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Characteristics of Woman and Weight Gain During Pregnancy with Post Partum Hemorrhage at Tidore Islands Hospital

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ABSTRACT

Background: Postpartum hemorrhage is the highest cause The maternal mortality rate in Indonesia can be prevented if health workers and families are able to detect early factors that cause bleeding, so that promotive , preventive, and timely referrals can be carried out. The purpose of this study was to determine the relationship between maternal characteristics and weight gain during pregnancy with the incidence of postpartum hemorrhage in the delivery room of Tidore . Islands Hospital. **Objective:** The population is all patients in the delivery room of the Tidore Kepulauan Hospital in August 2020-August 2021 of 465 people
Method Research: Total sampling technique. The independent variables were education, occupation, age, parity, antenatal visits , type of pregnancy, gestational age, type of delivery, anemia during pregnancy, and weight gain during pregnancy. The dependent variable is postpartum hemorrhage. **Research Results**: Based on the results of the logistic regression test, the variables of maternal age, anemia during pregnancy, parity, and weight gain during pregnancy had a p-value <0.05 so that the four variables had a significant relationship with the incidence of postpartum hemorrhage. **Conclusion**: The Exp (B) value highest in the variable of weight gain during pregnancy means that mothers who experience an increase in excess weight during pregnancy have 5,458 times the chance of postpartum hemorrhage. Health workers are expected to increase the provision of information about risk factors for postpartum hemorrhage and monitor the increase in maternal weight during pregnancy.

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PRELIMINARY

The maternal mortality rate from 1991 to 2015 was from 390 to 305 per 100,000 live births. However, this decline has not yet reached the MDGs target that must be achieved, which is 102 per 100,000 live births in 2015 [(1)] . Moreover, in the long-term plan, based on the *Sustainable Development Goals* (SDGs), the death rate is targeted to be less than 70 deaths per 100,000 live births by 2030 [(2)] .

The Maternal Mortality Rate in North Maluku Province in 2019 reached 202 per 100,000 live births in 2019. However, the overall Maternal Mortality Rate in 2019 decreased compared to previous years which reached 390 in 2017 and 441 in 2016. Compared to 2014 which was reached 229 , then the condition in 2019 has decreased. One of the areas in North Maluku Province whose MMR is still far from the SDGs target of Tidore Kepu lauan City , which is an expansion area of Central Halmahera Regency based on Law number 1 in 2003. Tidore Kepu Lauan City is located in the center of the island of Halmahera. The maternal mortality rate in Tidore Kepu Lauan is 166 per 100,000 live births, which is higher than the city of Ternate which is only 68 per 100,000 live births [(3)] .

In 2019, the most common causes of maternal death in Indonesia were 1,280 due to bleeding, 1,066 due to hypertension in pregnancy, 207 due to infection, and 1,311 other causes. Likewise, in North Maluku Province, bleeding was ranked the highest at 21 cases, followed by 2 cases of hypertension in pregnancy, 2 cases of infection, 3 cases of circulatory system disorders, 1 case of metabolic disorders, and 18 other cases [(1)] . This shows that bleeding is the highest cause of maternal death in Indonesia.

Postpartum hemorrhage is blood loss between 500 ml or more during childbirth or the puerperium , bleeding that is more than normal which has caused changes in vital signs, such as decreased consciousness, paleness, dizziness, cold sweats, shortness of breath, and blood pressure < 90 mmHg and pulse > 100/min [(4)] .

Risk factors in causing postpartum hemorrhage apart from auxiliaries and place/delivery factors are risk factors for maternal characteristics, including age, parity, maternal education, Hb levels, iron consumption and length of parturition [(5)] . Age, parity, history of poor delivery, prolonged labor are risk factors for postpartum hemorrhage [(6)] , but this is inversely proportional to the results of research conducted by Meidiana Pertiwi that maternal age, parity, distance between births and history of poor delivery have no effect on the incidence of postpartum hemorrhage [(7)] .

A retrospective study in Auckland, New Zealand on 11,363 primiparous women from 2006-2009 showed a significantly increased incidence of postpartum hemorrhage in overweight and obese women compared with normal weight women. This increased risk occurs with vaginal delivery or with cesarean delivery [8] .

