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Factors Affecting the Event of Low Birth Weight in the Work Area of Pataruman 2 Community Health Center
Oleh : Primo Parmanto, dkk

Gambaran Tingkat Pengetahuan Ibu Tentang Diare Pada Anak di Wilayah Pataruman 1 Tahun 2021
Oleh : Malayanti, dkk

Gambaran Kejadian Anemia pada Ibu Hamil di Wilayah Kerja Puskesmas Pataruman 1
Oleh : Katharina Setyawati, dkk

Faktor-Faktor yang Mempengaruhi Tingkat Kemandirian Lansia di Wilayah Kerja BLUD UPTD Puskesmas Banjar 3
Oleh : Irfan Taufik, dkk

Faktor-Faktor yang Mempengaruhi Keberhasilan Asi Eksklusif di Wilayah Kerja Puskesmas Banjar 3
Oleh : Desy Januarrifianto, dkk

Analisis Kepatuhan Konsumsi Obat Hipertensi pada Pasien Lansia di Puskesmas Banjar 2 Kota Banjar Tahun 2021
Oleh : Asep Zenzen Zaeni Dahlan, dkk

Gambaran Tingkat Pengetahuan, Sikap, dan Perilaku terhadap Pencegahan Gastritis Pada Lansia di Wilayah Kerja Puskesmas Banjar 1 Tahun 2022
Oleh : Tutwuri Handayani, dkk

Analisis Peran Lintas Sektor terhadap Penanganan Covid-19 di Kelurahan Pataruman Kota Banjar Periode Januari-April 2021
Oleh : Gatot Sugiharto, dkk

Gambaran Faktor-Faktor yang Mempengaruhi Kejadian ISPA pada Balita di Desa Neglasari Tahun 2022
Oleh : Kemalasari Nas Darisan, dkk

Tingkat Pengetahuan Ibu Hamil tentang Stunting di Wilayah Kerja Kelurahan Purwaharja Puskesmas Purwaharja 1 Kota Banjar Tahun 2022
Oleh : Ribkhi Amalia Putri, dkk

Gambaran Persepsi Masyarakat Mengenai Vaksin Covid-19 di Wilayah Kerja BLUD UPTD Puskesmas Purwaharja 1 Lingkungan Siluman Desa RW 11 Kelurahan Purwaharja Kecamatan Purwaharja Kota Banjar Tahun 2021
Oleh : Robertus Surjoseto, dkk

Gambaran Kejadian Skabies di Wilayah Kerja Puskesmas Banjar 3 Tahun 2021
Oleh : Retno Tri Siswanti, dkk

Profil Pasien Vertigo Sentral di Rumah Sakit Umum Daerah Pasar Minggu
Oleh : Wiwit Ida Chahyani, dkk.

