



# Analysis of the Relationship of Pregnancy Complications with The Event of Low Birth Weight In Indonesia (An Analysis of Secondary Data of Indonesian Health Demographic Survey 2017)

*Analisis Hubungan Komplikasi Kehamilan Dengan Kejadian Bayi Berat Lahir Rendah di Indonesia (Analisis Data Sekunder Survei Demografi Kesehatan Indonesia Tahun 2017)*

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## ABSTRACT

Pregnancy complications are problems or health problems that often occur during pregnancy, and can impact not only the health of the mother but also the newborn. High risk during pregnancy occurs in pregnant women under the age of 19 and over 35 years and the length of marriage is over 5 years. Further analysis of this secondary data is descriptive of analytics conducted using a Cross-sectional design. Research sites throughout the Province in Indonesia, conducted from July 24 to September 30, 2019. The secondary data was re-processed by researchers with several different variables in 2019. The samples in this study were all SDKI 2017 samples that met the criteria of 16,343 samples. Then the data is analyzed with univariate analysis, bivariate with a chi-square test, and multivariate with a logistics regression test. The results of the univariate analysis found that the percentage of babies born with LBW was 7.53% and the proportion of respondents who had pregnancy complications was 87.96%. Then the bivariate analysis obtained that there is a relationship between pregnancy complications with the incidence of BBLR obtained a p-value of 0.025 or a value of 0.81. Later multivariate analysis showed that the most influential factors were birth distance with OR=1.12 and Antenatal Care services (ANC) with OR=1.22. Then the factors associated with causing LBW are complications, maternal age, and socioeconomic status with a p-value of <0.05. There is a link between pregnancy complications and LBW events with a p-value of 0.025. Pregnancy complications have a connection to the incidence of LBW, it is necessary for every pregnant woman to be able to increase knowledge of the danger signs of pregnancy.

## ABSTRAK

Komplikasi kehamilan adalah masalah atau masalah kesehatan yang sering terjadi selama kehamilan, dan dapat berdampak tidak hanya pada kesehatan ibu tetapi juga pada bayi baru lahir. Risiko tinggi selama kehamilan terjadi pada wanita hamil di bawah usia 19 dan di atas 35 tahun dan lamanya pernikahan lebih dari 5 tahun. Analisis lebih lanjut dari data sekunder ini adalah deskriptif analitik yang dilakukan dengan menggunakan desain *cross-sectional*. Lokasi penelitian di seluruh Provinsi di Indonesia, dilakukan pada 24 Juli hingga 30 September 2019. Data sekunder tersebut diolah kembali oleh peneliti dengan beberapa variabel berbeda pada tahun 2019. Sampel dalam penelitian ini adalah seluruh sampel SDKI 2017 yang memenuhi kriteria 16.343 sampel. Kemudian data dianalisis dengan analisis univariat, bivariat dengan uji chi-square, dan multivariat dengan uji regresi logistik. Hasil analisis univariat menemukan bahwa persentase bayi yang lahir dengan LBW adalah 7,53% dan proporsi responden yang mengalami komplikasi kehamilan adalah 87,96%. Kemudian dalam analisis bivariat diperoleh bahwa terdapat hubungan komplikasi kehamilan dengan kejadian BBLR diperoleh nilai p 0,025 yang diperoleh atau nilai 0,81. Analisis multivariat kemudian menunjukkan bahwa faktor yang paling berpengaruh adalah jarak lahir dengan OR=1.12 dan *antenatal care services* (ANC) dengan OR=1.22. Kemudian faktor-faktor yang terkait dengan penyebab LBW adalah komplikasi, usia ibu dan status sosial ekonomi dengan nilai p <0,05. Ada hubungan antara komplikasi kehamilan dan kejadian LBW dengan nilai p 0,025. Komplikasi kehamilan memiliki hubungan dengan kejadian LBW, perlu bagi setiap wanita hamil untuk dapat meningkatkan pengetahuan tentang tanda-tanda bahaya kehamilan.

