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A literature review: Determinans factors associated with maternity emergency of premature rupture membranes

Literature reviewe: Determinan faktor yang berhubungan dengan kegawatdaruratan maternitas ketuban pecah dini

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INFO ARTIKEL

A B S T R A C T

Background: Premature Rupture of Membranes (PROM) is an emergency during to the puerperium which cause serious problems for the mother and fetus.
Objective: To identify the determinants factors associated with PROM in pregnant women.
Methods: A systematic review of the literature on articles published in the 2017-2022 timeframe. The journal was obtained through 8 databases (Google scholar, PubMed, Garuda Portal, Science Direct, Proquest, Crossref, National Library, Scopus) using "Maternity Emergency" AND "Premature rupture of membranes".
Results: The results of the study search found 1,413 articles which seven articles were selected and reviewed. The results show that the factors associated with PROM included parity (p=0.034; 0.034; 0.001), maternal age (p=0.018; 0.018; 0.063), exposure to cigarette smoke (p=0.044), sexual pattern (p=0.008), frequency of ANC (p=0.001), anemia (p=0.001), history of cervical conization (p=0.010), cervical length <25 mm at week 28 (p=0.009), negative lactobacillus (p=0.030), and second trimester bleeding (p=0.020).
Conclusion: The most dominant factor associated with the incidence of PROM were history of cervical conization.

Keywords: *maternity emergencies, pregnant women, premature rupture of membranes*

A B S T R A K

Latar Belakang: Ketuban Pecah Dini (KPD) merupakan kegawatdaruratan pada waktu hamil hingga masa nifas yang menyebabkan masalah serius bagi ibu dan janin.
Tujuan: Mengetahui determinan faktor yang berhubungan dengan KPD pada ibu hamil.
Metode: Tinjauan literatur secara sistematis pada artikel yang dipublikasikan rentang 2017-2022. Jurnal didapatkan melalui delapan database (Google scholar, PubMed, Portal Garuda, Science Direct, Proquest, Crossref, Perpustakaan Nasional, Scopus) dengan kata kunci "Kegawatdaruratan Maternitas" OR "Maternity Emergency" AND "Ketuban Pecah Dini" OR "Premature rupture of membrane".
Hasil: Hasil pencarian didapatkan 1.413 artikel yang diseleksi menjadi tujuh artikel kemudian di-review. Faktor yang berhubungan dengan KPD adalah paritas (p=0,034; 0,034; 0,001), usia ibu (p=0,018; 0,018; 0,063), paparan asap rokok (p=0,044), pola seksual (p=0,008), frekuensi ANC (p=0,001), anemia (p=0,001), riwayat konisasi (p=0,01), panjang serviks <25 mm pada minggu 28 (p=0,009), lactobacillus negative (p=0,03), dan perdarahan trimester kedua (p=0,02).
Kesimpulan: Faktor yang paling dominan berhubungan dengan kejadian KPD adalah riwayat konisasi serviks.

Kata kunci: *ibu hamil, kegawatdaruratan maternitas, ketuban pecah dini*

INTRODUCTION

A maternal emergency is an event that affects the cardiorespiratory system and/or the brain. So that it can lead to decreased consciousness, shock, decreased blood pressure resulting inunderperfusion in organs that will cause hypoxia to the potential for death. Premature Rupture Of Membranes (PROM) is an emergency in pregnancy [1]. Premature Rupture of Membranes is known as spontaneous rupture of the amniotic sac and leakage of amniotic fluid that occurs before the onset of labor at gestational age (at least 37 to 41 weeks).

Maternal Mortality Rate (MMR) During 2017, it reached 295.000 deaths in the world, with a death rate range from 279.000 to 340.000 (WHO, 2019). According to the [2] MMR reached 305 out of 100.000 live births. The incidence of maternal mortality has not been successful in meeting the MDGs targets, as many as 102 out of 100.000 live births in 2015. Total maternal deaths at the provincial level in 2018 to 2019 decreased, from 4.226 maternal deaths down to 4.221 maternal deaths in Indonesia. According to a report in 2019, the biggest triggers for maternal death were bleeding (1.280 cases), gestational hypertension (1.066 cases), and infection (207 cases).

Based data from the Health Office in 2017, the incidence of KPD in Wajo Regency experienced a graph of increasing and decreasing. In 2017 there were 166 cases, increased in 2018 to 196 cases, then decreased in 2019 to 192 cases of KPD, in mid-2020 it reached 151 cases. Throughout 2017 to 2020 Wajo Regency ranks first in maternal health problems with KPD [3]. The incidence of mothers with PROM at the Jatinegara District Health Center was 33,3% of mothers giving birth from a total of 75 respondents who experienced PROM with various causative factors [4]. The results of this study are in line with the research of [5] of 38 respondents, 50% of them experience PROM with various causes.

