two processes that involve complications (asphyxia, sepsis, cephalhematoma) and the risk of neonatal jaundice, namely: (a) excessive production, this exceeds the ability of the baby to excrete, for example closed bleeding and sepsis. (b) disturbances in the uptake process and hepatic conjugation, this disruption can be caused by hypoxia and infection. Asphyxia can cause hepatic hypoperfusion, which in turn will interfere with hepatocyte bilirubin uptake and metabolism (Myles, 2013).

Types of delivery are divided into several types, namely normal labor and delivery with measures that include ( *forceps extraction* labor, *vacuum extraction* delivery and *sectio secaria* delivery ). *Sectio* delivery is one of the factors that can cause dehydration in babies so that jaundice tends to occur, mothers who give birth to SC usually rarely breastfeed their babies because of postoperative discomfort, where it is known that breast milk plays a role in inhibiting the occurrence of enteropathic

bilirubin circulation in neonates (Reisa, 2013).

Birth weight also affects jaundice in which babies with birth weight <2500, either premature or term, can cause the absence or reduction of the amount of enzymes taken or cause a reduction in the reduction of bilirubin by hepatic cells, in addition to babies weighing <2500 a bilirubin increase. serum tends to be the same or slightly slower than the increase in bilirubin in infants of normal weight and term but longer duration which usually results in high bilirubin levels. In this study, the authors only took 2 of the 5 factors causing jaundice, namely the type of delivery and birth weight because according to the initial survey that the researchers conducted, it was found that more jaundice patients with the type of delivery by section and vacuum experienced icteric and also low birth weight.

The results of a study conducted by Alliyah (2017) entitled the relationship between the type of delivery and the occurrence of icteric in neonates at PKU Muhammadiyah Bantul Hospital, it was found that 32 women who gave birth by section gave birth to babies who experienced physiological jaundice (65.3%), and gave birth to babies who experienced pathological jaundice as many as 17 people (34.7%). While mothers who gave birth normally gave birth to babies with physiological jaundice as many as 33 people (84%), and 6 people who experienced pathological jaundice (15.4%). The results of statistical analysis using the Chi-square test resulted in p value = 0.041 (p value  $\leq$  0.05), meaning that there was a relationship between the type of delivery and the occurrence of icteric in neonates.

While the results of research conducted by Annisa (2018) entitled the relationship between birth weight and



the incidence of icteric in babies in the perinatology room at Arjawinangun Hospital in 2018 showed that of 12 respondents (42.9%) low birth weight babies experienced icteric as many as 10 respondents, namely (35.7%). The results of the analysis using the p value obtained value (p-value: 0.000 a  $\leq$  0.05), which means that there is a significant effect between low birth weight and the incidence of icterics in the perinatology room of the Arjawinangun Regional Hospital, Cirebon Regency.

Based on the above background, the researcher has examined the "Relationship Type of Labor and Birth Weight with the incidence of icteric in neonates in the perinatology room at the Padang Panjang City Hospital in 2019".

## MATERIAL AND METHODS

Quantitative research with *analytic descriptive* design with *cross sectional* approach . This research was conducted in the Perinatology Room of the Padang Panjang City Hospital. The population in this study were 102 respondents with a sample of 50 respondents. This research was conducted on February 20 - April 20 2019. This study used interviews with the respondent's mother or family and confirmed it / *cross check* by looking at the respondent's medical record. Data were distributed in narrative and tabular form using *the chi-square test*.

## RESULT

### a) Neonatal icteric incidence

**Table 1**  
Frequency Distribution of Jaundice in Neonates in the Perinatology Room of the Padang Panjang City Hospital in 2019

Icteric events	F	%
Jaundice	23	46
Not icteric	27	54
<b>Total</b>	<b>50</b>	<b>100</b>

Based on table 1, it is found that less than half of 23 (46%) respondents experienced icteric in neonates in the

Perinatology ward of Padang Panjang City Hospital.