**Keywords:** LBW, Pregnancy Complications, SDKI 2017

**Kata Kunci :** LBW, Komplikasi Kehamilan, SDKI 2017

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## INTRODUCTION

The development of the health sector is successful if it can be assessed from indicators of the degree of public health, one of which is through reducing the Maternal Mortality Rate (MMR) and infant mortality rate (AKB) (Chung & Bae, 2017). AKB describes the level of public health problems, if the AKB in an area is high, then the health status in the region is low. According to the World Health Organization, the AKB in the world in 2012 was 39 deaths per 1,000 live births. AKB is high, especially in developing countries. Indonesia as a developing country has an AKB that is almost close to the world's AKB. Based on the results of the Indonesian Demographic and Health Survey, there are 32 infant deaths out of 1,000 live births and this figure is still far from the target. Then on, infant mortality to 24 deaths per 1,000 live births between 2013-2017, there was a decrease from the previous survey. The majority of infant deaths in 2017 occurred in the perinatal period (0-7 days). And deaths in the perinatal group were caused by Intra Uterine Fetal Death (IUFD) by as much as 29.5% and Low Birth Weight Babies (BBLR) by as much as 7.1% (Averis, 2020).

As for babies with Low Birth Weight (LBW), they have a 20 times higher risk of mortality compared to babies with normal birth weight. Furthermore, LBW babies, especially those with very low birth weight, are more susceptible to cognitive abnormalities, behavioral disorders, growth and developmental disorders, as well as neurodevelopmental impairments (Anggraini & Septira, 2016).

The results of the Indonesian Demographic and Health Survey, have shown a decrease in AKB in Indonesia, in SDKI 2002-2003 was 35 per 2 1000 live births, then SDKI 2007 was 34 per 1000 live births, then SDKI 2012 was 32 per 1000 live births and the last SDKI 2017 was 24 per 1000 live births

(Bekkar et al., 2020). From various SDKI data and information, SDKI is part of the international Demographic and Health Survey (DHS) program, which is designed to collect data on fertility, family planning, and maternal and child health (Himawati, 2020).

BBLR is defined as a birth weight that is less than 2500 grams at the time of birth. This figure is set because it is in accordance with epidemiological data which states that babies born with this weight have a risk of 20 times to die compared to babies born with babies born exceeding 2500 grams. According to, there are 20 million cases of BBLR in the world and 95.6% of these cases occur in developing countries. The average percentage of BBLR cases in the world since 2009-2013 was 16%. BBLR cases are concentrated on two continents, namely Asia (72 %) and Africa (22 %) (LaFranchi, 2021). Indonesia as one of the countries on the Asian continent had a percentage of BBLR cases of 10.2% in 2013. The highest percentage of BBLR was found in Central Sulawesi Province (16.9%) and the lowest in North Sumatra (7.2%). Meanwhile, West Sumatra has a percentage of BBLR of 7.3% and Aceh Province of 9.2% (Lathif, 2018).

The 2017 SDKI report presents pregnancy disorders or complications experienced by women 15-49 years old who had their last live birth in the 5 years before the survey. Eight out of ten (81%) women do not experience complications during pregnancy (Rogne et al., 2017). Pregnancy complications are health problems or disorders that often occur during pregnancy, and can have an impact not only on the health of the mother but also on the newborn. Among women who had complications of pregnancy, 5 percent had excessive bleeding, 3 percent each had continuous vomiting and swelling of the legs, hands, and face or headaches accompanied by seizures, and 2 percent each had heartburn before 9 months and an early

rupture of the amniotic. Eight percent of women experienced other pregnancy complaints, including high fever, seizures and fainting, anemia and hypertension (Ernawati et al., 2017).

