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GRAND ATYASA PALEMBANG

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The Work Place Initiative: Health, Safety and Wellbeing Regarding COVID-19

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THE 3rd SRIWIJAYA INTERNATIONAL CONFERENCE ON PUBLIC HEALTH

The Work Place Initiative: Health, Safety and Wellbeing Regarding COVID-19

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PREFACE

On behalf of the organizing committee, I am delighted to welcome you to the 3nd Sriwijaya International Conference on public Health (SICPH 2021) during 21th october 2021 at Palembang South Sumatera, Indonesia. The SICPH 2021 is international conference organized by Faculty of Public Health, Sriwijaya University (UNSRI). I would like to extend my warmest welcome to all the participant of The SICPH 2021 under the theme ***"The Impact of Climate Change on Infectious Disease Transmission".***

The SICPH 2021 consists of keynote sessions from well known expert speakers in the field of public health, and academic paper sessions (oral presentations) who are coming from several region. This conference seeks to bring together academics, public health professionals, researchers, scientists, students and health stakeholders from a wide range of disciplines to present their latest research experience and further development in all areas of public health. We hoped that this conference will be usefull platform for researchers to present their finding in the areas on multidisciplinary realted to public health and health system issues.

This conference will provide opportunities to exchange ideas, knowledge, and development of the latest research among the participants. We will publish the paper as output from the SICPH 2021 in proceeding book with ISBN and selected paper will be published in Jurnal ilmu kesehatan masyarakat- SINTA 3 (a nationally-accredited journal). The SICPH 2021 is being attended by about 50 participants. I hope you enjoy the conference.

With regard to considerable conference agenda, we greatly appreciate any support and sponshorship derived from any govermental as well as private institutions for the success of the conference. Great appreciation is also handed to organizing committe of the conference for any voluntarily effort that bring to the succes of the conference.

The conference committee expresses its gratitude towards all the keynote speakers, authors, reviewers, and participanst for the great contribution to enssure the succes of this event. Finnally, I sincerely thank all the members of the organizing committee who have worked hard to prepare this conference.

Palembang, October 2021

Chair,

Anita Camelia, SKM., MKKK.

PREFACE

First of all, let us thank God, the Almighty, who has given His grace and guidance so that the 3rd Sriwijaya International Conference of Public Health (SICPH) with the theme of The Workplace Initiative: Health, Safety and Wellbeing Regarding Covid:19 can be held successfully. I welcome all of you to this seminar which has received great attention not only from university, but also other communities to submit papers to be presented in this seminar. I express my highest gratitude and appreciation the presenters.

The conference is divided in two session, the first session is speeches and the second session is round table discussion. In the first session, the invited keynote speakers were Prof. Dr. Tan Malaka, MOH, DrPH, SpOk, HIU (A Professor from Medical Faculty Universitas Sriwijaya), Prof. Dr. Retneswari Masilamani (University Tunku Abdul Rahman, Malaysia), Prof.Dr.Joselito L. Gapaz MD, M.PH(University of the Philippines) and Prof. Dr Tjandra Yoga Aditama, MHA,DTM&H, DTCE,SpP(C).FIRS (Professor from Griffith University, Australia)

Of course, this conference activity would not have succeeded without the support of all parties involved, as well as the presence of all participants in all regions in Indonesia and internationally. I especially thank to all the organizing committees for their hard work, perseverance, and patience in preparing and organizing this conference so that it can go well, smoothly and successfully.

Finally, through this conference let us extend the network and cooperation among all stakeholders of the public health sector, especially in Indonesia and in the world in general, to build a better public health world in Indonesia

Thank you for participating in this conference.