### b) Types of delivery in neonates

**Table 2**  
Frequency Distribution of Types of Delivery in Neonates in the Perinatology Room of the Padang Panjang City Hospital in 2019

Type of delivery	F	%
Normal	27	54
With action	23	46
<b>Total</b>	<b>50</b>	<b>100</b>

Based on table 2, it is found that less than half of the 23 (46%) respondents were born with action in the

Perinatology ward of the Padang Panjang City Hospital.



c) Birth weight in Neonates

**Table 3**  
**Frequency Distribution of Birth Weight in Neonates in the Perinatology Room of the Padang Panjang City Hospital in 2019**

Birth Weight	<i>f</i>	%
LBW	13	26
Normal	37	74
<b>Total</b>	<b>50</b>	<b>100</b>

Based on table 3, it was found that Perinatology ward of the Padang less than half of the 13 (26%) Panjangan City Hospital. respondents with LBW in the

d) Relationship Type of Delivery with the Incidence of Jaundice in Neonates

**Table 4**  
**Relationship Type of Delivery with Jaundice Incidence in Neonates in the Perinatology Room of the Padang Panjang City Hospital in 2019**

Type of Labor	Icteric events				Total	p-value
	Jaundice		Not icteric			
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Normal	6	22.	21	77.8	2	10
With action	1	73.	6	26.1	2	10
<b>Total</b>	<b>2</b>	<b>46</b>	<b>27</b>	<b>5</b>	<b>5</b>	<b>10</b>

Based on table 4, it can be seen that the proportion of respondents who experienced icteric was mostly in respondents who gave birth with action as much as 73.9%. The results of statistical tests with *chi-square* can be seen that the p-value is 0.001 ( $p \leq 0.05$ )

which means that there is a relationship between the type of delivery and the incidence of icteric in neonates in the perinatology room of the Padang Panjang City Hospital in 2019.

e) Relationship between birth weight and neonatal icteric incidence

**Table 5**  
**Relationship between birth weight and jaundice in neonates in the perinatology room of Padang Panjang City Hospital in 2019**

Birth Weight	Icteric events				Total	p-value
	Jaundice		Not icteric			
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Normal	1	32.	25	67.	3	1
LBW	1	84.	2	15.	1	1
<b>Total</b>	<b>2</b>	<b>4</b>	<b>27</b>	<b>5</b>	<b>5</b>	<b>1</b>

Based on table 5, it can be seen that the proportion of respondents who experienced icteric was mostly in respondents with low birth weight,

namely 84.6%. The results of statistical tests with *chi-square* can be seen that the p-value is 0.003 ( $p \leq 0.05$ ), which means that there is a relationship between birth





weight and the incidence of icteric in

neonates in the perinatology room of K0ta Hospital, Padang Panjang in 2019.

## DISCUSSION

### 1) Relationship Type of Labor with the incidence of jaundice

Based on table 4, it is known that (46%) respondents who were born with an act of delivery experienced icteric (73.9%), not icteric (26.1%). Babies born with normal delivery experienced jaundice (22.2%), did not experience icteric (77.8%). The results of the *chi-square* statistical test can be seen that the *p-value* is 0.001 ( $p \leq 0.05$ ), which means that there is a relationship between the type of delivery and the occurrence of icteric in neonates in the perinatology room of the Padang Panjang City Hospital in 2019.

The results of this study are in line with the research conducted by Faiqah (2012) with the title "The Relationship between Gestational Age and Type of Delivery with Billirubin levels in Ikteric babies at RSUP NTB", with the results of his research that out of 113 respondents with action delivery, 76 respondents (67.3% ) did not experience icteric and as many as 37 respondents (32.7%) experienced icteric. Then from 82 respondents with normal delivery, 51 respondents (62.2%) did not experience icteric and as many as 31 respondents (37.8%) experienced icteric. This research statistically shows there is a relationship between the two variables with a value of  $p = 0.025$ .

Widya's research (2007) reports that neonatal jaundice can occur in every delivery process, both normal labor and delivery with action. Indarti (2006) in her research states that babies born with action may not immediately cry and delay in crying resulting in hemodynamic abnormalities so that respiratory depression can cause hypoxia throughout the body which results in respiratory / metabolic acidosis

which can interfere with bilirubin metabolism. Sarjono, 2010)

Sarjono (2010) states that complications that occur due to childbirth with action can cause various disturbances in the perinatal period, which at this time is an important period in the early life of the neonate and is a vulnerable period because the organs of the body are not yet mature so if there is interference with the perinatal period can cause obstacles to growth and development of the neonate itself.