Complications related to pregnancy that occur in pregnant women include continuous vomiting and unwillingness to eat, high fever, swelling of the legs, hands and face accompanied by seizures, the fetus is less mobile, bleeding in the birth canal, and the amniotic rupture prematurely. Other health problems that can appear during pregnancy can be chills accompanied by cold sweats, pain or pain when urinating, long cough (more than 2 weeks), palpitations or chest pain, recurrent diarrhea as well as difficulty sleeping and excessive anxiety (Ford et al., 2019). According to research conducted by, mothers who experience pregnancy complications have a 2.3 times risk of having a baby with BBLR compared to mothers who do not experience pregnancy complications. A high-risk during pregnancy occurs in pregnant women who are less than 19 years old and over 35 years old and the length of marriage is over 5 years old (Chahyanto & Wulansari, 2018).

also suggested about 51.4% of women experience nausea and 9.2% of women experience vomiting. Nausea and vomiting during pregnancy are not yet clearly known. However, this condition is often associated with hormonal changes experienced by pregnant women. The pregnancy hormones known to have an effect on the appearance of this excessive vomiting are *human chorionic gonadotropin* (hCG) and estrogen (Yuliani et al., 2018). specifically, because the most common periods of gestational nausea and vomiting are at the age of the first 12-16 weeks, at which time, HCG reaches its highest levels. According to, the incidence of hyperemesis gravidarum lasts from 9-10 weeks of gestation. This incidence is decreasing and is then expected to end at 12-

14 weeks gestation. A small percentage continue until 20-24 weeks gestational age (Ifa Nurhasanah, 2020).

Pregnancy complications are also closely related to the frequency of antenatal visits made to pregnant women. in his research showed that the weight of newborns is influenced by antenatal services. Mothers who make antenatal visits at least 4 times during pregnancy have a 1.8 times chance of not giving birth to a BBLR child compared to mothers who do antenatal care less than 4 times. The findings are in line with the results of the research conducted by. Therefore, researchers are interested in researching the relationship between pregnancy complications and the incidence of low birth weight (LBW) in Indonesia in 2019.

## METHOD

This study is an analysis of secondary data from SDKI 2017. The research design used in SDKI 2017 is a cross-sectional study, this research is descriptive analytics carried out using a Cross-sectional design with a quantitative approach. Cross-sectional is a design of epidemiological studies that studies the relationship between disease and exposure (research factors) by observing the status of exposure and simultaneous disease in individuals of a single population, at one moment or period. As for the research locations in all provinces in Indonesia, it was carried out from July 24 to September 30, 2019. The data analysis univariate secondary data was reprocessed by researchers with several different variables in 2020.

## RESULTS

### Results of Research and Discussion

#### Univariate Analysis Results

This univariate analysis was carried out to provide a descriptive picture of each variable used in the study.

**Table 1. Numerical Data on Birth Weight, Birth Distance, Maternal Age, K1, K2, and K3/K4 Based on SDKI 2017**

Variable	Unstratified		Stratified	
	Mean (average)	CI 95%	Mean (average)	CI 95%
Birth Weight (grams)	3.194	3.168-3.219	3.189	3.158-3.220
Parity	2,76	2,71-2,81	2,75	2,68-2,81
Birth Distance (Month)	72,28	70,31-74,26	72,20	69,47-74,94
Mother's Age (Years)	30,77	30,47-31,08	30,83	30,51-31,15
K1	2,84	2,74-2,94	2,88	2,73-3,03
K2	1,91	1,79-2,03	1,99	1,83-2,15
K3/K4	3,75	3,62-3,88	3,89	3,67-4,10

Source: (SDKI Secondary Data 2017- processed in 2019)

Based on the table above (SDKI data) shows that the average baby has a birth weight of 3,147 grams, then the average birth distance is 2.18, then the average maternal age is 30.79

years, then the average K1 is 2.84, while the average K2 is 1.90, and the average K3 / K4 is 3.72.