Research on the factors that are the risk of PROM according to [6] caused by maternal age. As many as 60,7% experienced PROM at the age at risk. Research by (Astuti, 2017) states that out of 138 respondents, 93 of them are at risk for PROM. Another study, according to [8] as many as 54,13% of mothers who experienced KPD were caused by the mother's work. Based on [9] as many as 60,8% of the incidence of PROM based on the occupational status group of mothers who experienced PROM. Research by [10] there is an influence between fetal position abnormalities and the incidence of PROM.

PROM has many trigger factors, but the exact cause of PROM is not known. However, several factors can be associated with a risk of increasing the incidence of PROM such as infection, smoking during pregnancy, taking illegal drugs during pregnancy, having a history of PROM, polyhydramnios, experiencing bleeding during pregnancy, invasive procedures, multiple pregnancies, incompetent cervix, lacerations / history of cervical surgery, history of miscarriage,

gestational hypertension, and gestational diabetes [11].

PROM causes several health problems for both mother and fetus. Some of the risks associated with PROM include compression of the umbilical cord and ascending infection. The mother's risk will increase with the duration of delivery and the frequency of internal examinations, besides the risk for the mother can be in the form of infection; premature labor; increase in the cesarean birth rate [12]. Based on the explanation of the background, the author has an interest in doing literature review to several journals that have been published and have the theme of emergency maternity premature rupture of membranes. With the formulation of the problem What is "Determinant Factors Associated with Emergency Maternity Premature Rupture"? which aims to determine what the determinants of factors associated with emergency maternity premature rupture of membranes in pregnant women.

METHOD

Search strategy literature in this study using secondary data obtained from previously published research [13]. The protocol used to identify and select articles is a diagram Prefered Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) [14]. The articles obtained are from Google Scholar database, PubMed, Portal Garuda, Science Direct, Proquest, Perpustakaan Nasional (Perpusnas), and Scopus use keywords Boolean system [15] with keywords entered kegawatdaruratan maternitas "OR" maternity emergency "AND" ketuban pecah dini "OR" premature rupture of membrane.

The inclusion criteria for research articles are:

a. Literature published within the last five years maximum (2017-2020)

b. The population in the study was women giving birth with PROM

c. Research methods Quasi-experimental, cross sectional, observational cohort that can be accessed fulltext

d. There is a theory that analyzes the factors of PROM

e. Assessing the causative factors of PROM

The exclusion criteria for research articles are:

a. Patient giving birth without PROM

b. Does not address the emergency of PROM

c. Research method systematic review, literature review

d. Articles published before 2017

Selection of articles in material evidence-based medicine which is often recommended article search strategy based on PICO [16]. Types of articles that have been recognized and registered in journals. Articles can be categorized as accredited or indexed articles, namely having p-ISSN, e-ISSN, DOI, and open access [17]. The quality assessment used is checklist with an overall score for studies that meet the selection criteria of at least 50%. Checklist will be used will differ according to the type of research [18]. Articles

are limited to 5 year publications 2017-2022. Used 7 articles consisting of 2 international articles and 5 national articles that will be carried out review.

The research journal selection process is guided by the PRISMA flow diagram:
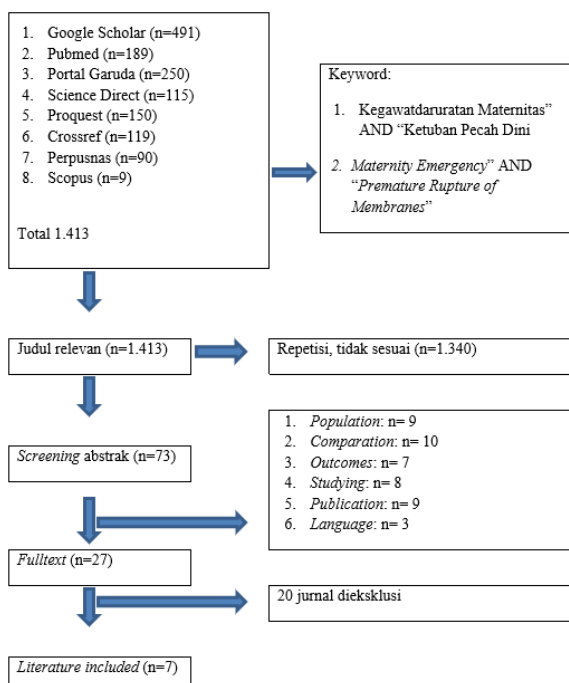
Gambar 1. Diagram PRISMA Flow Diagram

