Scientific Foundation SPIROSKI, Skopje, Republic of Macedonia
Open Access Macedonian Journal of Medical Sciences. 2021 Oct 08; 9(B):1080-1084.
https://doi.org/10.3889/oamjms.2021.7066
eISSN: 1857-9655
Category: *B - Clinical Sciences*
Section: *Gynecology and Obstetrics*

Comparison of Maternal and Neonatal Outcomes in Teenage and Reproductive Age Pregnancy at Tertiary Hospital in West Java, Indonesia

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Edited by: Ksenija Bogoeva-Kostovska
Citation: Nurdiawan W, Koto ARH, Zulvayanti Z, Atik N, Susiarno H, Hidayat D, Pusianawati D, Zulfa F. Comparison of Maternal and Neonatal Outcomes in Teenage and Reproductive Age Pregnancy at Tertiary Hospital in West Java, Indonesia. Open-Access Maced J Med Sci. 2021 Oct 08; 9(B):1080-1084. https://doi.org/10.3889/oamjms.2021.7066
Keywords: Obstetrics outcome; Teenage pregnancy; Reproductive age pregnancy; Referral hospital; Neonatal outcome
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Received: 14-Aug-2021
Revised: 01-Sep-2021
Accepted: 28-Sep-2021

Funding: This research did not receive any financial support
Competing Interest: The authors have declared that no competing interest exists

Abstract

AIM: This study was aimed to compare the maternal and neonatal outcomes among teenage and reproductive age pregnancies.

PATIENTS AND METHODS: This was a cross-sectional study of pregnant mothers in Hasan Sadikin General Hospital, the tertiary referral hospital in West Java, Indonesia. Patients who gave birth during January 2015–December 2018 were included and divided into two groups (teenage and reproductive age pregnancy). Their medical record data then were evaluated to compare both maternal and neonatal outcomes.

RESULTS: The incidence of teenage pregnancy was 10.05%. A total of 3810 patients were recruited. The teenage mothers were 522 subjects and reproductive age mothers were 3288 subjects. The incidence of eclampsia (5.2% vs. 1.9%, $p < 0.001$), anemia (18.4% vs. 14.9%, $p = 0.040$), and preterm delivery (27.2% vs. 18.6%, $p < 0.001$) was more frequent in teenage pregnancies. Teenage mothers also had a higher percentage of low birth weight babies (42.3% vs. 36.2%, $p = 0.007$).

CONCLUSION: Teenage pregnancies also had a higher risk of eclampsia, anemia, preterm delivery, and having low birth weight babies. More efforts to prevent teenage and high-risk pregnancy are needed, especially in rural areas.

Introduction

Teenage pregnancy is still a serious problem that needs attention. Every year, it is estimated that 21 million girls aged 15–19 years and approximately 12 million girls give birth in developing countries [1]. The teenage pregnancies are not simply as young adult pregnancy. It is an important aspect to note, because investment in adolescent health will have triple benefit (for the adolescents now, for their future adult lives, and for the next generation [2].

In 2013, as stated by Badan Kependudukan dan Keluarga Berencana Nasional/National Family Planning Coordinating Board of Indonesia, teenage pregnancy occurs to 48 of every 1000 pregnancies [3]. From Indonesian Demography and Health Survey (IDHS) 2017 data, 12.8% of 15–19-year-old girls are married. Most of these marriages occur to low educated girls with low-income families in rural areas. They are considered as a high-risk group due to inadequacy of health, emotional, education, socioeconomy, and reproductive aspects [4].

Teenage pregnancy increases the risk of maternal and neonatal mortality and morbidity. The leading cause of death of 15–19-year-old girls is pregnancy and birth complication [5]. Their risk for eclampsia, postpartum endometritis, and systemic infection is higher than 20–24 years old women [6]. Besides, every year, around 5.6 abortions with 3.9 million of unsafe abortion practice were done to 15–19-year-old girls. It also contributes to the increasing number of maternal mortality and will consistently become reproductive health problems [1].