**Table 2. Frequency Distribution of Pregnancy complications and LBW/BBLR in Indonesia Based on SDKI 2017**

Category	Frequency	Percentage	
		Unstratified	Stratified
<b>Baby Weight Born</b>			
No BBLR	15.097	92,38	92,47
BBLR	1.246	7,62	7,53
<b>Heartburn</b>			
Not	6.207	37,98	38,33
Yes	10.136	62,02	61,67
<b>Bleeding</b>			
Not	12.058	73,78	73,87
Yes	4.285	26,22	26,13
<b>Fever</b>			
Not	5.426	33,20	32,61
Yes	10.917	66,80	67,39
<b>Stiff</b>			
Not	14.311	87,57	87,5
Yes	2.031	12,43	12,5
<b>Swollen</b>			
Not	15.012	91,86	91,9
Yes	1.331	8,14	8,1
<b>Other</b>			
Not	16.031	97,98	98,03
Yes	330	2,02	1,97
<b>Complications</b>			
Not	1.999	12,23	12,04
Yes	14.344	87,77	87,96
<b>Parity</b>			
Low risk	13.940	85,30	85,55
High Risk	2.403	14,70	14,45
<b>Mother's age</b>			
Low risk	10.993	67,26	64,6
High Risk	5.350	32,74	35,4

Category	Frequency	Percentage	
		Unstratified	Stratified
<b>Birth distance</b>			
Low risk	15.264	93,40	93,65
High Risk	1.079	6,60	6,35
<b>Education</b>			
SD	8.195	50,14	49,7
JUNIOR	3.161	19,34	19,21
High School/Vocational School	3.604	22,05	22,57
D3/S1	1.383	8,46	8,53
<b>Socioeconomic status</b>			
Top	9.415	57,61	53,52
Upper middle	1.915	11,72	12,64
Intermediate	1.713	10,48	11,48
Lower middle	1.675	10,25	11,37
Bottom	1.625	9,94	10,99
<b>Implementation of K1</b>			
Complete	13.967	85,46	84,13
Incomplete	2.376	14,54	15,87
<b>Implementation of K2</b>			
Complete	13.561	82,98	81,73
Incomplete	2.782	17,02	18,27
<b>Implementation of K3/K4</b>			
Complete	13.504	82,63	81,36
Incomplete	2.839	17,37	18,64
<b>ANC Services</b>			
Good	2.320	14,20	15,52
Bad	14.023	85,80	84,48
<b>16.343</b>	<b>100</b>		

Source: (SDKI secondary data 2017- processed in 2019)

Based on table 5.2 univariate analysis (Stratified) explained that the proportion of respondents weighing babies born with BBLR was 7.53%, then respondents who experienced heartburn were 61.67%, while respondents who experienced bleeding were 26.13%, but respondents who had fever were 67.39%, while respondents who had seizures were 12.5%, then respondents who experienced swelling were 8.1%, respondents who experienced other complications 1.97%, then respondents who experienced complications 87, 96%, parity respondents (the number of children <3 people) were 14.45%, followed by the age category of mothers at high risk <20 years and >35 years old by 35.4%, the category of high-risk birth distance <2 years by 6.35%, respondents who had an elementary

school education of 49.7% and those with a junior high school education of 19.21%, then respondents with lower middle socioeconomic status of 11.37%, and the bottom socioeconomics by 10.99%, respondents who were incompletely implementing K1 by 15.87%, respondents who were incomplete in carrying out K2 by 18.27%, respondents who were incompletely implementing K3/K4 by 18.64%, then respondents who did not have a full pregnancy examination by 84.48%.

### Bivariate Analysis Results

Bivariate analysis to find out the relationship roughly between independent variables and dependent variables without considering independent variables or other risk factors.