Dean of Public Health Faculty,

Universitas Sriwijaya

Dr. Misnaniarti, S.K.M, M.K.M

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PREVALENCE AND RISK FACTORS FOR PREECLAMPSIA IN PREGNANT WOMEN IN RSUD (REGIONAL PUBLIC HOSPITAL) AJIBARANG IN 2019-2020

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ABSTRACT

Preeclampsia is a pregnancy complication that contributes to maternal and infant morbidity and mortality with an incidence of 2-8%. Efforts to prevent a preeclampsia through screening for risk factors in the first trimester are a priority in the management of preeclampsia cases in health services. The purpose of this study was to determine the prevalence and describe risk factors for a preeclampsia in Ajibarang Hospital Banyumas in 2019-2020. It was a descriptive study with a descriptive survey design. The sample is 114 second-hand data from medical record devices concerning pregnant women who were examined at RSUD Ajibarang in 2019-2020. Prevalence of preeclampsia in RSUD Ajibarang in 2019-2020 was 3.2%. The 81 respondents (71.1%) had a risk factor of multigravida. Other 58 respondents (50.9%) had BMI of 30. 49 respondents (43%) had a history of hypertension. Other 28 respondents (24.3%) aged at risk preeclampsia (20-35 years), nine respondents (7.9%) had multigravida pregnancy by new couples. Seven respondents (6.1%) had a family preeclampsia history. Six respondents (5.3%) had multigravida pregnancy with preeclampsia in the previous pregnancy. 4 respondents (4.4%) had DM history. The prevalence of preeclampsia in RSUD Ajibarang in 2019-2020 is 3.4% and the majority of risk factors consist of multigravida, BMI 30, and a history of hypertension.

Keywords: *Risk factors, preeclampsia, prevalence*

ABSTRAK

Preeklamsi menjadi komplikasi 2-8% kehamilan secara global pada tahun 2019. Hal ini dapat berdampak pada terjadinya morbiditas dan mortalitas perinatal. Upaya pencegahan preeklamsia melalui skrining faktor risiko pada trimester pertama menjadi prioritas dalam pengelolaan kasus preeklampsia di pelayanan kesehatan. Penelitian ini bertujuan untuk mengetahui prevalensi dan faktor resiko terjadinya preeklamsi di RSUD Ajibarang tahun 2019-2020. Penelitian ini merupakan penelitian deksripsi dengan rancangan survey deskriptif. Sampel penelitian ini adalah 114 data sekunder instalasi rekam medik mengenai ibu hamil melakukan pemeriksaan pada RSUD Ajibarang tahun 2019-2020. Prevalensi preeklamsi di RSUD Ajibarang tahun 2019-2020 3,2% dan faktor resiko multigravida 81 responden (71,1%), IMT > 30 58 responden (50,9%), riwayat hipertensi 49 responden (43%), usia beresiko preeklamsi (< 20 & > 35 tahun) 28 responden (24,3%), multigravida dengan kehamilan oleh pasangan baru 9 responden (7,9%), riwayat preeklamsi keluarga 7 responden (6,1%), multigravida dengan preeklamsi pada kehamilan sebelumnya 6 responden (5,3), serta riwayat DM 5 responden (4,4%). Prevalensi preeklamsi di RSUD Ajibarang tahun 2019-2020 3,4% dan faktor resiko mayoritas terdiri dari multigravida, IMT > 30, dan riwayat hipertensi

Kata Kunci: Faktor resiko, preeklamsi, prevvalensi

Introduction

Every pregnancy has a risk of death, in the world every minute a woman dies due to complications related to pregnancy and childbirth. Preeclampsia is estimated to be a complication of 2-8% of pregnancies globally in 2019. According to the World Health Organization (WHO) in 2017 around 810 per 100,000 live births or around 295,000 women died from complications of pregnancy and childbirth. Women living in developing countries have a higher risk of dying compared to women living in developed countries.[1] Indonesia is a developing country, the Maternal Mortality Rate (MMR) in Indonesia in 2015 reached 305/100,000 live births, a decrease compared to the 2012 AKI, which was 359/100,000 live births. MMR is one indicator to see the success of maternal health efforts. MMR is the ratio of maternal deaths during pregnancy, childbirth, and the puerperium caused by pregnancy, childbirth, and postpartum or its management but not due to other causes such as accidents or falls in every 100,000 live births. The 2015 SUPAS results show that the maternal mortality rate is three times higher than the Millennium Development Goals (MDGs) target. [2,3]

