



## Teenage Pregnancy in Indonesia: Determinants and Outcomes

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### ABSTRACT

This review aims to identify determinants and outcomes associated with teenage pregnancy in Indonesia. A search in PubMed, Science Direct, and google scholar databases in the last ten years (2011 to 2021) was conducted. The keywords were "teenage pregnancy" OR "adolescent pregnancy" AND "Indonesia". Journal criticism used CASP. Sixteen articles met the inclusion criteria. The most related determinants to teenage pregnancy were early marriage, economic status, educational level, knowledge, and access to information. Teenage pregnancies have a high risk of maternal and neonatal consequences such as anemia, preeclampsia, preterm birth, and low birth weight. Outcome problems of teenage pregnancy in Indonesia show a similar impact to the impacts revealed in studies in other countries. Women who have teenage pregnancy need support in getting access to adequate antenatal care to avoid the risk of complications for both mother and fetus. Effective education could be one of the efforts to raise legal age of marriage. Collaboration of the stakeholders and policymakers is needed to prevent teenage pregnancy, especially in groups that tend to be at risk.

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### Kata kunci:

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### ABSTRAK

Review ini bertujuan untuk mengidentifikasi determinan dan outcome yang berhubungan dengan kehamilan remaja di Indonesia. Dilakukan pencarian pada database PubMed, Science Direct, dan google scholar dalam sepuluh tahun terakhir (2011-2021). Kata kunci yang digunakan adalah "teenage pregnancy" OR "adolescent pregnancy" AND "Indonesia". Pembahasan jurnal menggunakan CASP. Sebanyak 16 artikel memenuhi kriteria inklusi. Determinan yang paling terkait dengan kehamilan remaja adalah pernikahan dini, status ekonomi, level pendidikan, pengetahuan dan akses informasi. Kehamilan remaja berisiko tinggi terhadap maternal dan neonatal seperti anemia, preeclampsia, kelahiran premature, dan berat bayi lahir rendah. Permasalahan outcome dari kehamilan remaja di Indonesia menunjukkan dampak yang serupa dengan studi dari negara lainnya. Wanita yang menjalani kehamilan remaja membutuhkan dukungan untuk memperoleh akses antenatal care yang adekuat untuk mencegah risiko komplikasi pada ibu dan janin. Edukasi yang efektif bisa menjadi salah satu upaya meningkatkan usia pernikahan. Kolaborasi stakeholder dan pembuat kebijakan dibutuhkan untuk mencegah kehamilan remaja, khususnya pada kelompok berisiko.

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## INTRODUCTION

In this century, teenage pregnancy is still one of global problems.(WHO, 2019) The World Health Organization (WHO) defines teenagers or adolescents as those people between 10 and 19 years of age.(Organization, 2015) The number of teenage pregnancies has decreased but is still relatively high in low and middle-income countries compared to upper-income countries.

Approximately, about 12 million births occur to adolescents aged under 16 in low and middle-income countries.(WHO, 2019) In 2019, it is estimated that of every 1,000 babies born, 41 babies are born to women aged 15-19 years. Based on the same source, the incidence of teenage pregnancy in Indonesia has not changed significantly in the last 20 years, which is about 46-47 per 1000 birth.(Worldbank, n.d.) Data from Demography Health Survey (DHS) 2017 in Indonesia, 7 percent of women aged 15-19 years have become a mother.(Kemenkes; BKKBN; BPS;, 2018)

Teenage pregnancy can be influenced by various factors. Early marriage contributes to the incidence of teenage pregnancy.(Yang Tidak & Ditunda, n.d.) Peers and parents also play an important role. Economic background and lack of knowledge are mentioned as factors that take part in this problem.(Chung et al., n.d.)

Teenage pregnancy poses a high risk both to the mother and the baby. The risk of complications of pregnancy and childbirth in adolescents can have a serious impact on maternal and neonatal death. It is correlated with maternal

nutrition, preterm birth and low birth weight, and other outcome problems. In addition, some teenage pregnancies are unwanted pregnancies that carry the risk of ending with unsafe abortions.(Kirchengast, 2016; WHO, 2019)

This review aims to review determinants and outcomes associated with teenage pregnancy in Indonesia. This review summarized the evidence on determinant and outcomes of teenage pregnancy from previous studies.