**Table 3. Relationship of pregnancy complications with BBLR incidence in Indonesia Based on SDKI 2017**

Variable	Baby Weight Born				Total		OR	CI 95%	P- Value
	No BBLR		BBLR		n	%			
	n	%	n	%					
<b>Pregnancy complications</b>									
Not	1.816	91,09	183	8,91	1.999	100	0,81	0,67- 0,97	0,025
Yes	13.281	92,65	1.063	7,35	14.344	100			
<b>Parity</b>									
Low risk	12.881	92,53	1.059	7,47	13.940	100	1,069	0,88- 1,28	0,476
High risk	2.216	92,05	187	7,95	2.403	100			
<b>Birth Distance</b>									
Low risk	14.111	92,53	1.153	7,47	15.264	100	1,156	0,90- 1,47	0,239
High risk	986	91,46	93	8,54	1.079	100			
<b>Mother's Age</b>									
Low risk	10.105	91,95	888	8,05	10.993	100	0,80	0,69- 0,93	0,004
High risk	4.992	93,4	358	6,6	5.350	100			
<b>Education</b>									
D3/S1	1.266	91,63	117	8,37	1.383	100	0,79	0,62- 1,01	0,067
High School/Vocational School	3.348	93,23	256	6,77	3.604	100			
JUNIOR	2.942	93,02	219	6,98	3.161	100	0,82	0,63- 1,06	0,138
Elementary School	7.541	92,05	654	7,95	8.195	100	0,94	0,74- 1,19	0,638
<b>Socioeconomic status</b>									
Top	8.628	91,77	787	8,23	9.415	100	0,62	0,50- 0,78	0,000
Upper middle	1.811	94,66	104	5,34	1.915	100			
Intermediate	1.588	92,34	125	7,66	1.713	100	0,92	0,74- 1,14	0,47
Lower middle	1.566	93,49	109	6,51	1.675	100	0,77	0,60- 1,005	0,05
Bottom	1.504	92,41	121	7,59	1.625	100	0,91	0,71- 1,17	0,49
<b>ANC Services</b>									
<b>Good</b>	2.177	93,7	143	6,3	2.320	100	1,25	1,01- 1,54	0,033
<b>Bad</b>	12.920	92,24	1.103	7,76	14.023	100			

Source: (SDKI Secondary Data 2017- processed in 2019)

Based on Table 5.3, it is explained that the proportion of pregnancy complications that are not BBLR is (91.09%) compared to the yes category (92.65%). Meanwhile, BBLR respondents who had pregnancy complications in the yes category were (7.35%) compared to the no category (8.91%). Then explained that the proportion of parity with lower risk is greater not causing BBLR (92.53%) compared to high risk (92.05%). Meanwhile, the proportion of maternal parity with high risk is greater in causing BBLR (7.95%) compared to low risk (7.47%). The proportion of birth distance with higher risk of low risk did not cause BBLR (92.53%) compared to high-risk birth distance (91.46%). Meanwhile, the high-risk birth distance is greater than experiencing BBLR (8.54%) compared to high risk (7.47%). the proportion of maternal age during childbirth with a lower risk did not cause BBLR (92.53%) compared to high risk (93.4%). Meanwhile, the proportion of maternal age during childbirth with high risk is lower (6.6%) compared to high risk (8.05%).

The proportion of low category maternal education did not cause BBLR (92.05%), compared to the education of middle category mothers (93.22%) and high category maternal education (91.63%). Meanwhile, the proportion of maternal education with a higher category led to BBLR (8.37%) compared to the middle category (6.77%) and low category maternal education (7.95%). The proportion of socioeconomic status that does not cause BBLR with the top category is (91.77%) compared to the middle category (92.34%) and socioeconomic status with the bottom category (92.41%). Meanwhile, the proportion of socioeconomic status with the bottom category led to BBLR of (7.59%) compared to the middle category (7.66%) and socioeconomic status with the top category (8.23%). Finally, the proportion of ANC services with good categories did not cause BBLR (93.7%) compared to bad categories (92.24%). Meanwhile, the proportion of ANC with bad

category causes BBLR (7.76%) compared to good category (6.3%).

