

Relationship Between Maternal Age, Education, and Parity in The Incidence of Spontaneous Abortion in Bali

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ARTICLE INFO

Article history:

Received Aug 31, 2022

Revised Sep 07, 2022

Accepted Sep 28, 2022

Keywords:

Maternal age

Education

Parity

Spontaneous abortion

Bali

ABSTRACT

Abortion is one of the problems in the world that affects the health, morbidity, and mortality of pregnant women. The purpose of this study was to examine the relationship between maternal age during pregnancy, education, and maternal parity in the incidence of spontaneous abortion at the Sanjiwani Hospital, Gianyar. This research was a retrospective and cross-sectional analytic study. The inclusion criteria were pregnant women who performed prenatal care at the Obstetrics Gynecology section of the Sanjiwani Hospital Gianyar, were clearly diagnosed with abortion (incomplete, complete, insipient) and/or non-abortion, and had complete pregnancy data. This study succeeded in collecting 79 data on pregnant women who met the inclusion and exclusion criteria. From the 79 data, 39 pregnant women experienced spontaneous abortion, and 40 pregnant women did not experience abortion. The results of bivariate analysis using chi-square showed a significant relationship between the age of pregnant women, education, and parity in the incidence of spontaneous abortion with a P value <0.05. This research is expected to be the basis of health promotion for pregnant women in order to increase the understanding of risk factors of spontaneous abortion and be able to take appropriate prevention.

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INTRODUCTION

Abortion is one of the problems in the world that affects the health, morbidity, and mortality of pregnant women. Abortion is the expulsion of products of conception that occurs at gestational age <20 weeks and fetal weight of 500 grams. The impact of abortion, if it does not get prompt and appropriate treatment, will increase the maternal mortality rate caused by complications from abortion, such as bleeding, perforation, infection, and shock (Zakira & Hardianto, 2021). Abortion can occur accidentally or on purpose. Abortions that take place accidentally are called spontaneous

abortions, while abortions that are carried out intentionally are called provocative abortions (Prawirohardjo, 2014).

Based on a study by the World Health Organization (WHO), one out of every four pregnancies ends in abortion (World Health Organization, 2012). The estimated incidence of abortion by WHO ranges from 40-50 million per year or the same as 125,000 abortions per day. In Indonesia, the maternal mortality rate according to the Indonesian Demographic and Health Survey (IDHS) in 2012 was 228 per 100,000 live births. Of the aforementioned number, deaths due to abortion were recorded to reach 30 percent. This figure has decreased but has not yet reached the target of the Millennium Development Goals (MDGs) by 102 per 100,000 live births and this figure increased in the 2012 IDHS to 359 per 100,000 live births (Bappenas, 2014).

Abortion is one of the contributing factors to maternal mortality, but abortion is often reported only in the form of bleeding, not in the form of abortion (Haddad & Nour, 2009). Abortion can be caused by three factors, namely: maternal, paternal, and fetal factors (Yogi et al., 2018). Factors that are often considered to have an effect on the incidence of abortion are maternal age during pregnancy, education, and parity (Fatkhayah et al., 2017). Raden's research (2009) at Dr. Moewardi Surakarta Hospital found that 65% of abortion sufferers aged less than 20 years (Raden, 2009). The mother's education factor also influences the occurrence of abortion. Education is needed for self-development and to increase the intellectual maturity of a mother. Low education makes a mother indifferent to health programs so that they do not recognize the risks that may occur during pregnancy (Prawirohardjo, 2014). The parity factor is also said to have an effect on the incidence of abortion. Multiparas and primiparas have a high risk of abortion (Chauhan et al., 2019; Mgaya et al., 2013)). The purpose of this study was to examine the relationship between maternal age during pregnancy, education, and maternal parity in the incidence of spontaneous abortion at the Sanjiwani Hospital, Gianyar.

RESEARCH METHOD

This research was conducted at Sanjiwani Hospital, Gianyar, which is a tertiary hospital located close to one of the tourism centers in Bali. The research design used was a cross-sectional analytic design with retrospective data collection. The medical records used were the medical records of pregnant women in 2017-2018 that met the inclusion and exclusion criteria. The inclusion criteria were pregnant women who performed prenatal care at the Obstetrics Gynecology section of the Sanjiwani Hospital Gianyar, were clearly diagnosed with abortion (incomplete, complete, insipient) and/or non-abortion, and had complete pregnancy data. Data on mothers with provocative abortion, infectious abortion, chronic disease or abnormalities of the uterine organs, history of trauma, and unreadable medical records were excluded from this study.