RESULT AND DISCUSSION

Based on data literature review from [19] explains that there is a relationship between parity and the incidence of PROM with the value p=0,034. [19] explains that there is a relationship between parity and the incidence of PROM with the value of p=0.034. [20] explains that there is a relationship between parity and the incidence of PROM. Of the 144 mothers who gave birth, there were multiparous mothers with PROM, mostly 57,38%, and grandemultiparous mothers with PROM as much as 56,52%. Another similar study conducted by [21] found that the incidence of premature rupture of membranes mostly occurred at parity risk >4 as many as 112 people (52,1%) with a value p=0,02 (OR = 1,865; 95% CI = 0,363-0,792) it can be concluded that there is a relationship between parity and the incidence of PROM at UPT Puskesmas Gajah Mada Tembilaha in 2012-2017. Mothers giving birth with parity at risk (multipara & grandemultipara) have a 1.865 times chance of experiencing PROM. High parity increases the risk of PROM due to birth trauma experienced. Other research that is in line is by [22] which states that parity of more than 3 is very risky for PROM, because high parity allows cervical damage during previous pregnancies.

Writer	Year	Journal	Article Title	Country	Causative factor KPD
Wahyuni & Lestari	2019	*Indonesia Midwifery Journal*	Hubungan Umur dan Paritas dengan Kejadian Ketuban Pecah Dini di RSUD Tangerang Tahun 2018	Indonesia	1. Parity 2. Age
Rozikhan *et al*	2020	*Midwifery Care Journal*	Hubungan Paparan Asap Rokok Terhadap Kejadian Ketuban Pecah Dini di Puskesmas Ringinarum Kabupaten Kendal	Indonesia	1. Smoke Exposure Cigarette
Lestari & Musa	2021	*Indonesia Midwifery Journal*	Hubungan Umur dan Paritas dengan Kejadian Ketuban Pecah Dini di RSUD Tangerang	Indonesia	1. Parity 2. Age

Writer	Year	Journal	Article Title	Country	Causative factor KPD
Maharani & Nugrahini	2017	Jurnal Medika Karya Ilmiah Kesehatan	Hubungan Usia, Paritas dengan Ketuban Pecah Dini di Puskesmas Jagis Surabaya	Indonesia	1. Sexal patern
Meihartati & Hairiyah	2018	Jurnal Penelitian Kesehatan Suara Forikes	Hubungan antara pola Seksualitas Gravida dengan Ketuban Pecah Dini	Indonesia	1. Parity 2. Age
Samejima et al	2021	Taiwanese Journal of Obstetrics & Gynecology	Identifying the Associated Factors with Onset of Preterm PROM Compared with PROM Term - A Retrospective Cross-Sectional Study	Japan	1. History conization 2. Cervix Length cervical <25mm on week 28 3. *Lactobacillus* negative 4. Bleeding second trimester
Utami & Toruntju	2022	Waluya The International Science Of Health Journal	Factors Related to the Event of Premature Rupture of Membrane in Muna Regency Hospitals	Indonesia	1. Parity 2. Frequency *Antenatal Care* 3. Anemia

Parity is the status of a woman in relation to the number of children ever born. Parity which is included in the high risk factor in pregnancy is grandemultipara. Where this can lead to circumstances affecting the optimization of the mother and fetus in the pregnancy they are facing [23]. Primiparous mothers ain't experienced trauma due to past birth history, so that cervical incompetence does not occur. Cervical incompetence is a condition in which the cervix is opened and thinned so that it cannot hold the fetus and the amniotic membranes. Multiparous and grandemultipara birth mothers are caused by anatomically, Most of the cervical conditions of multiparous women have opened due to the previous delivery process so that they cannot hold and protect the amniotic membranes both against trauma and against infection. Along with increasing gestational age, the amniotic membranes will experience maturation and thinning, this condition causes the membranes to break easily. If the gestational age is approaching term, then pregnant women will often get uterine contractions or known as his. In this case, multiparous women who have an open cervix are more likely to have premature rupture of membranes compared to primiparous women whose cervix is still closed [9].