Childbirth is a process of releasing a living conception, from the inside of the uterus through the vagina to the outside world (Prawirohardjo, 2016). The type of maternal delivery can be a risk factor for birth trauma. Type of delivery by *sectio secaria* (with the largest presentation), then followed by *vacuum / forcep* extraction has a tendency for closed bleeding in the head (labor trauma) such as *head succadeneum* and *chepalhematoma*, which are risk factors for jaundice. CS delivery is one of the factors that can cause dehydration in infants so that jaundice tends to occur where mothers who give birth with SC are usually not breastfed immediately (Kliegman, 2000). Mothers who give birth with SC usually rarely breastfeed their babies directly because of postoperative discomfort, where it is known that breast milk plays a role in inhibiting the enterohepatic circulation of bilirubin in neonates (Prawirihardjo, 2016).

According to the assumption of penilis, the type of delivery can affect the health status of the baby to be born, whether it is a normal delivery or in action, this can be seen from the results of a documentary study where babies with normal delivery also experience jaundice, although the percentage is less



than babies born with action. This is because babies born with action usually do not immediately get breast milk so that babies are more prone to jaundice, so based on the description above, the authors assume that the type of delivery can affect the health status of the baby to be born, both normal delivery and by action (SC and Vacuum), because both types of labor have a risk opportunity for icteric events.

## 2) Relationship between birth weight and jaundice

Based on table 5 babies born with low birth weight experienced jaundice (84.6%), did not experience icteric (15.4%). Meanwhile, babies with normal birth weight (32.4%) experienced icteric and (67.6%) did not experience jaundice. The results of statistical tests with *chi-square* can be seen that the p-value is 0.003 ( $p \leq 0.05$ ), which means that there is a relationship between birth weight and the incidence of icteric in neonates in the perinatology room of the Padang Panjang City Hospital in 2019.

The results of Septiani's (2011) study show that babies with less than normal weight gain can cause various abnormalities that arise from them, one of which is that babies will be susceptible to infection which can lead to neonatal jaundice. Birth weight <2500 g has the highest percentage of the tendency for neonatal jaundice. Another study was also conducted by Mutianingsih (2012) with the title "The relationship between low birth weight babies and the incidence of jaundice, hypoglycemia and neonatal infection in NTB Hospital in 2012", it was found that out of 167 cases of infants with LBW, it was found that 87 respondents experienced icteric. and 80 respondents did not experience icteric. The results of statistical tests show that the value of  $p < 0.05$  is 0.002.

This is in accordance with Kusumawardani's research in 2010, which states that there is a relationship between low birth weight and the incidence of jaundice in babies at Prof. Dr. Margono Soekardjo Purwokerto, obtained statistical results that there is a significant relationship ( $p$  value = 0.000) between low birth weight babies and the incidence of icteric.

Based on Key's theory in Ngastiyah 2005, jaundice occurs in babies with low birth weight besides that bilirubin production is relatively higher than babies weighing less than 2500 grams. Low birth weight or babies with birth weight <2500 grams also often experience jaundice because their organs are not yet fully formed due to immature hepatic function or impaired hepatic function such as hypoxia, hypoglycemia, acidosis, resulting in increased levels of bilirubin. In addition, it is also in accordance with the theory expressed by Porter (2002) which states that the risk factors for jaundice are caused by one of the factors of the neonate, namely low birth weight.