This research was carried out after obtaining approval from the Ethics Commission of the Faculty of Medicine and Health Sciences, Warmadewa University. The collected data were checked for correctness and completeness before being analyzed. Univariate analysis was conducted to describe the research subject. Age of pregnant women, education, parity, and abortion are nominal data so they will be displayed in the form of frequency and percentage. To determine the relationship between the age of pregnant women, education, and parity in the incidence of abortion, a bivariate analysis was carried out using chi-square. The relationship is declared significant if the P value is less than 0.05.

RESULTS AND DISCUSSIONS

This study succeeded in collecting 79 data on pregnant women who met the inclusion and exclusion criteria, with details as shown in table 1. In table 1, it is known that most pregnant women (51.9%) have a high-risk gestational age (less than 20 years old, more than 35 years old), have low education

or below junior high school (55.7%), and are multiparous or primiparous which is high risk of abortion (54.4%). From the 79 data, 39 pregnant women experienced spontaneous abortion, and 40 pregnant women did not experience abortion. The results of bivariate analysis using chi-square showed a significant relationship between the age of pregnant women, education, and parity in the incidence of spontaneous abortion with a P value <0.05, as shown in Table 2.

Table 1. Characteristic of Research Subject

Characteristic	Frequency	Percentage (%)
Age		
Low risk	38	48,1
High risk	41	51,9
Education		
Below junior high school	44	55,7
Upper junior high school	35	44,3
Parity		
Low risk	36	45,6
High risk	43	54,4
Abortion		
Yes	39	49,4
No	40	50,6
Total	79	100

Table 2. Relationship Between Maternal Age, Education, and Parity in The Incidence of Spontaneous Abortion

Characteristic	Spontaneous Abortion		P-Value
	YA	TIDAK	
Age			
Low risk	8 (21,1%)	30 (78,9%)	0.001*
High risk	31 (75,6%)	10 (24,4%)	
Education			
Below junior high school	34 (77,3%)	10 (22,7%)	0.001*
Upper junior high school	5 (14,3%)	30 (85,7%)	
Parity			
Low risk	9 (25,0%)	27 (75,0%)	0.001*
High risk	30 (69,7%)	13 (20,3%)	

Based on table 2, pregnant women mostly experienced abortion at a high-risk age (91.6%), while 27.3% of the pregnant women experienced abortion at a low-risk age. This is in line with the research by Prawirohardjo (2014), which stated that more women experienced abortion at a high-risk age (Prawirohardjo, 2014). In the chi-square test, there was a significant relationship between age and the incidence of spontaneous abortion. The maturity of the reproductive system is never separated from age (Dewvi et al., 2020; Wiadnjana et al., 2020). Reproductive organs that are not yet fully mature for pregnancy and the uterus that is not ready to be fertilized in someone who is too young (<20 years old) can be harmful to both the mother and the fetus, and if the aforementioned is accompanied with reproductive unpreparedness it can result in abortion. Likewise, the age of a person who is too old (> 35 years) during pregnancy can reduce the quality of the reproductive system so that it can be dangerous during the puerperium. Pregnancy at the age of >35 years can also cause abortion due to decreased ovum quality (Bayrampour et al., 2012; Hu et al., 2018). Generally, the ideal age for pregnancy is 20-35 years (Lestari & Ariwangsa, 2020; Prawirohardjo, 2014).

Table 2 also showed that abortion is more common in pregnant women with low education than in pregnant women with higher education. The relationship between education and the incidence of abortion was stated to be significant according to the chi-square test. These results are similar to some previous study which stated that there is a relationship between maternal education level and the incidence of abortion. This is because the lower the education of a mother, the greater the risk of

a mother having an abortion. Someone with higher education will tend to pay attention to the health of themselves and their families (Eskild et al., 2007; Zheng et al., 2017). Prawirohardjo (2014) stated that education is needed by humans for self-development and to increase one's intellectual maturity. Intellectual maturity will affect the insight and way of thinking both in action and in decision-making, including the use of health services (Pradnyawati et al., 2021; Putra et al., 2021). Low education makes a person indifferent to health programs so they are unable to recognize the dangers that may occur. Even though health facilities are available, it does not mean that people would utilize them properly (Permatananda et al., 2020; Prawirohardjo, 2014).