## METHOD

An advanced search for articles published in the last ten years (2011-2021) was conducted in July 2021 through the journal databases of Pubmed, ScienceDirect, and Google Scholar. The keywords used were "teenage pregnancy" OR "adolescent pregnancy" AND "Indonesia". The inclusion criteria that were used to select articles for our review consist of research articles written in English and Indonesian, original research, freely accessible full text articles, articles with country of study site that was in Indonesia, quantitative study, and articles discussing determinant factors or outcomes of teenage pregnancy. Each research article was analyzed using the instrument of CASP. Data from the articles taken are described in a table consisting of the name of the author, year, title, place of research, type of research, data collection, participants/number of samples, results, and recommendations.

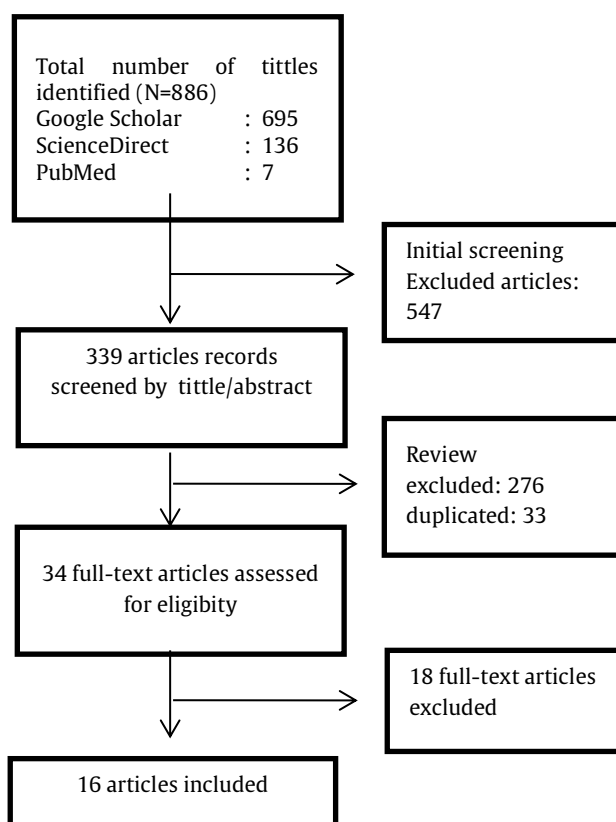


Fig.1 Flow of selection process

**RESULT AND DISCUSSION**

Identification of search used PubMed, ScienceDirect and Google scholar databases. In the first stage, a search in 3 databases succeeded in identifying as many as 886 articles. Thirty-three duplicate articles were found and excluded. Three hundred and thirty-nine articles were selected by title and 276 articles were excluded. Then, 63 articles were selected by abstract. Thirty-four articles were assessed for eligibility. Eighteen articles were excluded. Sixteen articles met the inclusion criteria and were eligible for a review.

The sixteen articles that met criteria were analyzed. This literature review has been divided into 2 sections: determinants and outcomes. Eight articles discussed determinants and 8 articles discussed outcomes of teenage pregnancy. The data analyzed were synthesized and are organized in table below.

**Table 1.**  
**Synthesis of article reviewed**

Item	Characteristic	n	%
<b>Determinants</b>			
Study design	Cross-sectional	6	75
	Case-control	2	25
Data collection	Indonesian DHS	2	25
	Interview	2	25
	Questionare	4	50
Sample size	≤100	5	62.5
	>100	1	12.5
	>1,000	1	12.5
	>10,000	1	12.5
Results	Early marriage	2	25
	Economic status	4	50
	Education level	4	50
	Knowledge	3	37.5
	Access to information	3	37.5
<b>Outcome</b>			
Study design	Cross-sectional	5	62.5
	Case-control	3	37.5
Data collection	Medical record	6	75
	Indonesian DHS	1	12.5
	Questionare	1	12.5
Sample size	≤100	2	25
	>100	3	37.5
	>1,000	2	25
Results	Anemia	4	50
	Preeclampsia/eclampsia	2	25
	Preterm	4	50
	Low birth weight	4	50

**Determinants**

Based on studies of teenage pregnancy in Indonesia, there are some determinants of adolescent pregnancy in Indonesia. We synthesized the dominant and interrelated determinants as follows.