Birth weight is the weight of an infant that is weighed within the first 1 hour after birth. Classification according to birth weight is low birth weight babies (LBW), namely birth weight <2500gr, normal birth weight babies with birth weight 2500-4000 gr and babies birth weight more than > 4000 g (Sylviati, 2008). Many babies born, especially small babies (babies weighing <2500 g) have jaundice in the first week of life. Due to the imperfect organs of the body, both anatomical and physiological, it is easy to develop some abnormalities, including immature liver. Immature liver facilitates neonatal jaundice, this can occur due to immature hepatic function. Lack of glucorinyl transferase enzymes so that the conjugation of indirect bilirubin to direct bilirubin is not yet complete and blood



albumin levels which play a role in the transport of bilirubin from tissues to the liver are lacking. In LBW the formation of the liver is not yet perfect (liver immaturity), which causes the indirect bilirubin conjugation to direct bilirubin in the liver to be imperfect. Low birth weight generally has a tendency to experience more frequent birth canal trauma as well as in small babies because their organs are still weak. The function of the liver and intestines is not yet perfect so that it can inhibit the conjugation of bilirubin and excrete meconium which in turn can increase bilirubin levels, but this condition is still influenced by the mode of birth and from the helpers (Manuaba, 2005).

In addition, LBW can also affect the incidence of jaundice, it can be seen that there are LBW babies experiencing jaundice, this can be caused by other factors such as immature function of the baby's organs, easy infection, asphyxia, and hypoglycemia which triggers increased levels of bilirubin so that it becomes icteric. . The beginning of jaundice begins in the fetus, when the fetus is in charge of removing bilirubin from the blood, it is carried out by the placenta, and not by the liver. After the baby is born, this task is immediately taken over by the liver, which can take several weeks to adjust. During this time, the liver works hard to remove bilirubin from the blood. During this process, the remaining amount of bilirubin still accumulates in the body, so that the bilirubin turns yellow, so the excessive amount of bilirubin can give a yellow color to the skin, sclera, and other body tissues (Sukadi, 2010).

According to the researchers' assumptions, based on the research results, the researcher concluded that babies with low birth weight have a greater chance of experiencing icteric. This is because babies with low birth weight are susceptible to infection and

less than perfect organs, both anatomically and physiologically. Immature liver facilitates neonatal jaundice, this is due to the immature hepatic function. Therefore, babies with low birth weight need to be supervised to prevent problems, especially the provision of adequate fluid / breast milk intake to prevent hypothermia, as well as adequate intake during pregnancy to prevent low birth weight by improving the quality of health services. especially services in early detection and taking appropriate action on maternal weight gain during pregnancy examinations according to standards, providing counseling and giving information to patients the dangers that will occur if they do not make regular repeat visits.

## CONCLUSION

There is a relationship between the type of delivery and low birth weight with the incidence of jaundice in neonates.

## REFERENCES

- Ali et al . 2012 . *Icterus Neonatorum in Near-Term and Term Infants*.*SQU Medical Journal*, 12 (2): 153-160
- Alliyah. 2017 . *Relationship Type of Delivery with Icteric Incidence in Neonates at PKU Muhammadiyah Bantul Hospital in 2017* . Faculty of Health, 'Asyiyah University, Yogyakarta
- Annisa, R. 2018. *Relationship between Birth Weight and Jaundice in Infants in the Perinatology Room at Arjawinangun Hospital in 2018*. Faculty of Nursing, Cirebon
- Arikunto. 2006. *The research procedure is a practical approach* . Jakarta: Rineka Cipta
- Batabyal. 2016. *Neonatal Jaundice-A Reviw. International Journal of Research and Development in*