Regarding parity in table 2, it is found that abortions occur more in those who are at risk of parity. The chi-square test found a significant relationship between parity and the incidence of spontaneous abortion. Cunningham (2005) stated that the more often a person gives birth, the weaker the uterus will be and it is difficult to maintain the contents of the conception so abortion is more likely to occur. In multiparous mothers, the blood vessels in the uterine wall are usually damaged, affecting the circulation of oxygen and nutrients to the fetus (Cunningham et al., 2005; Dewvi et al., 2020). The risks associated with parity can be managed through good obstetric care and by using family planning programs (Aryastuti et al., 2020; Cahyawati et al., 2022).

Weaknesses of this research include the fact that the research method only used a cross-sectional design, so it cannot accurately describe the causal relationship between variables. The variables in this study are only dichotomous so that the resulting data is less varied. In addition, the population in the study which was quite limited is also a weakness in this study.

CONCLUSION

This study succeeded in linking maternal age during pregnancy, education, and parity to the incidence of spontaneous abortion at the Sanjiwani Hospital, Gianyar. This research is expected to be the basis of health promotion for pregnant women. Pregnant women are expected to have a good understanding of the risk factors for spontaneous abortion and be able to take appropriate prevention.

References

- Aryastuti, A. A. S. A., Cahyawati, P. N., & Permatananda, P. A. N. K. (2020). Cadre Training in Managing Toddler Mother Classes in Kerta Payangan Village , Cadre Training in Managing Toddler Mother Classes in Kerta Payangan Village , Gianyar. *WARDS 2019: Proceedings of the 2nd Warmadewa Research and Development Seminar (WARDS)*, 27 June 2019, Denpasar-Bali, Indonesia, October. <https://doi.org/10.4108/eai.13-12-2019.2298895>
- Bappenas. (2014). *Rencana Pembangunan Jangka Menengah 2015-2019*. Badan Perencanaan Pembangunan Nasional, Jakarta.
- Bayrampour, H., Heaman, M., Duncan, K. A., & Tough, S. (2012). Advanced maternal age and risk perception : A qualitative study. *BMC Pregnancy and Childbirth*, 12(100), 1-13.
- Cahyawati, P. N., Aryastuti, A. A. S. A., & Permatananda, P. A. N. K. (2022). Penyuluhan dan Pendampingan Pemilihan Metode Kontrasepsi pada Kelompok Arisan Dewi Sartika Denpasar Timur. *E-Dimas: Jurnal Pengabdian Kepada Masyarakat*, 13(1), 91-96. <https://doi.org/10.26877/e-dimas.v13i1.4895>
- Chauhan, P. A., Bhalani, K. D., & Trivedi, A. (2019). Risk Factors Responsible for the High-Risk Pregnancy and Its Association with the Outcome of the Pregnancy among the High-Risk Mothers of Bhavnagar District , Gujarat : A Follow-Up Descriptive Study. *National Journal of Community Medicine*, 10(6), 351-356.
- Cunningham, F., Mac Donal, P., & Gant, N. (2005). Komplikasi Kehamilan:Abortus. In *Obstetri William* (pp. 571-597). EGC.
- Dewvi, P. A. S., Permatananda, P. A. N. K., & Wandia, I. M. (2020). Hubungan Antara Lingkar Lengan Atas dan Kadar Hemoglobin Ibu dengan Kejadian Bayi Berat Lahir Rendah di Beberapa Puskesmas Bali Utara. *Jurnal Bidan Komunitas*, 5(1), 1-6.
- Eskild, A., Nesheim, B., Busund, B., Vatten, L., & Vangen, S. (2007). Childbearing or induced abortion : the