## DISCUSSION

### Relationship of Pregnancy Complications with BBLR Incidence

In this study, mothers who had a pregnancy examination at least 4 times were more likely to be detected with pregnancy complications compared to those who checked their pregnancy less than 4 times. Complications related to pregnancy that occur in pregnant women include continuous vomiting and unwillingness to eat, high fever, swelling of the legs, hands and face accompanied by seizures, the fetus is less mobile, bleeding in the birth canal, and the amniotic rupture prematurely. Other health problems that can appear during pregnancy can be chills accompanied by cold sweats, pain or pain when urinating, long cough (more than 2 weeks), palpitations or chest pain, recurrent diarrhea as well as difficulty sleeping and excessive anxiety. Among women who had complications of pregnancy, 5% had excessive bleeding, 3% each had continuous vomiting and swelling of the feet, hands and face or headaches accompanied by seizures, as well as 2% each had heartburn before 9 months and an early rupture of the amniotic (Triana, 2016). 8% of women experienced other pregnancy complaints, including high fever, seizures and fainting, anemia and hypertension. 10% of women who experience excessive bleeding, their babies die at the age of 1 month and 8 percent give birth by caesarean section. When viewed based on the number of pregnancy complications, it is obtained that mothers who experience more than two pregnancy complications are more at risk of giving birth to BBLR compared to mothers who do not experience pregnancy complications. This is because mothers who experience more than two pregnancy complications make the mother's health weakened so that fetal growth

is hampered, resulting in BBLR (Sari et al., 2018).

From the results of the distribution of pregnancy complications variables, it turned out that there were 1,063 (7.35%) mothers who gave birth with BBLR. Then pregnant women who do not have pregnancy complications give birth with BBLR 183 (8.91%) (Amperatmoko et al., 2022). Based on the bivariate test, the relationship between pregnancy complications is related to BBLR, because the p-value obtained is 0.025. This is in keeping with researchers' initial assumption that pregnancy complications have a relationship with the incidence of BBLR. In the final modeling of the relationship of pregnancy complications with BBLR events, there were no interaction variables with an OR value of 0.81. Which means that mothers who do not experience pregnancy complications have the opportunity to prevent BBLR by 81% compared to mothers who experience pregnancy complications (Kusumawardani, D. A., & Wahyuningtyas, 2021). The assumptions of BBLR researchers are not only influenced by the components of the proposed pregnancy complications, but also have a relationship with other factors. So it can be said that the researcher's initial assumptions were correct, because the researcher not only looked for the relationship and influence of the pregnancy complication variables, but also included Independent variables that became other risk factors, such as parity, birth distance, maternal age, maternal education, socioeconomic status and antenatal care services. Based on the results of the research above, it can be concluded that pregnancy complications affect the incidence of BBLR. Therefore, it is recommended for pregnant women to make visits and antenatal examinations in order to be able to detect early and deal with pregnancy complications that occur. In addition, the health of the baby is influenced by the health of the mother during pregnancy and the delivery process as well as

the mother's ability to take care of the baby after birth (Sahil et al., 2016).

### **Relationship of Birth Distance and Maternal Age with BBLR Incidence**

The birth distance variable is the distance in months with previous births, with the category of 24 months at low risk. In the bivariate statistical test, the birth distance showed insignificant results where the p value = 0.239. In the initial model of the multivariate test with the logistic regression test, a p value of 0.359 was obtained, indicating that there was still no relationship with the BBLR event with OR = 1.12. The researcher's assumption that the progress of a good pregnancy process requires excellent physical condition of the mother, in addition to other conditions such as psychological conditions and the surrounding environment is very influential. Preparing a physical condition that can guarantee the pregnancy process for 9 months to proceed normally requires sufficient time to return to normal conditions. In this study, respondents were categorized as 35 years old with a high-risk category and 20-35 years in the low-risk category. The results of the bivariate statistical test showed that there was a significant relationship p value of 0.004 between the mother's age and the incidence of BBLR and in the multivariate analysis showed that the age of the mother still had a relationship with the incidence of BBLR (Soans et al., 2022).