Based on data literature review from [19] explains that there is a relationship between maternal age and the incidence of PROM with the value of p=0,018. Research [24] explains that there is a relationship between maternal age and the incidence of PROM with the value of p=0,018. Research [25] explains that there is a relationship between maternal age and the incidence of PROM. Of the 144 mothers who gave birth there were mothers who gave birth at risk ages (<25 years and >35 years) who

experienced PROM as many as 50 people (64,93%).

This research is supported by the research of [26] which explains that there is a relationship between maternal age and the incidence of PROM, with the value of p=0,022. Mothers with a high risk of experiencing PROM as much as 66,6%, while mothers with a low risk of experiencing PROM as much as 20% and mothers with a low risk age do not experience PROM as much as 13,3%. This shows that mothers with high risk (<20 and >35 years) have more PROM. The optimal maternal age for pregnancy is in the range of 20-35 years. Age at high risk increases the risk of pregnancy and childbirth. Another research that is in line is research by [27] which explains that there is a relationship between maternal age and the incidence of PROM with the value of p= 0,001. Mothers with age at risk of experiencing PROM as much as 76,7%, mothers with age not at risk of experiencing PROM as much as 23,3%, mothers with age at risk of not experiencing PROM as much as 20%, and mothers with age not at risk of experiencing PROM as much as 80%. This shows that age has a higher risk of developing PROM. Pregnancy at the age of <20 years causes complications and various complications for the fetus and mother. This is because the reproductive organs of the mother are immature and prone to tearing. At the age of the mother > 35 years, there is a risk for the mother and the fetus, because the pelvic floor muscles are no longer elastic, and the cervix is easily dilated.

Based on data literature review from [28] the results of the analysis show that there is a relationship between exposure to cigarette smoke and the incidence of PROM the value of p=0,003. The incidence of PROM mothers with exposure to cigarette smoke is more than the incidence of PROM without cigarette smoke. This study is supported by research conducted by [29] at Ungaran Hospital which shows that there is a relationship between smoke exposure and maternal smoking behavior with the incidence of premature rupture of membranes. From the results of the analysis with the test Chi-square which is obtained p=0.004 (OR= 6,935; 95% CI= 1,848-26,036) means that there is a relationship between smoke exposure and maternal smoking behavior with the incidence of PROM. Respondents who were exposed to smoke and smoking had a 6,935 times risk of experiencing PROM compared to respondents who were not exposed to secondhand smoke and did not smoke. Pregnant women who are exposed to cigarette smoke often experience problems during pregnancy such as abortion, low birth weight, pre-eclampsia, abruption placenta and KPD. Tar in cigarette smoke is a free radical that will damage the main molecular components of the body's cells and can disrupt cell integrity, reduce the elasticity of membranes, including the amniotic membranes, making them susceptible to rupture.

The impact of cigarette smoke on the embryo can cause spontaneous abortion. The effect of cigarette smoke on the fetal period is

causing premature labor and low birth weight (LBW) babies. In addition, cigarette smoke also results in an increased risk of asthma and delays in mental development when exposed to the fetal period. These impacts arise due to the presence of chemical components contained in harmful cigarette smoke. On the other hand, cigarette smoke also affects the cognitive development of the fetus [30].

Based on data literature review from [31], it was found that there is a close relationship between sexual patterns and KPD, the value of p=0,008. This happens because during intercourse they are not careful, and do not know the health condition of the fetus and mother when in pregnancy content. In addition, they also do not know the right position during sexual intercourse during pregnancy. This research is supported by [32] which explains that inappropriate sexual patterns can affect the incidence of PROM with a value of p=0,001 (OR= 10,286) the incidence of PROM in the inappropriate sexual pattern was 90%, while the incidence of non-PROM with an inappropriate sexual pattern was 46,7%. Inappropriate sexual patterns have a risk of experiencing PROM as much as 10,286 times greater than the right sexual pattern. The imprecision of sexual patterns in this journal is the inappropriate frequency, position, and penetration. The right sexual pattern is the frequency of once a week, with the mother's position on her side, on top, and knee chest, as well as penetration of the penis outside so as not to press the mother's stomach. Risky sexual patterns occur at a frequency of > 3 times a week, the mother's position is below and the penetration of the penis is deep and presses the mother's stomach.

Premature rupture of membranes is defined as rupture of the membranes before uterine contractions occur before 37 weeks of gestation. The latent period is defined as the duration from the rupture of membranes until the onset of labor [33]. Trauma although the injury may not be fatal, it is believed to be associated with premature rupture of membranes. Various kinds of trauma either directly or indirectly. Trauma obtained from sexual intercourse more than three times a week can trigger PROM due to a sudden increase in intrauterine pressure. At the time of orgasm, sperm will carry the hormone prostaglandin. The hormone prostaglandin is what triggers uterine contractions. Thus, having sex more often will increase the frequency of contractions, resulting in PROM [34].