Based on this background, postpartum hemorrhage can be prevented if we pay attention to predisposing factors and risk factors, so researchers are interested in conducting research on the relationship between maternal characteristics and weight gain with the incidence of postpartum hemorrhage at the Tidore Islands Hospital in 2021 .

METHODS

This study used approach . *cross sectional* . The population is all patients in the delivery room of the Tidore Kepulauan City Hospital in August 2020 - August 2021 of 465 people, with a *total sampling technique* . The time of the study was carried out on September 2-2 October 2021. The study used secondary data where data collection was obtained from census books in the delivery room and medical record room at the Tidore Kepulauan City Hospital and recorded in data collection sheets. This research has received ethically appropriate information from the Health Research Ethics Committee of Tanjungkarang Health Polytechnic No.063/KEPK-TJK/III/2021. Researchers tabulated research data, then performed bivariate analysis using the chi-square test/ *Fisher's exact test* and multivariate using logistic regression test.

RESEARCH RESULT

A. Results

Table 1 Characteristics Of Women In The Delivery Room

Characteristics	n (%)
Education	
Primary	39 (8.4)
Secondary	270 (58.1)
higher	156 (33.5)
Employment	
Not Employed	193 (41 .5)
Private	180 (38.7)
civil servant	92 (19.8)
age	
At Risk (<20 years and >35 years)	97 (20.9)
Not at risk (20-35 years)	368 (79.1)
Parity	
Grandemultiparity _	3 (0.6)
Multiparity	227 (48.8)
Primiparity	235 (50.5)
antenatal visits	
Incomplete (<6x)	80 (17.2)
complete (≥6x)	385 (82.8)
Pregnancy type	
Single	458 (98 .5)
Gemelli	7 (1.5)

Table 2 Results of bivariate analysis of the relationship between education, occupation, age, parity, antenatal visits, type of pregnancy, gestational age, type of delivery, anemia, and weight gain during pregnancy with the incidence of postpartum hemorrhage

Variables	Sig.	Information
Education	0.438	Sig >
Occupation	0.285	Sig >
Maternal age	0.000	Sig<
Parity	0.000	Sig<
antenatal visits	0.089	Sig >
Pregnancy Type	0.601	Sig >
Gestational Age	0691	Sig >
Type of Delivery	0.768	Sig >
Anemia	0.000	Sig <
Weight gain during pregnancy	gain0.000	Sig <

Source: Secondary data, 2021

Table 3 Results of multivariate analysis of the relationship between maternal characteristics and weight gain during pregnancy with the incidence of postpartum hemorrhage

Variables	Sig.	Exp (B)	95% CIfor Exp (B)	
			Lower	Upper
Maternal Age	0.002	3,043	1.515	6,113
Parity	0.015	2,255	1.172	4,338
Anemia During Pregnancy	0.000	3,971	1,993	7,912
Weight Gain During Pregnancy	0.000	5,458	3.205	9,295

Source: Secondary data, 2021

The results of multivariate analysis using regression Logistics show that the variable of weight gain during pregnancy is the most dominant variable associated with the incidence of postpartum hemorrhage in the delivery room at the Tidore Kepang Lauan Hospital in 2021 (Sig. 0.000 and Exp (B) 5.458) so it can be interpreted that mothers who experience excessive weight gain when Pregnancy has 5.458 times the chance of postpartum hemorrhage.

Gestational Age	
Post term	6 (1.3)
term	452 (97.2)
Preterm	7 (1.5)
Type of Delivery	
Normal	252 (54.2)
SC	213 (45.8)
Anemia during pregnancy	
Anemia (Hb 11 g%)	70 (15.1)
No anemia (Hb 11 g%) Weight gain	395 (84.9)
Weight gain during pregnancy	
more	126 (27.1)
appropriate	279 (60.0)
less	60 (12.9)
Postpartum Bleeding	
Postpartum	
bleeding There was no post	70 (15.1)
partum bleeding	395 (84.9)
Total	**465 (100)**