According to the assumption of maternal age researchers, it has an effect on the incidence of BBLR, because the age of mothers under 20 years is still not ready to experience pregnancy and can cause BBLR, then at the age of over 35 years are also at risk of experiencing BBLR because at that age the mother's condition is no longer prime (Chahyanto & Wulansari, 2018).



## The Relationship Between Maternal Education and Economic Status with BBLR Events

Education is an activity or lesson process to develop or improve certain knowledge so that the educational goal can stand alone. The level of maternal education is a factor that indirectly affects the incidence of BBLR. Poorly educated mothers find it difficult to accept motivation and are less aware of the importance of prenatal care, have limitations in obtaining adequate antenatal services, limited consumption of nutritious foods during pregnancy which will ultimately affect the condition of the mother and the fetus she is carrying. The higher the mother's education, the more information she gets about BBLR so that she can get more knowledge to prevent BBLR and make better decisions about her health. The maternal education variable in the bivariate test looked insignificant p-value 0.338, meaning that there was a relationship between maternal education and the incidence of BBLR. Then in the multivariate test education still has a relationship with the incidence of BBLR with a p value of 0.121 and with OR = 0.87. This means that mothers with low education have no difference in the risk of giving birth with BBLR compared to higher and secondary education (Mulyana & Kusumastuti, 2021).

The socioeconomic status of the family can show a picture of the family's ability to meet the nutritional needs of the mother during pregnancy which plays a role in the growth of the fetus (Yanti, 2018). In this study, the socioeconomic status of households was measured based on ownership of household assets. To determine the economic status of a household, each household item or facility is weighted based on the principal component analysis and the number of scores on the household's assets or facilities is standardized to follow the normal distribution, then divided into 5 quintiles and into an index of economic status (Mukkadas et al., 2021).

According to mothers who have low socioeconomic status in developing countries, they have a higher probability of being members of ethnic minorities, smoking, having a short birth distance, having less antenatal visits and having genital tract infections, which has an impact on the incidence of BBLR. In the United States, mothers with low status at high risk of giving birth prematurely are controlled by other risk factors such as weight gain, alcohol consumption, cigarettes, race, parity, and antenatal sources of care. From the previous presentation, it can be concluded that both in developing countries and in developed countries such as the United States, socioeconomic status is one of the strong risk factors that have an impact on health. The socioeconomic impact on health includes an unhealthy lifestyle, incomplete health services received, stress, inability to buy goods and services that are important for health. Based on a bivariate analysis between socioeconomic status and BBLR, a p value of 0.129 was generated, which shows that there is a relationship between socioeconomic status and BBLR events. In the multivariate analysis, a p value of 0.002 and OR of 0.69 were obtained. This means that mothers with the lowest socioeconomic status have no difference in the risk of giving birth with BBLR compared to the socioeconomic status of the upper middle class (Munadia & Umar, 2022). This study uses a secondary dataset from SDKI 2017, the advantage is quite efficient, however, in some aspects there are limitations that can affect the validity of the research results so that they must be adjusted to the available data (Chung & Bae, 2017).

## CONCLUSION

Based on bivariate results, it shows that the proportion of maternal age during childbirth with a lower risk does not cause BBLR (92.53%) compared to high risk (93.4%). Then the proportion of ANC services with good categories did not cause BBLR (93.7%)

compared to bad categories (92.24%). Meanwhile, the proportion of ANC with bad category causes BBLR (7.76%) compared to good category (6.3%).

Other risk factors that have a relationship with BBLR are found in the variables of parity and maternal education, other variables do not have a significant relationship with BBLR, such as parity, birth distance, maternal age, maternal education, socioeconomic status and antenatal care services.

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