Neonates complications that arise from mothers under 20 years old are premature labor, low birth weight babies, malnutrition, respiratory distress, birth trauma, and jaundice [7]. Ultimately, their growth will be restricted and resulted in low APGAR score right after birth [8].

In Indonesia, data about maternal and neonatal outcomes of teenage pregnancy are still limited. To the best of our knowledge, this was the first study about the outcome of teenage pregnancy in West Java. Hence, the objective of this study was to compare the

maternal and neonatal outcomes among teenage and reproductive age pregnancies.

Material and Methods

This was a cross-sectional study of pregnant mothers in Hasan Sadikin General Hospital between the period of January 2015 and December 2018. After the ethical approval number 1148/UN6.KEP/EC/2019 from the Ethics Committee of Padjadjaran University was obtained, we recruited the subjects. The inclusion criteria were complete medical record data, maternal age between 15 and 35 years old, and reside in West Java. They were categorized into two groups: Teenage pregnancy (15–<20 years old) and reproductive age pregnancy (≥20–<35 years old). Patients who had previous medical histories of heart disease, renal disease, hypertension, diabetes mellitus, liver disease, thyroid disorder, neoplasm, and chronic infectious diseases before pregnancy were excluded from this study. Their electronic medical record data were then evaluated to compare both maternal and neonatal outcomes.

Statistical analyses were conducted using IBM® SPSS Statistics 21. We described the distribution of demographic characteristics, area of residence, occupation, marital, and education status. The comparison of both maternal and neonatal outcomes was then analyzed with $p < 0.05$ which was considered statistically significant.

Results

The total number of delivery admission during 2015–2018 was 9890, of which 994 (10.05%) were teenagers. Based on inclusion and exclusion criteria, a total of 3810 patients were included in this study (Figure 1). Teenage pregnancies accounted for 522 patients and reproductive age pregnancies for 3288 patients.

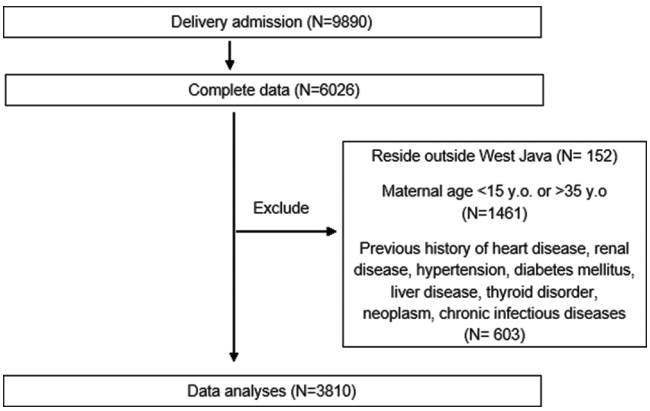

Figure 1: Research flow on data collection

Table 1: Demographic characteristics of subjects

	Reproductive age pregnancy (n = 3288)		Teenage pregnancy (n = 522)	
	n	%	n	%
Age of study group (years)				
Median (range)	18 (15–19)		27 (20–34)	
Area of residence				
Capital city	142	27.2	1216	37.0
Others	380	72.8	2072	63.0
Occupation				
Working mother	8	1.5	697	21.2
Non-working mother	514	98.5	2591	78.8
Marital status				
Married	510	97.7	3286	99.9
Unmarried	12	2.3	2	0.1
Education status				
Never attend school	12	2.3	72	2.2
Elementary school	89	17.0	205	6.2
Junior high school	222	42.5	545	16.6
Senior high school	197	37.7	2086	63.4
University	2	0.4	380	11.6

The median group ages were 18 and 27, respectively. The majority of subjects came from outside Bandung as the capital city of West Java and were non-working mothers. For the education status, teenage mothers were mostly attended school until junior high (42.5%) while the reproductive age mother was of senior high school graduates (63.4%). Most of the subjects were also married women. Subjects' characteristics are shown in Table 1.