DISCUSSION

Postpartum hemorrhage is a condition of postpartum mothers who experience blood loss more than normal which causes changes in vital signs, resulting in decreased consciousness, paleness, weakness, cold sweats, difficulty breathing, blood pressure less than 90 mmHg and pulse rate exceeding 100 times. /minute [(4)] . There were ten variables studied, namely education, occupation, age, parity, antenatal visits, type

of pregnancy, gestational age, type of delivery, anemia, and weight gain during pregnancy. Bivariate test of these variables was conducted and obtained six variables with Sig> 0.05, which means that there is no relationship with the incidence of postpartum hemorrhage, namely education, occupation, antenatal visits, type of pregnancy, gestational age, and type of delivery. While the other four variables have Sig <0.05, which means that there is a relationship with the incidence of postpartum hemorrhage, namely maternal age, anemia during pregnancy, parity, and weight gain during pregnancy. Furthermore, the four variables were tested multivariately and obtained a Sig value <0.05, meaning that the four variables had a significant relationship with the incidence of postpartum hemorrhage in the delivery room at Tidore . Riau Islands Hospital in 2021. The *Exp (B) value* lowestin the parity variable means that parity has a 2,255 times chance of experiencing postpartum hemorrhage, while the highest value in the variable of weight gain during pregnancy with an *Exp (B) value* which means that mothers have 5,458 times the chance of experiencing postpartum hemorrhage.

This study is different from the research at the market Rebo , East Jakarta, that there is no significant relationship between maternal age and the incidence of postpartum hemorrhage with a value of Sig = 0.245 [(9)] . And also in research at RSUP Dr. M. Djamil Padang obtained a Sig value = 0.253 so that there was no significant relationship between primary and secondary postpartum hemorrhage with age [(10)] . However, in another study conducted at Abdul Moeloek General Hospital, there was a significant relationship between maternal age and postpartum hemorrhage [(11)] . In this study, the value of Exp (B) of maternal age has a chance of 3,043 times the occurrence of postpartum hemorrhage.

Regarding the second maternal characteristic, anemia during pregnancy, it has a Sig value of 0.000 which means that there is a relationship between anemia during pregnancy and postpartum hemorrhage. The results of this study are in line with research on the relationship between anemia and postpartum hemorrhage at Wonogiri Hospital in 2010 and found that there was a relationship between anemia and postpartum hemorrhage where 32.4% of mothers experienced anemia during pregnancy, 45.5% experienced postpartum hemorrhage with a value of OR = 9.33 which means that mothers with anemia have a 9 times greater risk of developing postpartum hemorrhage

compared to mothers who have not experienced postpartum hemorrhage [12] . Whereas in this study based on the *Exp (B) value* , if anemia occurs during pregnancy, 3,719 times will experience postpartum hemorrhage.

Mothers who enter labor with low concentrations of hemoglobin (Hb) may experience an even faster decrease in hemoglobin if bleeding occurs. Anemia associated with uterine disability is a more direct cause of uterine atony , which results in postpartum hemorrhage [13] . This is also supported by the opinion of Manuaba that one of the causes of postpartum hemorrhage in the fourth stage is uterine atony, this occurs because the lack of hemoglobin in the blood causes the uterine muscles to not contract adequately so that the uterus cannot close the open bleeding from the placental implantation site after the baby is born so that uterine atony appears which results in profuse bleeding [14] .

The third characteristic of the mother, namely parity, based on the multivariate test has a Sig value of 0.015, which means that there is a relationship between parity and postpartum hemorrhage. According to Khumaira , parity one and parity more than three have a higher incidence of postpartum hemorrhage [15] . In parity one, the uterus in the mother has not worked efficiently, tends to be disorganized or hypotonic [16] . Whereas in grandemultipara mothers the uterus tends not to work efficiently in all stages of labor so that uterine atony tends to occur which causes failure of blood vessel compression at the placental implantation site which results in post partum bleeding [17] .

This study is in line with research at PKU Muhmadiyah Hospital Bantul that there is a significant relationship between parity and postpartum hemorrhage with a Sig value of 0.000 and the study states that parity is at risk, namely 1 and more than 3 children have a 9,333 times greater the risk of postpartum hemorrhage compared to childbirth with parity is not at risk, namely 2-3 children [18] . In this study, parity at risk had a 2,255 times chance of postpartum hemorrhage.