Preeclampsia is a cause of maternal death with a total of 1,066 cases throughout Indonesia in 201912. According to the 2019.12 Central Java Provincial Health Office report data based on reports from districts/cities of 76.9/100,000 live births. This achievement has increased when compared to the MMR in 2018 of 78.6 / 100,000. One of the causes of maternal death is preeclampsia with a total of 123 people or 29.6%. The Maternal Mortality Rate (MMR) in Banyumas Regency in 2019 was 38 per 100,000 live births.[4]

Preeclampsia is a pregnancy-specific condition characterized by placental dysfunction and a maternal response to systemic inflammation with endothelial activation and coagulation. Preeclampsia occurs in 2-8% of all pregnant women worldwide.[5] Incidence rates are also on the rise in several hospitals in Indonesia.[6]

In this case, of course, preeclampsia is a serious health problem and has a high level of complexity. The magnitude of this problem is not only because preeclampsia affects the mother during pregnancy and childbirth, but also causes postpartum problems due to endothelial dysfunction in various organs, such as the risk of cardiometabolic disease and other complications. The results of the meta-analysis showed a significantly increased risk of hypertension, ischemic heart disease, stroke and venous thromboembolism in mothers with a history of preeclampsia with a relative risk of 3.7 (95% CI 2.70 – 5.05), 2.16 (95% CI 1.86). –2.52), 1.81 (95% CI 1.45 –2.27), and 1.79 (95% CI 1.37 –2.33). Long-term

effects can also occur in infants born to mothers with a preeclampsia, such as low birth weight due to premature delivery or experiencing stunted fetal growth, and contribute to the high rates of perinatal morbidity and mortality. Hypertensive disease in pregnancy is the second most common cause of perinatal morbidity and mortality. Babies with low birth weight or experiencing stunted fetal growth are also at risk for metabolic diseases as adults.[5]

Various efforts have been made to reduce the incidence of preeclampsia, namely the eradication program for a preeclampsia where this program is a program that seeks to accelerate the reduction in the incidence of preeclampsia in pregnancy, childbirth, and postpartum as well as comprehensive management of the incidence of preeclampsia maternal mortality. Implementing the preeclampsia eradication program by reducing the morbidity and mortality of preeclampsia in pregnant women and saving newborns from high-risk mothers through 4 pillars, namely strengthening community empowerment, strengthening the use of health financing, strengthening clinical governance and standardized referrals, and strengthening technology, information, and community.[7]

An increase in preeclampsia cases in Banyumas Regency in 2019 amounted to 252 cases and increased in 2020 to 599 cases with a distribution of cases in 40 sub-districts in the Banyumas district. RSUD Ajibarang is one of the referral hospitals for preeclampsia cases in Banyumas Regency. Hence, this study is very important to knowing by various parties related to the prevalence of preeclampsia that occur in pregnant women and to better understand the risk factors that can occur in preeclampsia so that it can be detected as early as possible with the aim of knowing the prevalence, characteristics, and description of risk factors for preeclampsia in pregnant women at the Ajibarang Hospital in 2019-2020.[4,7]

Method

The research method used was a descriptive study with a descriptive survey design at Ajibarang Hospital. Collecting data using secondary data obtained from the Medical Record Source of Ajibarang Hospital through documents with a sample of 114, which obtaining using a categorical descriptive formulation with inclusion criteria for medical record data of pregnant women with a preeclampsia who conducted examinations at Ajibarang Hospital with a period of time for examination of pregnant women in 2019-2020 with the sampling technique in this study using a purposive sampling technique where in this technique the sampling is based on a certain consideration (samples selection made based on certain

goals or objectives) which making by themselves on the characteristics or characteristics of the population already known in advance.[8,9]