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DAFTAR ISI

Factors Affecting the Event of Low Birth Weight in the Work Area of Pataruman 2 Community Health Center	1 - 6
<i>Oleh : Primo Parmanto, Athariq Wahab, Annisa Nurul Afifah, Annisa Sastrawati Rayes, Azzahra Asya Sisdiani, Iyaza Imtiaz, Luthfiyyah Adelia Sukma, Muhammad Indo Fuji R, Naila Durratu Sa'diyah, Ratri Qirana Putri Saryadi, Afifa Nuha Suhaila, Muhammad Hanif M, Muhammad Irfan R D, Nusaiba Dzati rahma, Safira Isnindita S, Thalia Nur Azizah.</i>	
Gambaran Tingkat Pengetahuan Ibu Tentang Diare Pada Anak di Wilayah Pataruman 1 Tahun 2021	7 - 12
<i>Oleh : Malayanti, Abdul Baktiansyah, Farsida, Fabian Anfasa Razak, Muhammad Fachry Rahman, Muhammad Farhan, Wahidin Nawawi, Annisa Adelia Savitri, Radestra Ksatriapraja, Rizky Wulandari, Ulfi Safitri Ramadhani, Randitya Noviansyah.</i>	
Gambaran Kejadian Anemia pada Ibu Hamil di Wilayah Kerja Puskesmas Pataruman 1	13 - 17
<i>Oleh : Katharina Setyawati, Alidina Nurafifah, Amar Makruf, Fadhilah Istiqamah, Popy Anggraeni Alvina Sarda NF, Anisya Putri Jayanti, Dewi Rahman, Hanif Dwi Irfandi K, Sabrina Jamila, Vika Rachma F, Safira Isnindita S, Thalia Nur Azizah, Gina Dwi Candrarini.</i>	
Faktor-Faktor yang Mempengaruhi Tingkat Kemandirian Lansia di Wilayah Kerja BLUD UPTD Puskesmas Banjar 3	18 - 28
<i>Oleh : Irfan Taufik, Pitut Aprillia Savitri, Nur Rahmah Sari, Maynaliza Nurul Aini, Siti Haniwidiya, Nabila Jasmine Kusumaning A, Indah Dwi Anugrah, Annaya Noor Sabina, Diana Salsabila Khoirunnisya A, Nadiyah Cahyanih, Athira Azhar Budiani, Aziza Iskhakova, Muhammad Reynaldi Anandita G, Rulli Rustaman, Hasbi Tri Fatwa Nur Alam, Lalu Ahmad Asmayadi.</i>	
Faktor-Faktor yang Mempengaruhi Keberhasilan Asi Eksklusif di Wilayah Kerja Puskesmas Banjar 3	29 - 35
<i>Oleh : Desy Januarrifianto, Mohammad Labib, Andi Annisa Dwi Adam, Cindy Sally, Dwi Suci Hariyat, Fathie Yaqhan R.A Dano, Ghina Nurli Aulia, Hikmatul Paramitha Zalda, Sahlan Abad, Umi Dyah Retnasih, Shahfinaz Humaerratul A, Vina Nahdia A, Witania Selini.</i>	
Analisis Kepatuhan Konsumsi Obat Hipertensi pada Pasien Lansia di Puskesmas Banjar 2 Kota Banjar Tahun 2021	36 - 41
<i>Oleh : Asep Zenzen Zaeni Dahlan, Toha Muhaimin, Farsida, Agni Mubarak, Atemi, Aulia Adilah, Aulia Diandra Shafiera, Bima Anretama, Fauziah Zahara Salsabila P, Monicha Vanesa R.G, Muhammad Khatami, Muhammad Syamirul Alam, Mutiara Amalia, Raudhah Laila Mukarromah, Salsabilla Athaska, Wanda Try Wulandari.</i>	