- Pharmacy and Life Sciences* . 5 (4). 2198-2200.
- Blackburn, S. 2012. Bilirubin Metabolism, Maternal , *Fetal & Neonatal Physiology* : A Clinical Perspective. Saunders, Missouri
- MOH RI. 2012. Indonesia's Health Profile. Jakarta: MOH RI
- Goddess. 2012. Indonesia's Health Profile. Jakarta: Salemba Medika
- Faiqah, S. 2012. *Relationship between age of gestation and type of delivery with Billirubinemia levels in icteric babies at RSUP NTB 2012*. Poltekkes Kememkes. Mataram
- Jejh. 2010. *Neonatal Care for Infants and Children under five* . Jakarta: TIM
- RI Ministry of Health. 2015. Indonesia's Health Profile. Available at <http://www.kemendes.go.id> accessed on 13 December 2018
- Khairunnisak. 2013. *The relationship between breastfeeding and icteric incidence in newborns 0-7 days at the Regional General Hospital dr. Zainal Abidin Banda Aceh*. U'Budiyah College of Health Sciences Banda Aceh Indonesia
- Kliegman, R. 2000. *Jaundice and Hyperbillirubinemia in newborns: Nelson's Pediatrics*. Jakarta: EGC
- Kliegman, RM 2000. *Jaundice and Hyperbillirubinemia in Newborns : Nelson's Children's Health Sciences*. EEGC, Jakarta
- Kosim, M. et al. 2008, *Textbook of Neonatology* . IDAI, Jakarta
- IBG Manuaba, 2005. *Obstetrics, Gynecology and Family Planning for Midwife Education* . Jakarta: EGC
- Mansjoer, A. 2002. *Kapita Selecta Medicine* . Media Aesculapius, Jakarta
- Markum. 2009. *Child Health Sciences* . FKUI, Jakarta
- Muslihatun. 2010. *Infant and Toddler Care* . Yogyakarta: Fitramaya
- Mutianingsih, R. 2014 . *Relationship between low birth weight infants and the incidence of jaundice, hypoglycemia and neonatal infection in NTB General Hospital in 2012*. Thesis. Postgraduate Program, Faculty of Medicine, Brawijaya University, Malang
- Myles. 2013. *Textbook of Midwives. Edition 14*. Jakarta: EGC
- Notoatmojo. 2012. *Health Research Methodology* . Jakarta: rineka Cipta
- Nursalam. 2011 . *Concept and Application of Nursing Research Methodology*. Jakarta: Salemba Medika
- Prawiroharjo. 2016. *Midwifery Science Sarwono Prawiharjo* . Jakarta: Bina Pustaka Foundation
- Reisa, M. (2013). *Description of Neonatorum Jaundice Risk Factors in the Perinatology Room of Mattaheer Hospital, Jambi, 2013* . Journal of the Faculty of Medicine and Health Sciences, Jambi University. <http://online-journal.ac.id> . Retrieved 20 January 2019
- Rini . 2013 . *Analysis of Risk Factors Associated with Ikteric Incidents in the Cendrawasih Room at RSUD DR.Soetomo*. Midwife Education Study Program. Faculty of Medicine, Airlangga University, Surabaya
- Riskesdas. 2018. *National Riskesdas Basic Health Research Report* . Jakarta: MOH RI
- Rosmawaty. 2015. *Neonatorum icteric incidence in Normal Delivery and Sectio Secaria Delivery at RSU Nene Malomo, Siddang Sapanga District* . Journal, Hassanudin University Master Program in Midwifery: Makassar. [http:](http://)



- /repository.unhas.ac.id. accessed  
on 20 January 2019
- Saifudin. 2012. *National Reference Book for Maternal and Neonatal Health Services*. Jakarta: PT Bina Pustaka Sarwono Prawirohardjo.
- Suciaty Agustini. 2014. *The relationship between low birth weight babies and the incidence of Asphyxia in PKU Muhammadiyah Bantul Hospital in 2013*. Publication manuscript. HIGH SCHOOL OF HEALTH SCIENCE 'AISYIYAH YOGYAKARTA.  
<http://digilib.unisayogya.ac.id> .  
Access date January 20, 2019
- Sukadi.A. 2008. *Hyperbillirubinemia. Neonatology Textbook* . IDAI. Jakarta
- Sylviati. 2010. Hyperbillirubinemia. [www.pediatric.com](http://www.pediatric.com) . Accessed December 22, 2018
- Vivian. 2014. *Infant and Toddler Care*. Jakarta: Salemba Medika
- WHO. 2015. *Breast Counseling: A Training Course, p* . WHO / CDR / 93.4
- Wijayaningsih. 2013 . *New Born Baby Care, Midwifery Education Textbook. Medical Book Publishers* . Jakarta: EGC
- Zabeen, B. et al. 2010. Risk Factors and Outcome of Neonatal Jaundice in A Tertiary Hospital. *Ibrahim Med Coll Journal* , vol, no 2, pp 70-73