The variables in this study were the prevalence, characteristics and risk factors of preeclampsia with the instrument used in the form of a checklist on the characteristics and risk factors for mothers with a preeclampsiapreeclampsia that designing by researchers based on secondary data from medical records at Ajibarang Hospital. Data analysis by descriptive statistics for all variables of pre-eclampsia risk factors using a virtual table presented in numbers (n) and percentages (%) and the selected table format is a table without vertical lines. The ethics in this study are informed consent (consent form), anonymity (no name), confidentiality (confidentiality), good faith (interest), justice non-malicious (no harm).[10,11]

Results

Table 1. Prevalence of Preeclampsia at RSUD Ajibarang in 2019-2020

Description	(n)	(%)
Pregnant Women with Preeclampsia	552	3,2
Pregnant women don't have preeclampsia	16.837	96,8
Results	**17.398**	**100**

As can be seen from Table 1, the total incidence data of preeclampsia cases in 2019-2020 was 552 cases (3.2%).

Table 2. Distribution of Subjects Based on Characteristics of Respondents with Preeclampsia at RSUD Ajibarang in 2019 – 2020

Risk Factors	Frequency (N)	(%)
History of Antenatal are (ANC)		
a. < 4 Times	4	3,5
b. > 4 Times	110	96,5
Results	**114**	**100**
Referral System		
a. The patient comes of his own volition	42	36,8
b. Referral Patient	72	63,2
Results	**114**	**100**
Classification of Preeclampsia		
a. Early-onset preeclampsia (EOP)	19	16,4
b. Late-onset preeclampsia (LOP)	95	83,3
Results	**114**	**100**
Mean Arterial Pressure (MAP)		
a. < 90	0	0
b. > 90	114	100
Results	**114**	**100**
Thrombocytopenia		
a. Yes	3	2,6
b. No	111	97,4
Results	**114**	**100**
Education		
a. No School	0	0
b. Elementary School	25	21,9
c. Junior High School	42	36,8
d. Senior High School	34	29,8
e. College	13	11,4
Results	**114**	**100**
Profession		
a. Yes	18	15,8
b. No	96	84,2
Results	**114**	**100**

In table 2, it can explaining that the data for the characteristics of respondents that occurred in the Ajibarang Hospital in 2019 - 2020 with the characteristics of a history of carrying out ANC examinations > 4 times, namely 110 respondents (96.5%). Referral system implemented by respondents, of which as many as 72 respondents (63.2%) referring to Ajibarang Hospital. Respondents experienced preeclampsia classified as LOP in as many as 95 respondents (83.3%). MAP on respondents that are > 90 as many as 114 respondents (100%). Data on thrombocytopenia obtaining by respondents with thrombocytopenia as many as 3 respondents (2.6%). The education data dividing into several levels of education and the results obtained are the majority of respondents with junior high school education as

many as 42 respondents (36.8%). Occupational data showed that respondents had jobs for 18 respondents (15.8%).

Table 3. Distribution of Subjects based on Risk Factors for Preeclampsia at RSUD Ajibarang in 2019 – 2020

Risk Factor	Frequency (N)	(%)
Age		
a. < 20 years	2	1,8
b. 20 – 35 years	86	75,4
c. > 35 years	26	22,8
Results	**114**	**100**
Parity		
a. Primigravida	33	28,9
b. Multigravida	81	71,1
Results	**114**	**100**
Body Mass Index (BMI)		
a. < 30	56	49,1
b. > 30	58	50.9
Results	**114**	**100**
History of Hypertension		
a. Yes	49	43
b. No	65	57
Results	**114**	**100**
History of Diabetes mellitus (DM)		
a. Yes	5	4,4
b. No	109	95,6
Results	**114**	**100**
Multigravida Pregnancy with Preeclampsia In The Previous Pregnancy	6	5,3
a. Yes	108	94,7
b. No		
Results	**114**	**100**
A Family Preeclampsia History		
a. Yes	7	6,1
b. No	107	93,9
Results	**114**	**100**
Multigravida Pregnancy By New Couples		
a. Yes	9	7,9
b. No	105	92,1
Results	**114**	**100**