Gambaran Tingkat Pengetahuan, Sikap, dan Perilaku terhadap Pencegahan Gastritis Pada Lansia di Wilayah Kerja Puskesmas Banjar 1 Tahun 2022	42 - 47
<i>Oleh : Tutwuri Handayani, Toha Muhaimin, Farsida, Alfiana Adhitia S, Ayu Dika Anugrahwati, Harli Zidhan Koto, Nadif Mahendra Tiasto, Nur Chomsatun FT, Muhammad Bobby S, Shara Fatimatuzzahro, Syifa Amalia Khairunnisa, Mutiara Adinastika M, Hidlir Nugrahdhi, Luftania Hartandi H.</i>	
Analisis Peran Lintas Sektor terhadap Penanganan Covid-19 di Kelurahan Pataruman Kota Banjar Periode Januari-April 2021	47 - 52
<i>Oleh : Gatot Sugiharto, Anggi Nur Indah Sari, Daffa Alhafizh Alen, Devara Dezanira Dikaputri, Diah Indah Sari, Dina Ummami A, Habibi Al Fajri, Mia Aulia, Raisha Alfathan Muttaqin, Rifqi Fakhri Hafidz, RR. Frilizky Hanindita Ayu, Siti Azaniah Putri, Tivalen Dwirara Anggraini, Qadi Maqshudi.</i>	
Gambaran Faktor-Faktor yang Mempengaruhi Kejadian ISPA pada Balita di Desa Neglasari Tahun 2022	53 - 59
<i>Oleh : Kemalasari Nas Darisan, Pitut Aprilia Savitri, Alvita Shabilla Chintami, Anggraeni Dwi Puspita Sari, Annisa Salsabil Husna, Arrizqi Hafidh Abdussalam, Athaya Luthfi, Dawud Muzakki, Diaz Resyanugraha, Else Bella Pratiwi, Gita Persada Octaviani, Izza Ihsan, Jenny Callista Vaulina, M. Rizky Bambang W, Putri Zelba Aguienes, Salsabila Brilliant Widyadhana.</i>	
Tingkat Pengetahuan Ibu Hamil tentang Stunting di Wilayah Kerja Kelurahan Purwaharja Puskesmas Purwaharja 1 Kota Banjar Tahun 2022	60 - 64
<i>Oleh : Ribkhi Amalia Putri, Abdul Bahtiansyah, Farsida, Alfi Liani Sakinah, Alif Ramadhan S, Azhar Wicaksono, Fatharani Mazaya G, Hamzar Haidar, Hanna Desnia I, Inna Anjal Oktasari P, Intan Karlina, Liana Rahayu, Muhammad Fairuzaki, Rafiedah Ishmah M.</i>	
Gambaran Persepsi Masyarakat Mengenai Vaksin Covid-19 di Wilayah Kerja BLUD UPTD Puskesmas Purwaharja 1 Lingkungan Siluman Desa RW 11 Kelurahan Purwaharja Kecamatan Purwaharja Kota Banjar Tahun 2021	65 - 68
<i>Oleh : Robertus Surjoseito, Maria Eka Putri, Abiyyu Hidayat, Ardika, Arriza Maulana, Ayu Farah Syifa, Dimas Bagus Bramasta D, Farah Khairunnisa M, Fathi Rahmah Safira, Indah Mardiana, Mayinda Nabilla Ismah, Salsa Ananda Putri, Tiara Amoria Nadhifah, Windi Meylani.</i>	
Gambaran Kejadian Skabies di Wilayah Kerja Puskesmas Banjar 3 Tahun 2021	69 - 72
<i>Oleh : Retno Tri Siswanti, Pitut Aprilia Savitri, Fahriz Yusuf, Geulis Gemala W, Milla Bella Imbrany, M. Bilal Al Farisi I, M. Jalaluddin Rumi, Mutiara Atika Fatin, Novia Yuliantri, Raden Zhafira S, Sativa Azkia, Syafina Fairuz Sofiana, Syafira Febrianti, Ulfaira Nadila Ardi, Ghassani Zatil Iman.</i>	
Profil Pasien Vertigo Sentral di Rumah Sakit Umum Daerah Pasar Minggu.....	73 - 76
<i>Oleh : Wiwit Ida Chahyani, Dwiana Chusnul Aini, Murni Sri Hastuti</i>	

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Factors Affecting the Event of Low Birth Weight in the Work Area of Pataruman 2 Community Health Center

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Abstract

Background: Low birth weight (LBW) is considered a significant public health problem because it is estimated that 15% to 20% of all births worldwide are LBW. LBW is still a nutritional problem for toddlers in West Java in addition to malnutrition, underweight, and stunting. **Objective:** Knowing the factors that influence the incidence of LBW in the work area of Pataruman 2 Community Health Center. **Methods:** The research method used is a descriptive method with univariate analysis. Using primary data in the form of a questionnaire distributed to respondents. Respondents were mothers with LBW babies in the period 2021 at the Pataruman 2 Community Health Center. **Results:** The results showed that several factors influence the occurrence of LBW. A total of 86.7% live with active smokers, 60% are married at the age of < 20 years, 46.7% live far from health care centers, 26.7% have not been diligent in taking Fe tablets given by health workers, 40 % have not eaten with a portion of rice, vegetables, side dishes, and fruit for the growth and development of the fetus and 46.7% have experienced health problems during pregnancy. **Conclusions:** Characteristic factors of mothers based on the gestational age of LBW more occur at the age of not at risk, namely 20-35 years, higher education level, not working and income in the family meet daily needs.