Based on data literature review from research by [35] the results show that there is a relationship between the frequency of ANC visits and the incidence of PROM with a value of p=0,538. This research is supported by research [7] with testing Chi-square, got the result p=0,001 ≤ α= 0,05. Thus, there is a relationship between the frequency of ANC and PROM, with the frequency of ANC visits less than four times being a risk factor for the occurrence of PROM. The frequency of ANC affects the occurrence of KPD because in carrying out health communication, as well as

routine checks, pregnant women will receive health counseling related to consuming nutritious food, maintaining pregnancy, and getting Fe tablets. Fe tablets serve to prevent anemia in pregnancy, because anemia in pregnancy affects the presence of PROM. So that if the frequency of ANC is less, then few get early examinations and prevention of dangers during pregnancy.

Anemia is a condition in which red blood cells / hemoglobin (Hb) have decreased in number, so that the oxygen carrying capacity for the needs of vital organs in pregnant women is reduced. The capacity of the blood to carry oxygen is low, spurring the heart to increase cardiac output. Heart conditions that continue to be driven to work hard will lead to heart failure and other complications such as preeclampsia [36]. Anemia in pregnancy as a maternal condition with hemoglobin (Hb) <11 gr% in the first and third trimesters, while in the second trimester the hemoglobin level is <10.5 g%. Anemia of pregnancy is called potential danger to mother and child [37].

Based on data literature review from [35] the results showed that there was a relationship between anemia and the incidence of PROM, with a value of p=0,438. This research is in line with research conducted by [38] at the Alisa Talang Kramat Kenten Clinic in 2018 with the results of the test Chi- square show value p= 0,001 (OR= 0,049). This shows that there is a significant relationship between maternal hemoglobin levels and the incidence of PROM. Other studies that are in line are research by [39] which was carried out at Panembahan Senopati Hospital, Bantul, where the test results were obtained Chi- square show value p=0,011, then it means that there is a relationship between anemia with PROM. Anemia in pregnancy causes the immune system to decrease and prevents the fetus from absorbing nutrients from its mother, so that fetal development is disrupted. The occurrence of an infectious process that interferes with the collagenolytic process resulting in a disturbance in the balance between the production of matrix metalloproteinases (MMP) and tissue inhibitor of metalloproteinase (TIMP). In this case, the amniotic membrane responds to the infection process so that the lining becomes thin and breaks easily. Another research that supports the research is [29] which shows that there is a relationship between anemia status and the incidence of premature rupture of membranes with a value p=0,010 means that respondents who are anemic have a risk of 12.500 times compared to respondents who are not anemic. Anemia during pregnancy makes pregnant women less able to deal with blood loss and makes them susceptible to infection. Anemia also results in fetal hypoxia and premature delivery which is dangerous for both mother and fetus. The body's metabolic ability will be reduced so that the growth and development of the fetus in the womb will be disrupted.

Based on literature review from [40] it was found that the history of cervical conization affects the occurrence of PROM

p=0,01. Cervical conization is an act of taking abnormal tissue in the form of a cone on the cervix using a laser, scalpel or surgical knife metal wire loop connected to the mains (LEEP/ LEETZ). LEEP is a therapy used in stage 1 cancer for patients who want to have children [41]. [42], describes some conclusions regarding the other effects of cervical conization on pregnancy outcome. The key point is that the risk of birth premature depending on the size of the cervical conization. Furthermore, during pregnancy, a larger cervical conization length is associated with a shorter cervix and risk of delivery premature higher, especially increased in nulliparous women whereas smaller cervical conization size is accompanied by adequate cervical conization length and risk of delivery premature lower levels were mostly observed in women with prior parity. Assessment of cervical conization length is a predictor of birth risk premature, may be supplemented with a cervical conization measure to increase its diagnostic value. Changes in the length of the conization of the cervix during pregnancy due to the size of the conization of the cervix during pregnancy can cause PROM.