The research conducted by Ely Tjahjani also stated that there was a relationship between maternal parity and the incidence of primary postpartum hemorrhage [19] . The results of this study are not in accordance with the research conducted by Naturrini that parity is not a risk factor for postpartum hemorrhage in her study [20] . In women with a history of parity 1 time the incidence of postpartum hemorrhage is more due to laceration of the birth canal. Laceration of the birth canal is the second

most common cause of postpartum hemorrhage.

Postpartum bleeding that occurs in a well-contracted uterus is usually caused by a cervical or vaginal tear. Meanwhile, in women with a history of parity 2-3 times the possibility of postpartum hemorrhage due to an overstretched uterus, fatigue due to labor or prolonged labor, excessive use of oxytocin in labor during labor induction, a history of bleeding in previous deliveries or a history of manual placenta. . In women with a history of parity more than equal to 4 times, it is caused by impaired elasticity of the uterine muscles. Abnormalities of the uterine muscles occur due to repeated stretching due to pregnancy so that there is a disturbance in the uterine muscles to contract shortly after the birth of the baby which results in bleeding.

The last variable is weight gain during pregnancy, based on the multivariate test it has a Sig value of 0.000, which means that there is a relationship between weight gain during pregnancy and postpartum hemorrhage. Pre-pregnancy obesity and fetal macrosomia were two associated risk factors, in the singleton and vaginal delivery subgroups, but not in the multiple pregnancy and caesarean section subgroups. Fetal macrosomia as a risk factor for predicting postpartum hemorrhage [(21)] .

Contraction of the uterus after delivery is an important mechanism to prevent postpartum blood loss. If contractility is impaired, it will result in increased blood loss [(22)] . Maternal obesity is positively associated with hypercholesterolemia and obese pregnant women have been found to have levels of high cholesterol, low density lipoprotein and very low density lipoprotein ([23)] . An increase in very low density lipoprotein cholesterol (VLDL-C) has been associated with an increase in the free cholesterol/phospholipid ratio, and changes in membrane viscosity and membrane fluidity [(24)] .

Reduction of membrane fluidity can affect the function of integral membrane components, such as the translocation of $Ca2^{+}$ from the extracellular space to the cytoplasm during the contraction-relaxation cycle of smooth muscle cells. Therefore, high cholesterol levels in obese women may affect the effectiveness of uterine contractions [(25)] .

The results of this study are also in line with a study in Scotland which showed that 1 in 5 obese women experienced a higher incidence of postpartum hemorrhage than women with normal weight [(26)] . So that during antenatal checks it is recommended that every pregnant woman with a high Body Mass Index (BMI), have early detection and

control of her weight gain to prevent complications. The COVID pandemic of the 19th year of this 2020-2021, is driving an increase in obesity in women entering pregnancy. High caloric intake of sweetened drinks and snack excess, which is higher than physical activity contributes to weight gainber l duringore . pregnancy In there recommendations *Institute Of Medicine* , weight gain is determined based on the body mass index (BMI) before pregnancy.

Active Management of the Third Stage of Labor has been recommended to reduce blood loss by 40-68% [(27)] . Hospital guidelines that encourage this practice have been Resulted in a significant reduction in incidence massive bleeding. Active management that involves the immediate or immediate administration of uterotonic drugs after delivery of the anterior shoulder, the umbilical cord is under control traction, and usually early clamping and cutting of the umbilical cord, reduce the risk of postpartum hemorrhage and shorten third stage of labor without a significant increase in risk of retained placenta [(28)] .

CONCLUSION

1. Education, occupation, antenatal visits, type of pregnancy, gestational age, and type of delivery were not associated with the incidence of postpartum hemorrhage.
2. Maternal age, anemia during pregnancy, parity, and weight gain during pregnancy are associated with the incidence of postpartum hemorrhage.
3. Variable weight gain during pregnancy is the most dominant variable associated with the incidence of postpartum hemorrhage

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