Keywords: *Factor, low birth weight,*

Introduction

WHO defines low birth weight (LBW) as a birth weight of fewer than 2500 grams regardless of gestational age. LBW is an important public health indicator of maternal health, nutrition, health service delivery, and poverty because LBW babies are at a higher risk of death and disease immediately after birth and non-communicable diseases in the course of their life. LBW babies are 20 times more likely to have complications and die compared to normal-weight babies (1).

LBW infants have a potential risk of cognitive deficits, motor delays, and other behavioral and psychological problems (2,3). Household costs, as well as health system costs, can be saved by reducing the burden of LBW (4,5).

The pathophysiology of LBW is still not fully understood, but it is estimated that intrauterine growth retardation (IUGR) and premature birth are the causes of LBW. IUGR is the result of insufficient uterine-placental perfusion and fetal nutrition affecting the overall anthropometric parameters of the fetus. IUGR newborns are characterized by malnutrition. Extrauterine infections, trauma, disease, IUGR, fetal infections, and anomalies are factors that contribute to preterm birth, resulting in growth retardation which ultimately results in low birth weight (6,7).

LBW is considered a significant public health problem because it is estimated that 15% to 20% of all births worldwide are LBW. The prevalence of LBW varies between regions with the highest at 28% in South Asia and the lowest at 6% in East Asia and the Pacific (8).

The prevalence of LBW in Indonesia in 2020 is 3.1%. The highest prevalence of LBW is in East Nusa Tenggara Province 6.9% and the lowest is 0.8% in Riau Province, while in West Java it is 2.4%. In West Java Province in 2020, there were 899 infant deaths recorded. The proportion of infant deaths was 72.0% neonatal deaths, and 19.1% were post-neonatal deaths (29 days–11 months). LBW is the most common cause of neonatal death, 35.2%, followed by asphyxia 27.4% (9). LBW is still a nutritional problem for toddlers in West Java in addition to malnutrition (having a weight that is not

by their age), thinness (having a weight that is not by their height), and stunting (having a height that is not by their age) (10).

The prevalence of LBW in Banjar City based on the Banjar City Health Office report in 2020 was 127 cases, and in 2021 there were 136 cases of LBW. The number of LBW cases recorded at the Pataruman 2 Community Health Center is 15 cases in 2020, and 18 cases in 2021. There has been a significant increase in LBW cases in 2020-2021 (11).

Low birth weight is a preventable public health problem. This is one of the important factors of child survival and development, as well as long-term consequences such as the risk of developing non-communicable diseases. Mortality and morbidity can be prevented by addressing the factors associated with low birth weight (12).

The above background causes researchers to be interested in examining the factors that influence the incidence of LBW in the work area of Pataruman 2 Community Health Center.

Methods

This research uses a descriptive method with univariate analysis. Using primary data in the form of a questionnaire distributed to respondents. This research was conducted in the working area of Pataruman 2 Community Health Center in May 2021. The population in this study were all patients with low birth weight (LBW) at Pataruman 2 Community Health Center, with a sample of 15 respondents using a purposive sampling technique that met the inclusion criteria, namely mothers who gave birth to LBW babies in the Pataruman 2 Community Health Center area, domiciled in the Pataruman 2 Community Health Center area, and are willing to be respondents. Mothers who did not fill out the questionnaire completely and stillbirths with LBW babies became the exclusion criteria. Data processing using SPSS 22.0 with univariate analysis to see the description of the characteristics of each research variable.

This research has obtained ethical approval from the ethics committee of the Faculty of Medicine and Health with the number FKK/2021. All respondents have been asked for their consent in participating in this study from the beginning of data collection to completion.

Results

The results of the study from 15 respondents who gave birth to LBW mothers obtained data on the characteristics of mothers as many as 2 respondents aged < 20 years and > 35 years (13.3%) and 13 other respondents aged 20-35 years (86.7%). The education level of most respondents was at the senior high school level of 46.7%. 93.3% of mothers do not work, 46.7% parity has 2 children, 60.0% pregnancy interval is over 2 years, 1 person or 6.7% of mothers have had a miscarriage, all mothers have 100.0% antenatal care examinations, 40.0% of them have examinations at integrated healthcare health facilities center and 33.3% in community health centers, 86.7% of mothers made antenatal care visits more than 4 times during pregnancy.