- impact of education and ethnic background . Population study of Norwegian and Pakistani women in Oslo , Norway. *Acta Obstetric et Gynecologia*, 86, 298-303. <https://doi.org/10.1080/00016340601133780>
- Fatkhiyah, N., Kodijah, & Hadiningsih, T. A. (2017). Faktor Risiko Maternal Kejadian Abortus (Studi Kasus di RSUD Dr. Soeselo Slawi Kabupaten Tegal). *Kebidanan*, 6(1). <https://doi.org/10.26714/jk.6.1.2017.6-12>
- Haddad, L. B., & Nour, N. M. (2009). Unsafe Abortion : Unnecessary Maternal Mortality. *Revies in Obstetrics & Ginecology*, 2(2), 122-126.
- Hu, X., Miao, M., Bai, Y., Cheng, N., & Ren, X. (2018). Reproductive Factors and Risk of Spontaneous Abortion in the Jinchang Cohort. *International Journal of Environmental Research and Public Health*, 15, 1-9. <https://doi.org/10.3390/ijerph15112444>
- Lestari, A., & Ariwangsa, I. D. G. A. S. (2020). Factors That Influence The Event of Low Birth Weight Baby (LBW) in Mother at Payangan , Bali. *The Proceedings of the 1st Seminar The Emerging of Novel Corona Virus, NCov 2020, 11-12 February 2020, Bali, Indonesia, October*, 1-6.
- Mgaya, A. H., Massawe, S. N., Kidanto, H. L., & Mgaya, H. N. (2013). Grand multiparity : is it still a risk in pregnancy ? *BMC Pregnancy and Childbirth*, 13(241), 1-8.
- Permatananda, P. A. N. K., Aryastuti, A. A. S. A., & Cahyawati, P. N. (2020). Gerakan Keluarga Sadar Obat pada Kelompok Darma Wanita dengan Pendekatan Belajar Aktif. *Jurnal Pengabdian Kepada Masyarakat (Indonesian Journal of Community Engagement)*, 6(1), 56. <https://doi.org/10.22146/jpkm.42305>
- Pradnyawati, L. G., Cahyawati, P. N., & Permatananda, P. A. N. K. (2021). Pemberdayaan Kader dalam Pencegahan IMS dan HIV/AIDS pada Pedagang Perempuan di Kota Denpasar. *Jurnal Paradharma*, 4(2), 145-150. https://jurnal.undhirabali.ac.id/index.php/para_dharma/article/viewFile/1376/1210
- Prawirohardjo, S. (2014). *Ilmu Kebidanan*. PT Bina Pustaka, Jakarta.
- Putra, N. M. W. N. D., Arsana, I. W. E., & Permatananda, P. A. N. K. (2021). Hubungan Antara Body Image dengan Perilaku Diet pada Mahasiswi Fakultas Kedokteran dan Ilmu Kesehatan Universitas Warmadewa Tahun Angkatan 2020. *Aesculapius Medical Journal*, 1(1), 27-31.
- Raden, J. N. (2009). *Hubungan antara Kejadian Abortus dengan Usia Ibu Hamil di RSUD Dr. Moewardi Surakarta pada Tahun 2008*. Universitas Sebelas Maret.
- Wiadnjana, I. G. P., Yanti, M. R. R., & Permatananda, P. A. N. K. (2020). *Nutritional Status of Reproductive Women Who Follow Vegetarian Diet in Badung Regency. November*. <https://doi.org/10.4108/eai.11-2-2020.2302019>
- World Health Organization. (2012). *Information sheet Unsafe abortion incidence and mortality Global and regional levels in 2008 and trends Information sheet*. https://apps.who.int/iris/bitstream/handle/10665/75173/WHO_RHR_12.01_eng.pdf
- Yogi, A., Prakash, K. C., & Neupane, S. (2018). Prevalence and factors associated with abortion and unsafe abortion in Nepal : a nationwide cross-sectional study. *BMC Pregnancy and Childbirth*, 18(376), 1-10.
- Zakira, S., & Hardianto, G. (2021). *Risk Factors Associated with Spontaneous Abortion in Dr . Soetomo General Hospital Surabaya : a Case-control Study*. 7(65). <https://doi.org/10.21070/midwiferia.v>
- Zheng, D., Li, C., Wu, T., & Tang, K. (2017). Factors associated with spontaneous abortion : a cross-sectional study of Chinese populations. *Reproductive Health*, 14(33), 1-9. <https://doi.org/10.1186/s12978-017-0297-2>