**1. Early Marriage**

Most teenage pregnancies that occurred in Indonesia were pregnancies in marriage. Some of the teenagers who are married planned their pregnancies. A study in Malang showed that women who married at the age of <20 years were more at risk of experiencing teenage pregnancy than women who married at age >20 years (OR=12.1, 95% CI 1.2-114) (Gamelia et al., n.d.) A cross-sectional study in South

Tangerang City showed similar results. This finding indicated a correlation between marital status and teenage pregnancy. Marriage indicates a definite sexual activity and lead to pregnancy.(Sari, 2014) There is a view that marriage can be a solution to reduce a family's economic burden.(Nikmatur Rohmah; Ah Yusuf, n.d.) Responsibilities, including financial responsibility, rest with the husband, who can also share the family's economic burden.(Nikmatur Rohmah; Ah Yusuf, n.d.)

Early marriage also occurs in several countries, especially countries with high poverty rates such as Northern Ethiopia(kidan Ayele et al., 2018), Eastern Ethiopia(Mezmur et al., 2021), and Sudan, especially in Juba region.(Vincent & Alemu, 2016) Poverty can also contribute to early marriage because the daughter's family get benefits from a dowry (which is often given by the prospective spouse's family as a gift)(Vincent & Alemu, 2016). Teens married early are more likely to have a teenage pregnancy than single teens.(kidan Ayele et al., 2018)(Mezmur et al., 2021)(Habitu et al., 2018) Consistent with the findings of several studies which show that the rate of early marriage is still high in some countries, adolescents are exposed to unwanted pregnancies and unsafe abortions. Early marriage can force teenagers to terminate their education, make them lose their future for the economy and independence, and reduce women's decision-making power.(Beguy et al., 2013)

**2. Economic Status**

A study that used data from Indonesia Demography and Health Survey (DHS) in 2017 showed that wealth status is inversely proportional to incidence of teenage pregnancy. The lower the wealth status is, the higher the risk of teenage pregnancy becomes, and vice versa. Teenagers in the poorest group have the highest risk of teenage pregnancy.(Nikmatur Rohmah; Ah Yusuf, n.d.) The limited access to health services and reproductive health information for poor youth is thought to have contributed to this problem.(Chotimah et al., n.d.) Low-income parents tend to have low levels of education. As mentioned in the previous point, parents with low incomes tend to allow their children to be early married to reduce family economic burden.(Rahayu et al., n.d.)

The results of this study are similar to the results of studies in several regions and countries such as Northern Ethiopia(kidan Ayele et al., 2018), Sudan(Vincent & Alemu, 2016), Zimbabwe(Marisa & Marisa, 2018) and Nigeria(Kopoluyi, JA., Njoku E, O.,& Oyinloye, 2014). The economic status of adolescents' families may affect their vulnerability to pregnancy. Findings in previous studies revealed that those with higher monthly incomes had the lowest odds of conceiving in their teens compared to those with the lowest monthly income levels. As mentioned earlier, families with low economic levels choose to marry off their children at a young age to reduce the economic burden, while those with the highest income continue their education and other career goals.(Rahayu et al., n.d.)(kidan Ayele et al., 2018)

**3. Education Level**

Adolescents with the highest level of education of primary school had the highest potential for teenage pregnancy (OR= 0.30; 95% CI 0.09-0.99) compared to adolescents with secondary education (OR= 0.13; 95% CI 0.004-0.43) and adolescents with higher education (OR=0.04, 95% CI 0.01-0.12).(Nikmatur Rohmah; Ah Yusuf, n.d.) The results of another study in Malang and Magelang also

showed a higher chance of teenage pregnancy in teenagers with low education.(Rahayu et al., n.d.; Setyaningsih et al., 2018)