Table 1. Mother characteristics

Variable	N	%
Age		
<20 years and > 35 years	2	13.3
20-35 years	13	86.7
Education		
Primary school	5	33.3
Junior high school	2	13.3
Senior high school	7	46.7
Collage	1	6.7
Occupation		
Work	1	6.7
Not Work	14	93.3
Parity		
1	5	33.3
2	7	46.7
3	2	13.3
4	1	6.7
Pregnancy distance		

0 years	5	33.3
1-2 years	1	6.7
>2 years	9	60.0
Abortion history		
Yes	1	6.7
No	14	93.3
Antenatal care		
Yes	15	100.0
No	0	0.0
Health facility antenatal care		
Integrated healthcare center	6	40.0
Community health center	5	33.3
Hospital	2	13.3
Others	2	13.3
Number of visits to antenatal care		
≤4 times	2	13.3
>4 times	13	86.7

Table 2. Analysis of Category Factors Affecting the Incidence of LBW

Question	Yes		No	
	N	%	N	%
1. Is the income in the family sufficient for daily needs?	15	100.0	0	0.0
2. Have you ever had children who had multiple pregnancies?	1	6.7	14	93.3
3. Have you ever been pregnant before?	12	80.0	3	20.0
4. Do you live with a smoker?	13	86.7	2	13.3
5. Have you had any labor in the last 2 years?	14	93.3	1	6.7
6. Are there certain foods in your family or neighborhood that are prohibited to be consumed during pregnancy?	4	26.7	11	73.3
7. Does the mother have a history of diabetes or commonly called diabetes mellitus?	0	0.0	15	100.0
8. Did you get married at the age of < 20 years?	9	60.0	6	40.0
9. Do you live far from the health care center?	7	46.7	8	53.3
10. Is the mother diligent in taking the medicine that has been given by the health worker during pregnancy?	11	73.3	4	26.7
11. Do you eat 3 times a day with portions of rice, vegetables, side dishes, and fruit for the growth and development of the fetus?	9	60.0	6	40.0
12. During pregnancy, the mother had any disturbances (danger signs of pregnancy) such as severe headache, blurred vision, swelling of the face and hands, excessive nausea and vomiting, severe abdominal pain, bleeding, premature rupture of membranes, high fever, hypertension, fetal movement reduced and stressed?	7	46.7	8	53.3
13. Have you ever experienced a delivery process with the help of a device (abnormal delivery)?	4	26.7	11	73.3
14. Does your mother consume alcohol?	0	0.0	15	100.0
15. Is your mother an active smoker?	0	0.0	15	100.0

Based on Table 2, it can be seen that several factors influence the incidence of LBW in the Pataruman Health Center area 2. As many as 13 respondents live at home with smokers (86.7%), 9 respondents married at the age of < 20 years (60%), and 7 respondents have a place to live. who are far from the health service center (46.7%), 4 respondents are still not diligent in taking the medicine given by health workers (26.7%), 6 respondents still do not eat 3 times a day with portions of rice, vegetables, side dishes, and fruit for fetal growth and development (40%) and 7 respondents had experienced health problems during pregnancy such as severe headache, blurred vision, swelling of the face and hands, excessive nausea and vomiting, severe abdominal pain, bleeding, premature rupture of membranes, high fever, hypertension, reduced fetal movement and stress (46.7%).

Discussion

The incidence of LBW is strongly influenced by the age of the mother. Pregnant women under the age of 20 years have the opportunity to give birth to babies with a low average weight when compared to mothers who get pregnant when they are over 20 years old. The results of this study are from research conducted in Nepal. There was no statistically significant difference in the mean of LBW between maternal age groups. This means that the risk of LBW can be experienced by mothers in all age groups. Each addition or subtraction of one year of maternal age will increase or decrease the weight of the baby born by 4.3 grams. The risk of LBW identified is higher experienced by mothers aged < 20 years and > 35 years (13).