Based on data literature review from [40] it was found that cervical length <25 mm at week 28 affected the occurrence of PROM, with p value = 0,009. This research is in line with research conducted by [43] at Dr. Kariadi Semarang Hospital, 112 research subjects measured the length of the cervix using ultrasound. This finding shows an association between cervical length and the incidence of PROM with cervical length <25 mm. The optimum cervical length is different for each gestational age. The cervical length limit used as the 25 mm measured showed a significant association with the occurrence of preterm labor. The sensitivity and specificity of cervical length as a predictor of preterm labor will increase with the combination of other tests. The combination with Metalloproteinase-9 Matrix (MMP-9) assay increased sensitivity up to 90,9% and specificity up to 98,3%. The increase in MMP-9 causes ECM degradation, especially type IV collagen (the main membrane that makes up the basement membrane), resulting in PROM.

Based on data literature review from [40] it was found that Lactobacillus negatively affected the occurrence of PROM with p value = 0,03. This research is supported by the research of [44], which obtained the results of Lactobacillus-depleted high-diversity vaginal bacterial community has been identified as a risk factor for preterm birth. The results showed that approximately one third of patients had vaginal dysbiosis before premature rupture of membranes, also providing further evidence for vaginal infection. To identify vaginal bacteria associated with the risk of PROM, used LEfSe on 165 RNA data collected from control patients and women who were sampled antenatally before PROM. Samples from the last group were enriched in the bacterial class Bactroidales. Fusobacteriales and Clostridiales, while the increase in Lactobacillus predicts normal delivery. The

pathophysiology linking vaginal dysbiosis with activation of inflammation and early stimulation of pro-delivery pathways in gestational tissue is well documented. The patient had vaginal dysbiosis before the membranes ruptured, providing further evidence for ascending vaginal infection in the pathophysiology of PROM and preterm delivery. Hematogenous infection of gestational tissue that causes rupture of PROM cases is caused by negative lactobacilli. In the pathophysiology of PROM and preterm delivery, infection of hematogenous pathogens in the gestational tissue leading to rupture may occur.

Based on data literature review from [40] it was found that bleeding during the second trimester affected the occurrence of PROM with a p-value=0,02. This research is supported by research [45] at the Ayub Teaching Hospital with p= 0,023 (OR=2,486; 95%CI=1,117–5,334). Vaginal bleeding was also found to be a risk factor for PROM by increasing the risk by 2,486 times. Bleeding especially in the second trimester can cause premature labor and PROM. Bleeding can impede blood supply to related tissues and ischemia, which is a reduction in blood that can cause changes in normal cell function. This causes decidual necrosis which weakens the membrane or predisposes to intraamniotic infection, which eventually results in rupture of the membrane.

[46] explains that the most dominant factor can be seen from the independent variables that influence dominant over the dependent variable. Assessing the most dominant factor is by looking at the OR value with the most dominant influence on the dependent variable. The most dominant factor in literature review this is a history of cervical conization with OR=37,5.

Arrangement limitations literature review namely there are difficulties in finding articles or sources according to the inclusion criteria, and adjusting to the search results. The risk of bias in the study was prevented by the PICOS search strategy and adjusting the inclusion criteria.

CONCLUSION

The results of a literature review of seven articles through a series of selections, obtained ten factors that can cause PROM is parity, maternal age, exposure to cigarette smoke, sexual pattern, frequency of ANC, anemia, history of conization, cervical length <25mm at week 28, negative lactobacillus, and bleeding during second trimester. The most dominant factor influencing the occurrence of PROM is a history of cervical conization.

TERIMA KASIH

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REFERENCE

1. Baston H, Hall J. Midwifery Essentials Emergency Maternity Care. China: Elsevier; 2019.

2. Kemenkes RI. Profil Kesehatan Indonesia 2019. 2020;

3. Salam A, Nadyah, Helvian FA. Hubungan antara Kenaikan Berat Badan Selama Kehamilan dengan Kejadian Ketuban Pecah Dini di Kabupaten Wajo. Indones J Clin Nutr Physician. 2021;4(1):74–81.

4. Anggraeni L, Yuria M. Faktor Predisposisi Kejadian Ketuban Pecah Dini pada Ibu Bersalin di Puskemas Kecamatan Jatinegara. J Kesehat Med Saintika. 2021;12(2):213–9.

5. Ali RN, Hiola FAA, Tomayahu V. Faktor-Faktor yang Memengaruhi Kejadian Komplikasi Ketuban Pecah Dini (KPD) di RSUD DR MM Dunda Limboto. J Heal Sains. 2021;2(3):381–93.

6. Prihandini SR, Pujiastuti W, Hastuti TP. Usia Reproduksi Tidak Sehat dan Jarak Kehamilan yang Terlalu Dekat Meningkatkan Kejadian Abortus di Rumah Sakit Tentara Dokter Soedjono Magelang. J Kebidanan. 2016;5(9):47–57.