Table 2 shows the comparison of maternal and neonatal outcome between teenage pregnancy and reproductive age pregnancy. Antepartum morbidities that were significantly prevalent in teenage group were eclampsia (5.2% vs. 1.9%, $p < 0.001$) and anemia (18.4% vs. 14.9%, $p = 0.038$). The incidence of antepartum hemorrhage (5.5% vs. 2.7%, $p = 0.007$), placenta previa (4.8% vs. 2.3%, $p = 0.009$), and malposition and malpresentation (13.5% vs. 9.4%, $p = 0.009$) was significantly higher in reproductive age mother than teenage mother. There were no statistical differences in preeclampsia ($p = 0.594$), premature rupture of the membrane ($p = 0.772$), and inadequate contraction ($p = 0.168$) in the two groups.

Table 2: Maternal and neonatal outcome

	Teenage pregnancy (n = 522)		Reproductive age pregnancy (n = 3288)		p-value
	n	%	N	%	
Preeclampsia	54	10.3	366	11.1	0.594
Eclampsia	27	5.2	64	1.9	<0.001**
Antepartum hemorrhage	14	2.7	180	5.5	0.007*
Premature rupture of the membrane	98	18.8	635	19.3	0.772
Inadequate contraction	21	4.0	180	5.5	0.168
Placenta previa	12	2.3	159	4.8	0.009*
Malposition and malpresentation	49	9.4	445	13.5	0.009*
Anemia	96	18.4	489	14.9	0.038*
Preterm delivery	142	27.2	613	18.6	<0.001**
Postpartum hemorrhage	1	0.2	48	1.5	0.017*
Spontaneous vertex delivery	319	61.1	1624	49.4	<0.001**
Cesarean section	146	28.0	1360	41.4	
Instrumental delivery	37	7.1	166	5.0	
Spontaneous bracht	20	3.8	138	4.2	
Maternal mortality					
Yes	3	0.6	11	0.3	0.425
No	519	99.4	3277	99.7	
Neonatal morbidity					
Fetal distress	70	13.4	402	12.2	0.446
Low birth weight	221	42.3	1190	36.2	0.007*
Neonatal mortality	40	7.7	278	8.5	0.543

All parameters analysis with Chi-square test, except for maternal mortality (Fisher's exact test). Significance at p<0.05* and p<0.001**.

For the postpartum maternal morbidity, preterm delivery (27.2% vs. 18.6%, p < 0.001) was more common in teenage group while postpartum hemorrhage (1.5% vs. 0.2%, p = 0.017) was more common in the older mother group. Cesarean section rate in adult mothers was more frequent than in teenage mother (41.4% vs. 28.0%, p < 0.001). In addition, the incidence of maternal death in this study was higher in teenage mothers but the difference was not significant (p = 0.425).

The neonatal morbidity that was found to be significantly different was low birth weight. Low birth weight babies were noted in 42.3% and 36.2% (p = 0.007) of the teenage mothers and adult mothers, respectively. The neonatal mortality among reproductive age mother was higher than the teenage pregnancy, but the difference was not significant (p = 0.543).

Discussion

In this study, the prevalence of teenage pregnancy was 10.05%. This prevalence was considered quite high among developing countries and higher than the prevalence in Indonesia. In other studies, it was found that the prevalence of teenage pregnancy ranges from 0.6% to 15.4% [8], [9]. Despite the legal regulation in our country, teenage marriages and pregnancies continue to occur with high incidence and still become a major public health concern.

From the characteristics of subjects, we found that the majority of teenage came from other cities outside the capital city which were more rural than the capital city. The IDHS data in 2017 also found that teenage pregnancy was more frequently found in rural areas rather than urban areas [4]. Other study also found that rural women have the highest proportion of teenage pregnancy [10].

Lower educational background and unemployment were found to be the major characteristics of teenage pregnancy in the present study. Furthermore, although both of teenage and reproductive mothers were mostly non-working mothers, the proportion of non-working teenage mothers was higher. It was an expected result as the other studies also found similar determinants of teenage pregnancy. The teenage pregnancy rate in non-working mothers was also found to be significantly higher in other previous studies [10].