In table 4.3, it can be explained that the data about the frequency of risk factors for the incidence of preeclampsia in Ajibarang Hospital in 2019 - 2020 with the risk factor of age at risk for preeclampsia (< 20 & > 35 years) 28 respondents (24.3%). Next, parity data was obtained by multigravida up to 81 respondents (71.1%). Data on BMI showed that respondents with BMI > 30 were 58 respondents

(50.9%). Next, data regarding the history of hypertension were obtained by respondents with a history of hypertension, namely 49 respondents (43%). n the data of the history of DM, it was obtained that respondents with a history of DM were as many as 5 respondents (4.4%). Up to 6 respondents (5.3%) with a history of preeclampsia in a previous pregnancy had data on multiple pregnancies in previous pregnancies complicated by preeclampsia. Among the data on family history of preeclampsia, as many as 7 respondents (6.1%) had a family history of preeclampsia. Next, data on multiple pregnancies with new partners showed that as many as 9 respondents (7.9%) had multiple pregnancies with new partners.

Discussion

Prevalence reflects the extent of disease that persists in a population at a point in time. In this case, the prevalence is equal to the incidence rate multiplied by the average duration of cases (Lilienfeld and Lilienfeld, 2001; Timmereck, 2001 in Asridiana, 2020). Based on data obtained from the medical records of the Ajibarang Hospital regarding the prevalence of pregnant women and also the prevalence of preeclampsia, it can be explained that the total incidence of preeclampsia cases in 2019 - 2020 was 552 cases (3.2%) with the incidence of non-preeclampsia cases being 16,837 (96.8 %) of a total of 17,398 cases.[12]

Pregnancy visits or also known as ANC are one of the early prevention efforts that can be used as preeclampsia. Preliminary data or information related to blood pressure before pregnancy would be very helpful for health workers to differentiate chronic hypertension from preeclampsia. The results of this study showed that 110 respondents (96.5%) had more than 4 ANC examinations. The findings of this study are consistent with research conducted by Syam, which showed that the number of ANC visits increased by >4 during the implementation of the JKN programme.[13] Health insurance can also improve the quality of maternal health care by increasing the ratio between births by technicians (doctors, nurses or trained midwives) and the number of caesarean sections. A combination of increased use and improved maternal health services contributed to improved overall maternal health outcomes, including a reduction in maternal mortality, p-value = 0.001. In addition, another study was also conducted by Faiqoh (2014) where it was found that mothers who did ANC > 4 times (29 respondents) were more than those who did ANC < 4 times (6 respondents), p-value = 0.733.7 Lusiana (2014) indicated that although ANC examinations have been carried out routinely, there are several other risk factors that contribute more to the occurrence of this disease, such as heredity or past medical history.[13,14]

Notoatmodjo (2011) defines a referral system as a health service delivery system that carries out reciprocal delegation of responsibility for a case of a disease or health problem vertically (from units that are more capable of handling), or horizontally (between units of the same level of ability).[15] In simple terms, the referral system regulates where and where a person with a certain health disorder comes from to have their illness checked. The referral system is closely related to employees/officers. The results of this study show that the respondents came with a referral as many as 72 respondents (63.2%). This study is in line with the research conducted by Rejeki (2008). It was found that mothers came with more referrals (71.8%) than mothers who came on their own (28.57) with p-value = 0.206.[16]

Classification of preeclampsia can be divided into EOP and LOP based on the time of clinical diagnosis, can also be divided into mild preeclampsia and severe preeclampsia based on clinical and laboratory manifestations and the presence of complications. EOP occurs at less than 34 weeks' gestation, and late onset occurs at or after 34 weeks' gestation.[17] The data is divided into two categories EOP and LOP. The results of this study indicated that respondents experienced EOP as many as 19 respondents (16.4%) and LOP as many as 95 respondents (83.3%). So, the ratio between the two is 1:4. This research is in line with the research conducted by Burhanuddin (2018) for the Characteristics and Outcome Descriptions of EOP and LOP at Dr. RSUP. Hasan Sadikin Bandung found that mothers with EOP had 192 (55,48%) more respondents than mothers with LOP.[18]