The increased risk of LBW in pregnant women aged < 20 years has the possibility of experiencing anemia. In addition, mothers aged < 20 years with a history of first birth have a higher risk of developing LBW compared to mothers who have a history of birth more than once (14).

The results of this study are in line with the 2017 Indonesian Demographic and Health Survey Data Analysis journal, Education plays an important role in social and economic development which will have an impact on health status. Lack of education will have implications for the lack of ability to find, understand and use available health information. The level of education, either directly or indirectly, can affect the baby's birth weight through the knowledge gained regarding care and nutrition during pregnancy (15).

Apart from education, work does not escape the daily life of mothers. Maternal employment status is also one of the factors that affect birth weight. Based on the results of the study indicate that almost all respondents are housewives. This is in line with the research conducted by Khazaei et al. (2021) showed that the majority of mothers who gave birth to babies with LBW were mothers who did not work (92.9%). The same thing was also revealed in research conducted at Cut Meutia General Hospital, North Aceh Regency, which showed that most of the mothers who gave birth to babies with low birth weight were mothers who did not work or were housewives (16).

Nutrition during pregnancy is very important to prevent LBW. Consumption of Fe tablets is important to meet iron needs during pregnancy and prevent anemia. Iron is very important in the development of fetal weight because the transformation of minerals and other nutrients from the mother to the fetus is influenced by the availability of hemoglobin in the mother's red blood cells. Pregnant women who did not take Fe tablets during pregnancy were identified as giving birth to babies with the lowest birth weight when compared to pregnant women who took Fe tablets who also gave birth to babies with low birth weight. (17).

A history of diseases suffered by the mother during pregnancy such as hypertension, preeclampsia, eclampsia, anemia, diabetes mellitus, and other chronic diseases can have an impact on pregnancy and the fetus it contains, such as abortion, premature delivery, and low birth weight (18).

According to Jayanti, Dharmawan, and Aruben (2017), pregnancy interval is the time distance between the last pregnancy and the current pregnancy. Pregnancy spacing < 24 months can cause poor pregnancy conditions, impaired child development, and affect reproduction. Pregnancy intervals of < 24 months also increase the risk of infant mortality by 50% (19).

According to research, it is known that CO (carbon monoxide) and nicotine interact with each other resulting in blood coagulation. This blood coagulation greatly affects Hb levels. Pregnant women who are exposed to cigarette smoke have higher Hb levels than people who are not exposed to cigarette smoke. The continuity of pregnancy is very dependent on the condition and health of the mother, the placenta, and the condition of the fetus. High Hb levels plus the number of hematocrit above 52.0% will make the blood thicken and clot (hypercoagulation). As a result, the work of the heart to pump blood throughout the body is forced to become more severe, and the risk of oxygen diffuse disturbances to the mother's tissues, especially to the fetus. Nicotine and CO inhaled by pregnant women cause the blood vessels in the placenta to shrink. This can reduce the amount of blood flow, oxygen, and nutrients in the fetus. This is what causes the occurrence of LBW. Another impact is that the placenta becomes thinner, so there is a risk of premature separation, and the risk of infant mortality is also very large (20).

The prevalence of passive smoking tends to increase along with the increase in the prevalence of smokers. In Indonesia, more than half (57.0%) of households have at least one smoker, and almost



all smokers (91.8%) smoke at home (21). In Ambon City, 65.0% of households have 1 smoker, and almost all smokers (90.0%) smoke at home (22).

Conclusion

The factors that influence the incidence of LBW at the Pataruman 2 Community Health Center are mothers who live with active smokers and mothers who have a history of pregnancy disorders such as severe headaches, blurred vision, swelling of the face and hands, excessive nausea, and vomiting, severe abdominal pain, bleeding, premature rupture of membranes, high fever, hypertension, reduced fetal movement and stress.

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Conflict Of Interest

The author declares that there is no conflict of interest and has no affiliation or relationship with any organization or entity.

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