7. Astuti AT. Faktor - Faktor yang Berhubungan dengan Kejadian Ketuban Pecah Dini di RS TK II Pelamonia Makassar Tahun 2017. J Kesehat Delima Pelamonia. 2017;1(2):153–9.

8. Setyaningsih PH. Gambaran Karakteristik Ibu Bersalin dengan Ketuban Pecah Dini di Rumah Sakit Umum Daerah Balaraja Tangerang. Edudharma J. 2019;3(1):32–9.

9. Zamilah R, Aisyiyah N, Waluyo A. Faktor-Faktor yang Mempengaruhi Kejadian Ketuban Pecah Dini (KPD) pada Ibu Bersalin di RS.Betha Medika. J Bid Ilmu Kesehat. 2020;10(2):122–35.

10. Setiana P, Herawati, Sutriyati. Hubungan Kelainan Letak Janin, Preeklamsia, Ketuban Pecah Dini dengan Persalinan Sectio Caesarea. J Kesehat dan Pembang. 2019;9(18):69–75.

11. Swearingen PL. Nursing Care Planning Resource, Volume II Maternal and Neonatal Health, First South Asia Edition, Adaptation Molly Babu. India: Elsevier; 2018.

12. Durham R, Chapman L. Maternal-Newborn Nursing : the Critical Components of Nursing Care. 2nd ed. 2013.

13. Winardi W, Musak RA. Literatur Review Panduan Riset Kesehatan dan Keperawatan. Pekalongan, Jawa Tengah: PT. Nasya Expanding Management; 2021.

14. Timotius KH. Pengantar Metodologi Penelitian Pendekatan Manajemen Pengetahuan untuk Perkembangan Pengetahuan. Yogyakarta: Penerbit Andi (Anggota IKAPI); 2017.

15. Moenadjat Y, Kekalih A, Friska D, Lalisang TJ. Penelitian Bedah. Jakarta: UI Publishing; 2020.

16. Ichsan B. Literasi Informasi Ilmiah untuk Kedokteran dan Kesehatan. Ratlin R, editor. Jawa Tengah: Muhammadiyah university Press; 2021.

17. Fatirul AN, Waluyo DA. Metode Penelitian Pengembangan Bidang Pembelajaran (Edisi Khusus Mahasiswa Pendidikan dan Pendidik). Tangerang: Pascal Books; 2022. 163 p.

18. Barbara L. Systematic Review dalam Kesehatan: Langkah demi Langkah. Yogyakarta: Deepublish Publisher; 2020.

19. Wahyuni T, Lestari M. Hubungan Umur dan Paritas dengan Kejadian Ketuban Pecah Dini di RSUD Tangerang Tahun 2018. Indones Midwifery J. 2019;3(1):18–23.

20. Maharrani T, Nugrahini E. Hubungan Usia, Paritas dengan Kejadian Ketuban Pecah Dini di Puskesmas Jagir Surabaya. J Penelit Kesehat Suara Forikes. 2017;8(2):102–8.

21. Sari NI. Hubungan Paritas dan Kelainan Letak dengan Kejadian Ketuban Pecah Dini pada Ibu Bersalin

di UPT Puskesmas Gajah Mada Tembilan Tahun 2012-2017. J Kesehat Husada Gemilang. 2019;2(1):22–7.

22. Idaman M, Darma IY, Zaimy S. Hubungan Faktor Risiko dengan Ketuban Pecah Dini. J Kesehat Med Saintika. 2019;11(1):111–24.

23. Bakri SH. Upaya Peningkatan Kesehatan dan Gizi Ibu Hamil. Bandung: Penerbit Media Sains Indonesia; 2021.

24. Lestari M, Musa SM. Hubungan Umur dan Paritas dengan Kejadian Ketuban Pecah Dini di RSUD Tangerang. Indoneisa Midwifery J. 2021;5(1):5–10.

25. Maharani T, Nugrahini EY. Hubungan Usia, Paritas dengan Ketuban Pecah Dini di Puskesmas Jagir Surabaya. J Penelit Kesehat Suara Forikes. 2017;8(2):102–8.

26. Hatijar, Saleh IS. Faktor yang Berhubungan dengan Kejadian Ketuban Pecah Dini di Rumah Sakit Sinar Kasih Tentena. Celeb Heal J. 2020;2(2):70–6.

27. Wilda Y, Suparji S. Dampak Faktor Usia dan Paritas Terhadap Prevalensi Ketuban Pecah Dini Ibu pada Masa Bersalin. 2-Trik Tunas-Tunas Ris Kesehat. 2020;10(1):67–71.