Teenage mothers in this study tend to have lower educational levels than reproductive age mothers. Most of the teenagers were junior school graduate, while the reproductive age mothers were senior high school graduates. The governmental compulsory education program in our country should be 12 years or until senior high school. This finding reflects that the implementation of government programs was not optimum at the grassroot level. Whereas, the previous studies already stated that among adolescents in low-middle-income countries, higher education is associated with reduced teenage births and older age at marriage [11]. Completion of secondary school also provides benefit to empower them to become responsible of their own lives, motivate them to prevent pregnancy, and to improve their health and well-being [12]. Girls also were likely unable to avoid pregnancy due to knowledge gaps as a consequence of illiteracy and low level of education [1].

The obstetric outcomes that were found to have significantly higher incidence among teenage group were eclampsia, anemia, and preterm delivery. Another study with similar findings supports the present study. Eclampsia was increased among adolescent mothers [13]. This finding suggested that the teenage mother who had hypertension tends to develop eclampsia more frequently or reach medical care at the more severe condition as medical care was sought only when the condition has deteriorated. The condition of the mother, which was already severe when she reached the health facility, could be caused by several factors. According to the three delays model theory, the reasons that were very likely to be experienced by teenage mothers in this study were delays in decision-making to seek medical help and delays in reaching appropriate health facilities [14].

The higher incidence of eclampsia was also probably due to poor antenatal care by quality or they reluctantly seek for antenatal care [15]. However, we could not conclude due to limited data of antenatal care during pregnancy in this study.

Meanwhile, this study found that preeclampsia was not significantly different in both groups. Previous evidence from the WHO studies stated that the risk of hypertension had no association with their young age [16]. One possible explanation was probably due to the fewer presence of comorbidities among adolescent women [17].

Anemia was one of the major complications found among teenage mothers in our study. It was similar to another study that found teenage mothers were more likely to develop anemia when compared to adult women. A 2–3 times increased risk of anemia among teenage mothers was found in some studies [18], [19]. Teenage mothers whom themselves are growing are additionally burdened by the demands of pregnancy [18].

Another finding that was found to be significantly higher in teenage pregnancy was preterm delivery and low birth weight babies. Some studies confirmed this finding [20], [21]. A study in India also shown a nearly three times higher risk of preterm delivery and low birth weight babies among teenage pregnancy [18]. The low birth weight babies may impact their future health condition concerning coronary artery disease, hypertension, and type 2 diabetes [22], [23], [24], [25].

The more frequent incidence of antepartum and postpartum hemorrhage in older mothers was probably due to the incidence of hemorrhage in all pregnancies itself which was already high in our country. Previous evidence showed conflicting results. One group of studies found a higher incidence of antepartum hemorrhage and postpartum hemorrhage in teenage mothers [20]. However, the other studies have documented similar risk of hemorrhage between teenage and older pregnancies [26], [27].

Contrary to the other authors, the maternal death in this study was more frequent in teenage pregnancy than reproductive age pregnancy but the difference was not significant. The death of teenage mother in this study was probably also underestimated due to limitation and incomplete data. The increase in maternal mortality among teenage mothers was documented in other evidence. The UN report published in 1991 stated that teens aged <15 years were 5 times and teens aged 15–19 years were twice likely to die from maternal causes as older women [28]. The leading cause of death among girls aged 15–19 years based on the WHO data also due to complication during pregnancy and childbirth [1], [29]. A study in Chile found higher risk of maternal mortality only found in mothers <15 years old, while mothers 15–19 years were having lower risk of maternal death if compared to mothers 20–34 years old [30].

Conclusion

The incidence of teenage pregnancy in the tertiary hospital of West Java was quite high. Teenage pregnancies also had a higher risk of eclampsia, anemia, preterm delivery, and having low birth weight babies. Despite the various teenage and reproductive health programs in Indonesia, the implementation was challenging to raise the health status of teenage girls in this archipelago. More efforts, health system strengthening, and collaboration across sectors are needed to prevent teenage and high-risk pregnancy, especially in rural areas.

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