The other studies from Sudan(Vincent & Alemu, 2016) and Eastern Ethiopia(Mezmur et al., 2021) reported similar results. Education has a relationship with the knowledge and information that a person has.(Nikmatur Rohmah; Ah Yusuf, n.d.) However, in some areas in Indonesia, especially in rural areas, there are inequalities in the opportunity of education for women. Women with low education tend to have little opportunity to speak both in the family and in society.(Chotimah et al., n.d.) On the other hand, women with higher education have easier access to information and have choices.(Rahayu et al., n.d.) The level of education also influences adolescents in making decisions to marry and become pregnant. Teenagers who are not on a formal education process tend to choose early marriage.(Nikmatur Rohmah; Ah Yusuf, n.d.)

#### 4. Knowledge

Lack of knowledge about reproductive health and unsafe sexual behavior are determinants for teenage pregnancy.(Setyaningsih et al., 2018) In line with a study in Bali, teenagers with lack of knowledge about reproductive health and teenage pregnancy are at greater risk of teenage pregnancy.(Meriyani et al., n.d.) Finding of a study in Malang revealed that teenagers with less knowledge about condom use were more likely to experience teenage pregnancy (OR 5.9, 95% CI 1.2 – 27.8).(Setyaningsih et al., 2018) A study in Yogyakarta expressed a similar result that teenage with good knowledge can avoid teenage pregnancy.(Budiharjo et al., 2018) A study in South Tangerang City stated that teenagers with a lack of knowledge about sex and reproductive health have a higher chance of getting pregnant than those who had good knowledge.(Sari, 2014)

Research in Eastern Euthopia also shows that pregnancy in adolescents is influenced by knowledge of the fertile period in the menstrual cycle.(Mezmur et al., 2021) Teenagers who have a sufficient and appropriate understanding of reproductive health tend to understand the behavior and channel the sex drive through other healthy and responsible activities. Teenagers with a lack of knowledge about sex tend to have uncontrolled sexual behavior, resulting in teenage pregnancy. Premarital sex has become a dating activity for some teenagers.(Budiharjo et al., 2018; Sari, 2014) Home should be the starting point for providing sex education. However, the majority of Indonesian parents consider sex a taboo topic to be discussed between parents and children. (Budiharjo et al., 2018)

#### 5. Access to Information

Access to information is one of the main determinants of teenage pregnancy. Access to health information is related to teenager knowledge. The teenage pregnancy rate was lower in the group that received the promotion program intervention than in the group that did not receive the program. The program focuses on the development of children and adolescents to reduce cases of unwanted pregnancies in adolescents.(Gamelia et al., n.d.)

Convenient access to information has double impact, both positive impact and negative impact. Open online access can make it easier for teenagers to get the information they need about reproductive health. However, access to information also can be the opportunity to access

pornographic content. This condition can lead teenagers to engage in premarital sexual activity and be at risk of teenage pregnancy.(Sari, 2014) Another Indonesian DHS study found that the lower frequency of reading newspapers or magazines and internet use were correlated with childbearing in teenagers.(Chotimah et al., n.d.)

#### Outcomes

Based on studies of teenage pregnancy in Indonesia, we synthesized the maternal and neonatal outcomes below:

##### 1. Anemia

A study in Dr. Cipto Mangunkusumo Hospital found a significant difference in anemia during pregnancy between teenage and adult mothers (32.1% vs 11.8%, OR=2.08, 95% CI 1.22-3.54). Another study in the same place and different time presented a result that the risk of anemia at childbirth was higher in teenage mothers (44 % on 12-15 years old vs 30.9 % on 16-19 years old vs 17.2 % 20-34 years old).(Indarti et al., 2020) A cross-sectional study in Dr. Oen Hospital Surakarta showed that anemia as a complication of teenage pregnancy is the greatest risk compared to other complications (OR=8.4, 95 % CI 3.22-21.93).(Raharja et al., n.d.) This result is in line with another study in Surabaya which showed that pregnant teenagers were 7 times more at risk of developing anemia compared to pregnant women of reproductive age. There were 45 percent of pregnant teenagers in this study who had anemia.(Husna et al., 2019) Another cross-sectional study presented that anemia tends to be more common in the group of pregnant teenagers (33.3% vs 12.1%, p=0.04, OR 3.625).(Rahayu et al., n.d.) The lower prevalence of anemia was shown from the results of the study in Malang the case of anemia in adolescent pregnant women 5.3%.(Tarsikah; Dyah Ayu Amira Diba; H Didiarto, 2020) A study based on medical record at a hospital in Bali showed 12.9% complications in teenage pregnancy were anemia.(S. Nurtanio; I.M. Darmayasa; I.M.B.D; Aryana, 2019) The results of another study in Aceh showed that one of the complications that occurred in pregnant adolescents was anemia of 10.75%. Complications in teenage pregnancy, including anemia, are related to maternal compliance with antenatal care and economic status.(Madjid & And, 2014) Pregnant women with financial constraints tend to not have regular antenatal care, increasing the risk of complications that can occur during pregnancy and childbirth.(S. Nurtanio; I.M. Darmayasa; I.M.B.D; Aryana, 2019)

The finding that the percentage of anemia incidence was higher in teenage pregnancy was also reported in studies that were conducted in other countries, such as Malaysia(Nagandla & Kumar, 2020), Republic of Macedonia(Rexhepi et al., 2019), Greece(V et al., 2015), and Oman(Al-Haddabi et al., 2014b). The prevalence of anemia was high in most girls in their growth period. The majority of anemia is iron-deficiency anemia.(Batura & Colbourn, 2020) Meanwhile, during pregnancy, the need for iron also increases.(Pavord et al., n.d.) This double burden worsens conditions in teenage pregnancy. Anemia in pregnancy that did not receive proper treatment was associated with risk for preterm, stillbirth, and other bad impacts.(M et al., 2017)

##### 2. Preeclampsia/Eclampsia

A study in Bali showed that as many as 20.2% of pregnant teenagers had preeclampsia.(S. Nurtanio; I.M. Darmayasa;



I.M.B.D; Aryana, 2019) The result of a study at Dr. Cipto Mangunkusumo Hospital displayed that the prevalence of preeclampsia between mothers from the age group of 16-19 years and mothers aged 20-34 years was almost similar (16.6 % vs 17.6 %). However, in this study, eclampsia was found higher in pregnant women in the 12-15 year age group and the 16-19 year age group than in mothers in the 20-34 year group (20 % vs 5 % vs 2.0%,  $p < 0.001$ ,  $OR = 4.03$ , 95 % CI 1.73-9.39).(Indarti et al., 2020)

Other studies worldwide reported similar results. Incidence of preeclampsia was higher in teenage pregnancy than in adult pregnancy. These studies were from Greece (V et al., 2015) and Turkey (Karataşlı et al., 2019). However, globally, there has been a decrease in the incidence. Preeclampsia/eclampsia in teenage pregnancy is also correlated with economic and demographic factors. (Macedo et al., 2020) Besides, uterine immaturity is one of the main rationales for many maternal complications in adolescent pregnancy, including preeclampsia. (I et al., 2017) A finding from a study in Thailand showed an increased risk of cesarean delivery, especially in the group of adolescents with overweight, one of which is due to preeclampsia. (Vivatkusol et al., 2017)

### 3. Preterm Birth

A study on teenage pregnancy in Bali showed various complications of teenage pregnancy both in pregnancy and childbirth. Preterm labor is one of the most common complications encountered with a prevalence rate of 23.3% of all adolescent deliveries. (S. Nurtanio; I.M. Darmayasa; I.M.B.D; Aryana, 2019) A study in Kanjuruhan Hospital, Malang, categorized infant outcomes from teenage pregnancy based on gestational age at postterm, term, and preterm. The results showed that the highest group was preterm (53.3%). (Tarsikah; Dyah Ayu Amira Diba; H Didiharto, 2020) A study at Dr. Cipto Mangunkusumo Hospital showed an increased risk of low birth weight in adolescent pregnancies ( $OR = 2.28$ , 95% CI 1.60-3.25). (Indarti et al., 2020) The results of an analytical study that was conducted at Dr. Oen Hospital Surakarta revealed that pregnant teenagers had a higher risk of having preterm delivery than pregnant women of reproductive age ( $OR = 2.9$ , 95% CI 0.315-1.01). (Raharja et al., n.d.)

