

Research Article

## Maternal and Fetal Outcome on Pregnancy in Advanced Maternal Age

### *Luaran Maternal dan Fetal pada Kehamilan Ibu Usia Lanjut*

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#### Abstract

**Objective:** Pregnancy in advanced maternal age (AMA) was classified as high risk. The study aims to provide a better description of pregnancy outcome in AMA.

**Method:** The cross sectional study was to review the demography, medical and obstetrics problems, mode of delivery, maternal and fetal outcome in Tangerang General Hospital as a referral center in Banten. The data were taken from medical records of 35-year-old and above women age who delivered on the period of January to December 2014.

**Result:** The total number of delivery and live birth was 6,107 and 5,926 respectively, including 1,548 (25.36%) pregnancies in AMA. The prevalence of grandmultiparities was 11.4%. The average education level was mostly elementary. The prevalence of hypertension in pregnancy was 34.6%. There was increasing trend of miscarriages from 10.8% in 35-40-year-old group to 25% in above 45-year-old group. Pregnancy complications were higher consisting of 3.2% multifetal, 16.6% malpresentation, and 7.1% placenta previa. Cesarean section rate was 33.6%. Maternal near-missed cases were 56 of 1000 and the maternal mortality rate (MMR) was 932 of 100,000 live births. The prevalence of stillbirth and perinatal mortality were 5.3% and 12.9%; respectively.

**Conclusion:** Adverse maternal and fetal outcome were higher in AMA as it takes special attention and multidiscipline-approached care started from preconception, antenatal, preparation of delivery, and also postpartum care.

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**Keywords:** advanced maternal age (AMA), fetal outcome, maternal outcome, pregnancy

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#### Abstrak

**Tujuan:** Kehamilan ibu usia lanjut memiliki risiko tinggi. Rumah Sakit Umum (RSU) Tangerang adalah pusat rujukan di provinsi Banten, sehingga diharapkan penelitian ini dapat menggambarkan luaran kehamilan pada ibu usia lanjut.

**Metode:** Penelitian ini menggunakan studi potong lintang yang melakukan kajian pada karakteristik demografi, masalah medis, obstetri, metode persalinan, luaran fetal dan maternal di RSUD Tangerang sebagai pusat rujukan Provinsi Banten. Data diambil dari rekam medis kasus kehamilan ibu usia lanjut di RSUD Tangerang dari Januari 2014 sampai Desember 2014.

**Hasil:** Terdapat 6.107 persalinan, 5.926 kelahiran hidup di mana 1.548 (25,36%) ibu usia lanjut. Sebanyak 11,4% grandemultipara, pendidikan rata-rata SD. Prevalensi hipertensi 34,6%. Abortus meningkat sebanding usia ibu, dari 10,8% pada usia 35-40 tahun sampai 25% pada usia  $\geq$  45 tahun. Komplikasi kehamilan lebih tinggi dari penelitian lain, yaitu kehamilan kembar 3,2%, malpresentasi 16,6% dan plasenta previa 7,1%. Seksio sesarea sebanyak 33,6% persalinan. Kejadian maternal near missed dan AKI yaitu 56 per 1000, dan 932 per 100.000 kelahiran hidup. Prevalensi kematian janin intrauterin dan perinatal adalah 5,3% dan 12,9%.

**Kesimpulan:** Luar maternal dan fetal yang tidak diinginkan sampai dengan kematian ibu dan janin lebih tinggi pada ibu usia lanjut, sehingga diperlukan perhatian dan penanganan khusus dimulai dari perencanaan kehamilan, asuhan antenatal, persiapan persalinan, dan asuhan nifas yang baik.

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**Kata kunci:** kehamilan ibu usia lanjut, luaran fetal, luaran maternal

## INTRODUCTION

Pregnancy in advanced maternal age (AMA) is generally defined as pregnancy in women aged 35 years old or older.<sup>1</sup> The trend of delayed childbearing is increasing, especially in developed countries, since last decade.<sup>2</sup> This situation also happened in Indonesia as it was reported by Indonesia Demographic Health Survey (IDHS) in 2013.<sup>3</sup> This accelerating demographic shift becomes major clinical and public concern.<sup>4</sup> Pregnancy in AMA is prone to have higher complications, whether it is caused by general degenerative process or decrease of reproductive function.<sup>5</sup>

Tangerang General Hospital is a tertiary and referral center in Banten as one of the most crowded provinces in Indonesia.<sup>3</sup> Annual Report of Tangerang General Hospital in 2013 recorded 7,534 deliveries, including 1,683 (22.3%) pregnancies in AMA.<sup>6</sup> Therefore, this study aims to provide a better description of pregnancy outcome in AMA.

## METHODS

The cross-sectional study reviewed the demography, medical and obstetrics problems, mode of delivery, maternal and fetal outcome in Tangerang General Hospital, Banten. The data were taken

from medical records of patients with the inclusion criteria of 35 year-old and above women delivering in Tangerang General Hospital from January 1, 2014 to December 31, 2014. Data entry and analysis used Microsoft Excel 2010.

## RESULTS

### The Characteristics of Patients

There were 6,107 deliveries and 5,926 live births in Tangerang General Hospital from January 2014 to December 2014. Of those, 25.3% or 1,548 cases were pregnancy in AMA. There were nineteen missing cases or incomplete medical records secondary to Death on Arrival (DOA) cases or

transferred to other departments.

Table 1 described the advanced maternal age during pregnancy whereas the majority of cases were due to multiparities. While majority of patients were only completed elementary school and the average time was spent for schooling was around 8.27 years.

### Maternal Outcomes

There were 38% pregnancies with medical disorders. Hypertension was the most common medical disorders as 529 cases (34.6%) followed by 17 cases (1.1%) of diabetes, 1 case (0.1%) of HIV and 33 cases (2.2%) of other diseases.