MAP is a reflection of hemodynamic perfusion pressure of vital organs, if blood flow is too small, then blood flow cannot reach organs and tissues, conversely if the heart works too hard to pump blood flow it can increase vascular damage and rupture of small blood vessels.[19] The results of the MAP measurement on respondents obtained results of 100% of all 114 respondents. The findings of this study were reinforced by a study conducted by Muhammad (2021), who found that pregnant women with MAP screening results >90 mmHg was more common in 62% of patients with preeclampsia than in 28% of patients without preeclampsia.[20]

One of the complications of preeclampsia, namely thrombocytopenia that occurs due to increased consumption of platelets in the maternal circulation.[21] It is called thrombocytopenia if the platelet count is less than 150,000/µl30.30 The results of this study are respondents with thrombocytopenia as many as 3 respondents (2.6%). Moderate thrombocytopenia (18.3%) was the most common group in EOP. Meanwhile, LOP was predominated by mild (6.7%) and moderate (6.7%) thrombocytopenia with p = 0.004.[22]

Education is very important and contributes to the delivery of health information, where a person's high level of education will facilitate the delivery of information and vice versa in a person's low level of education. Education affects a person in changing health behavior that begins with the provision of health information. Mother's low formal education can be supported by informal education obtained through counseling activities by health workers in pregnant women's classes or other health facilities.[15]

Work affects muscle work and blood circulation. In pregnant women there are physiologic changes in blood circulation along with increasing gestational age due to enlargement and pressure from the uterus, which causes an increase in the workload of the heart to meet the needs during pregnancy so that pregnant women are allowed to do work that is not too burdensome for their pregnancy. Pregnant women to stay smooth and avoid preeclampsia.[23] The results of this study show that the respondents have a job as many as 18 respondents (15.8%). Results of a study conducted by Indriani (2013) showed that working mothers were 4 times more likely to develop preeclampsia compared to non-working mothers, p-value = 0.001. In addition, there is also a significant relationship between work and physical activity and stress levels in pregnant women.[24]

The reproductive age of women is 20-35 years old. This reproductive age is the safest time for pregnancy and childbirth because at that age the risk of complications during pregnancy is lower. Age under 20 years and over 35 years are also referred to as the age at high risk for complications during pregnancy. At the age of < 20 years, the size of the uterus has not reached the normal size for pregnancy, so the possibility of pregnancy disorders such as preeclampsia is greater. At >35 years, a degenerative process occurs that causes structural and functional changes in peripheral blood vessels that are responsible for changes in blood pressure, making them more prone to preeclampsia.[12]

This shows that age Age <20 and >35 years were associated with higher risk factors for preeclampsia in 24.3% of total cases. Research conducted by Rahmawati (2020) obtained p-value = 0.011. Additionally, conducted another study that did the same thing and found a significant relationship between maternal age and the incidence of preeclampsia in a total sample of 87 respondents, p-value = 0.025. Theoretically, in a normal pregnancy blood test, angiotensin, renin, and aldosterone are increased as compensation, allowing blood circulation and metabolism. In preeclampsia and eclampsia, angiotensin, renin, and aldosterone are decreased, but edema, hypertension, and proteinuria are found. In the ischemic theory of placenta accreta, it is explained that trophoblasts are absorbed into the circulation, which can increase sensitivity to angiotensin, renin, and aldosterone, thereby causing arteriolar spasm and salt and water retention.[25]

The theory of ischemia often occurs in primigravida and gestational age at term, hence preeclampsia often occurs in a primigravida. However, this does not mean that all primiparas must have preeclampsia, but rather are affected by other predisposing factors.[12,18] . The longer pregnancy interval is a risk factor for preeclampsia, indicating that the protective effect of previous pregnancies may decrease with time or that there are other time-dependent factors that contribute to the increased risk of preeclampsia (Harutyunyan, 2013 in Yuliani, 2019). The results showed that the number of respondents with multiple births was 81 respondents (71%). The findings of this study are consistent with research conducted by Fadli (2017) in which multiple pregnancies (60%) are more advantageous than primipara (32.6%) or multiple pregnancies (6.9%).