28. Rozikhan, Sapartinah T, Sundari A. Hubungan Paparan Asap Rokok terhadap Kejadian Ketuban Pecah Dini di Puskesmas Ringinarum Kabupaten Kendal. Midwifery Care J. 2020;1(2):24–9.

29. Rohmawati N, Fibriana A ika. Ketuban Pecah Dini di Rumah Sakit Umum Daerah Ungaran. Higeia J Public Heal Res Dev. 2018;2(1):10.

30. Syaifuddin A. Psikologi Umum Dasar. Jakarta: Kencana; 2022.

31. Meihartati T, Hairiyah. Hubungan antara Pola Seksualitas Gravida dengan Ketuban Pecah Dini. J Med Karya Ilm Kesehat. 2018;3(1):76–83.

32. Handayani L, Amelia R, Sumarni E. Hubungan Pola Seksual Ibu Hamil dengan Kejadian Ketuban Pecah Dini (KPD) di RSUD dr. H. Moch. Ansari Saleh Banjarmasin. Din Kesehat. 2017;8(1):33–44.

33. Assefa NE, Berhe H, Girma F, Berhe K, Berhe YZ, Gebreheat G, et al. Risks Factors of Premature Rupture of Membranes in Public Hospitals at Mekele City, Tigray, A Case Control Study. BMC Pregnancy Childbirth. 2018;18(386).

34. Kinney ESM, James SR, Murray SS, Nelson KA, Ashwill JW. Maternal-Child Nursing. 4th ed. Canada: Elsevier; 2012.

35. Utami W, Tasnim, Torunju SA. Factors Related to the Event of Premature Rupture of Membrane in Muna Regency Hospitals. Waluya Int Sci Heal J. 2021;1(1):15–9.

36. Dai NF. Anemia pada Ibu Hamil. Penerbit NEM; 2021.

37. Astuti RY, Ertiana D. Anemia dalam Kehamilan. Pribadi O, editor. 2018;1(2).

38. Hariani D. Hubungan Kadar Hemoglobin Ibu dan Letak Janin dengan Kejadian Ketuban Pecah Dini di Klinik Alisa Talang Kramat Kenten Tahun 2018. J Kebidanan J Med Sci Ilmu Kesehat Akad Kebidanan Budi Mulia Palembang. 2019;9(1):26–31.

39. Natsir F, Rismayana, Wahyuntari E. Hubungan Paritas dan Anemia dengan Kejadian Ketuban Pecah Dini (KPD) pada Ibu Bersalin di RSUD Panembahan Senopati Bantul. Media Publ Promosi Kesehat Indones. 2019;2(2):88–92.

40. Samejima T, Yamashita T, Takeda Y, Adachi T. Identifying the Associated Factors with Onset of Preterm PROM Compared with Term PROM - A retrospective Cross-Sectional Study. Taiwan J Obstet Gynecol. 2021;60(4):653–7.

41. Handayani L, Suharmiati. Menakhlukkan Kanker Serviks dan Kanker Payudara dengan 3 Terapi Alami. Jakarta Selatan: PT AgroMedia Pustaka; 2012.

42. Firichenko S V., Stark M, Mynbaev OA. The Impact of Cervical Conization Size with Subsequent Cervical Length Changes on Preterm Birth Rates in Asymptomatic Singleton Pregnancies. Sci Rep. 2021;11(1).

43. Prajarto HW, Pramono BA. The Association of Cervical Length, Bacterial Vaginosis, Urinary Tract Infection and Premature Rupture of

Membranes to The Imminent Preterm Labour. Diponegoro Int Med J. 2020;1(2):10–6.

44. Brown RG, Marchesi JR, Lee YS, Smith A, Lehne B, Kindinger LM, et al. Vaginal Dysbiosis Increases Risk of Preterm Fetal Membrane Rupture, Neonatal Sepsis and is Exacerbated by Erythromycin. Vol. 16, BMC Medicine. 2018.

45. Toqueer M, Javaid M, Nazneen Z, Ahmed K, Hayauddin H, Toqueer U. Risk Factors of Premature Rupture of Membranes in Ayub Teaching Hospital: A Case Control Study. 2022;18(1):44–7.

46. Damayanti S. Faktor-Faktor yang Berhubungan dengan Motivasi Pegawati Tetap di Rumah Sakit Umum Daerah Kabupaten Penajam Paser Utara Kalimantan Timur Tahun 2014. J Adm Rumah Sakit. 2018;2(2).