The studies from other countries also showed similar results. There was a higher incidence of preterm birth in teenage pregnancy than in adult pregnancy. The studies were from Malaysia (Nagandla & Kumar, 2020), Oman (Al-Haddabi et al., 2014b), Nepal (Kayastha et al., n.d.), Taiwan (CP et al., 2010), Thailand (P et al., 2016), Nigeria (Omole-Ohonsi & Attah, 2011), Oman (Al-Haddabi et al., 2014a), Turkey (Karataşlı et al., 2019) and China (T et al., 2020). Preterm birth was one of the most indications for cesarean section in teenage pregnancies. (Karataşlı et al., 2019) Furthermore, preterm was associated with one of the contributors to infant mortality. (Cinar, 2017)

### 4. Low Birth Weight

The analysis result from the Indonesia DHS found that teenage pregnancy poses a risk to the health of the baby, including low birth weight. (udah et al., n.d.) A one-year retrospective study at Dr. Cipto Mangunkusumo Hospital showed significant differences among pregnant women aged 12-15 years, 16-19 years, and 20-34 years despite the high percentage of LBW cases in the three groups. (60 % vs 50.8 % vs 71.4%,  $p < 0.001$ ,  $OR = 2.28$ ; 95% CI 1.60-3.25). (Indarti et al.,

2020) Based on another retrospective study in Dr. Cipto Mangunkusumo Hospital in a 3-year period, as many as 15 percent of births were to teenage mothers. The results showed a correlation between teenage pregnancy and the incidence of low birth weight. There was an increased risk of low birth weight in this group of teenage mothers (53.84% vs 38.8%,  $OR = 1.83$ , 95% CI 1.08-3.13). (Kayika et al., n.d.) Data on infant outcomes based on weight category from a study in Malang showed that only 45.3% of infants had normal weight. There were 44% of infants had low weight birth, and 10.7% had very low birth weight. (Tarsikah; Dyah Ayu Amira Diba; H Didiharto, 2020)

Low birth weight is also one of the consequences of teenage pregnancy in other countries. Studies from Malaysia (Nagandla & Kumar, 2020), Nepal (Kayastha et al., n.d.), Oman (Al-Haddabi et al., 2014b), and Taiwan (CP et al., 2010) showed a higher incidence of low birth weight among teenage mothers than adults mothers. The health of infant of teenage mother is associated with increased nutritional needs and a double burden on the body for infant growth, while the mother's own body is still growing too. (udah et al., n.d.) Approximately 60% of teenage pregnancies experience inappropriate pregnancy weight gain, which certainly contributes to risky perinatal outcomes. (Vivatkusol et al., 2017)

### LIMITATION OF THE STUDY

Article reviews are limited to quantitative research. This study did not look at the impact of teenage pregnancy on psychological and social life.

### CONCLUSIONS AND SUGGESTIONS

There were various determinants in teenage pregnancy. Early marriage, socioeconomic status, education level, knowledge, and access to information are dominant and interrelated determinants of this problem in Indonesia. Teenage pregnancy poses risks to maternal and neonatal outcomes, such as anemia, preeclampsia/eclampsia, preterm birth, and low weight birth. Outcome problems of teenage pregnancy in Indonesia show a similar impact to the impacts revealed in studies in other countries. Based on the complex determinants, it is necessary to have a comprehensive effort to prevent and reduce teenage pregnancy rate. Preventing teenage pregnancy needs the collaboration of stakeholders and policymakers. Reproductive health education that reaches all youth, especially those who are at risky groups, should be better optimized. Awareness of various parties about this problem can increase vigilance in preventing teenage pregnancy and complications of the outcome.

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## Conflict of Interest Statement

The authors declare that there is no conflict of interest

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