Pregnant women experience different changes in the hormonal, cardiovascular, and urinary tract composition than non-pregnant women. Obesity is closely related to an unbalanced diet and poor nutrition. Being overweight also increases the risk of cardiovascular disease. So, overweight people are more likely to develop high blood pressure than normal people.[12] BMI is used to measure whether a person is in the normal weight or obese category. Obesity is associated with oxidative stress and inflammatory responses. The inflammatory response was found to be increased in obese women and led to target blood vessels and vascular changes associated with preeclampsia.[26]

Hypertension is caused by vasospasm (narrowing of blood vessels). Vasospasm itself can cause damage to the blood vessels. These changes will lead to endothelial damage and leakage of subendothelial cells, leading to deposition of blood components, including platelets and fibrinogen in the subendothelium (Wibowo, 2013). A previous history of gestational hypertension is strongly associated with elevated levels of soluble Fms-like tyrosine kinase 1 (sflt-1), which is responsible for angiogenesis imbalances in pregnant women with preeclampsia. A history of preeclampsia in a previous pregnancy is also closely related to the incidence of endothelial dysfunction preceded by vascular resistance. sflt-1 is an antiangiogenic agent commonly found in pregnant women with high blood pressure and can persist for up to a year after delivery. This condition will increase the risk of gestational hypertension in subsequent pregnancies.[27]

One of the predisposing factors for a severe preeclampsia is a history of hypertension, previous hypertensive vascular disease, or essential hypertension. High blood pressure developed before pregnancy can cause damage or damage to vital organs in the body. Pregnancy itself can increase weight, which can lead to more severe disease/injury, which is manifested by edema and proteinuria. History of hypertension affects the risk factors for preeclampsia as much as 43% of the total cases. The

results showed that most of the pregnant women who had preeclampsia had a history of hypertension according to the results of a study conducted by Sabgustina (2021) where in her research the p-value = 0.00, in this case, showed a relationship between a history of hypertension and the incidence of preeclampsia.[28]

The theory of placental vascular abnormalities explains that the spiral arteries in pregnant women who suffer from a preeclampsia will become stiff and hard so that the lumen of the spiral arteries is unlikely to be distended and vasodilation, causing the spiral arteries to relatively have vasoconstriction and failure of remodeling of the spiral arteries that will cause a placental ischemia. The ischemia of the placenta will produce toxic oxidants (free radicals), namely hydroxyl, which will damage blood vessels, resulting in endothelial dysfunction. The production of free radicals will increase if there is a placental ischemia which will cause oxidative stress. In addition to placental ischemia, changes in fat content can also trigger oxidative stress. In particular, the insulin resistance syndrome (obesity and insulin resistance) has an important role in the pathogenesis of preeclampsia. Obese patients will experience an increase in triglycerides and free fatty acids. This material can be oxidized directly or induced with the end result of increasing oxidative stress and lipid peroxidation.[12]

The first pregnancy by the new partner is considered a risk factor, although not nulliparous because the risk is increased in women who have low exposure to sperm This was associated with the likelihood of a history of preeclampsia inherited from a current partner. Preeclampsia is a genetic disease that is inherited (Renaningrum, 2017). Pregnancy with a new partner also increases the risk of preeclampsia. The sperm cells of the new partner will be exposed to the Major Histocompatibility Complex (MHC) molecule which is an important factor in determining the antigenicity of the specific maternal immune response (Rozikhan, 2007, Nurbaniwati, 2021). Pregnancy with a new partner affects risk factors for preeclampsia in up to 7.9% of the total number of cases. Research conducted by renaningrum (2017) found that OR = 0.185, or it could be explained that a marital history related to the pregnancy of a new partner was listed as a risk factor for the development of preeclampsia.

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Conflict of Interest

The authors declare that they have no conflicts of interest.

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