**Table 1.** Maternal Age to Parity and Education Level

Age	Parity				Education level			
	≤1	2 - 5	6 ++	Less	Elm	JHs	SHs	HD1
35 - <40	76	1060	103	22	546	404	238	29
Percent	6.1	85.6	8.3	1.8	44.1	32.6	19.2	2.3
40 - <45	10	195	61	5	124	51	61	25
Percent	3.8	73.3	22.9	1.9	46.6	19.2	22.9	9.4
≥ 45	2	12	10	5	11	4	3	1
Percent	8.3	50.0	41.7	20.8	45.8	16.7	12.5	4.2
Total	88	1267	174	32	681	459	302	55
	5.8	82.9	11.4	2.1	44.5	30.0	19.7	3.6

*Notes:*

*Less* : not completed Elementary school  
*Elm* : completed Elementary school  
*JHs* : completed Junior High school  
*SHs* : completed Senior High school  
*HD1* : Diploma and higher

**Table 2.** Maternal Age to Obstetrics Problems and Mode of Delivery

Age	First Trimester			Second & Third Trimester					Mode of Delivery			
	Ab	Ect	Mol	MuP	PS	MalP	PIP	PIA	Sp	CS	Vc	Fc
35 - <40	134	14	5	32	199	198	86	23	650	371	57	8
Percent	10.8	1.1	0.4	2.6	16.1	15.9	6.9	1.8	59.8	34.3	5.2	0.7
40 - <45	45	3	8	15	25	49	22	6	136	64	8	2
Percent	16.9	1.1	3.0	5.6	9.4	18.4	8.2	2.2	64.8	30.5	3.8	0.9
≥ 45	6	0	0	2	2	7	0	0	10	7	0	1
Percent	25.0	0	0	8.3	8.3	29.1	0	0	55.5	38.9	0	5.6
Total	185	17	11	49	226	254	109	29	796	442	65	11
Percent	12.1	1.1	0.7	3.2	14.8	16.6	7.1	1.9	60.7	33.6	4.9	0.8

*Ab* : Abortion  
*Ect* : Ectopic Pregnancy  
*Mol* : Molar Pregnancy  
*MuP* : Multiple Pregnancies  
*PS* : Previous Scar  
*MalP* : Malpresentation  
*PIP* : Placenta Previa  
*PIA* : Placental Abruption  
*Sp* : Spontaneous vaginal delivery  
*CS* : Cesarean Section  
*Vc* : Vacuum Extraction  
*Fc* : Forceps Extraction

\*The number and percentage of cases were based on the diagnosis in the labor ward and operating theater reports. It meant one patient might have two diagnosis of the above complication.

Table 2 showed obstetric problems in the first trimester lead to nonviable conception and problems which revealed in later gestational age. The rate of CS was high (33.6%) because AMA and multiparities had higher risk problems such as malpresentation, previous CS, placenta previa, placental abruption, and multiple pregnancy.

There were total of 66 maternal near-missed cases (56 in 1,000 live births) required special care in ICU or HCU on admission and there were 11 maternal mortality cases (the maternal mortality rate/MMR 932 per 100,000 live births).

### Fetal Outcomes

Study of fetal outcomes on pregnancy in AMA showed regardless of spontaneous or medically indicated, premature delivery comprised 26.4% of all deliveries; while, term deliveries were occurred in 849 cases (58%), serotines deliveries were in 13 cases (0.9%), and the rest were less than 20 weeks which could be abortion, molar pregnancy, and ectopic pregnancy. As recorded, another severe outcome as fetal congenital anomaly was presented in 35 cases (2.96%).

**Table 3.** Birth Weight

Birth weight (grams)	Cases	%
500 - 999	28	2.2
1000 - 1499	42	3.4
1500 - 2499	188	15.0
2500 - 3999	971	77.5
4000 - 4499	21	1.7
4500+	2	0.2
Total	1251	100.0
Abortus, ectopic, molar, non-institutional delivery	278	
Total	1529	

The incidence of Extremely Low Birth Weight (ELBW), Very Low Birth Weight (VLBW), and Low Birth Weight (LBW) were 2.2 %, 3.4%, and 15%; respectively. However, the incidence of macrosomia (>4000 grams) was 1.9%. After excluding early pregnancy loss and non-institutional delivery, there were 5.3% intrauterine fetal death and 12.9% perinatal death.

### DISCUSSION

The Age Specific Fertility Rate (ASFR) is the number of live births per 1,000 women in a specific age group for particular geographic area in the point of time annually.<sup>7</sup> Age specific fertility rate (ASFR) for 35-year-old and above Indonesian women was 16.76%; however, this study reported the prevalence was 25.3%.<sup>8</sup> Higher proportion of pregnancy in AMA in this institution showed that this group had major clinical and public health problem because AMA is consistently associated with adverse pregnancy outcomes.

In this study, 5.8% of pregnancy in AMA experienced conceiving for the first time. The rate was lower than in Europe (11%).<sup>2</sup> It showed that pregnancy in AMA in this institution was caused by multiparity compared to delayed childbirth.<sup>9</sup> Indonesia Demographic Health Survey (IDHS) 2013 reported the average number of children for 40-49 year-old women were 3.2 in Indonesia, 3.8 in Banten, and 4.8 in this institution.<sup>3</sup>

In 2013, the average duration of schooling for more than 15 years was 8,62 in Banten Province.<sup>10</sup> Most patients had the educational level only elementary graduated with the average duration of schooling was 8.27 years. The patients' educational level was under the average of Banten province whereas the older population had lower education level.

Education is very important and it contributed to society behavioral changes toward personal or family health. Apart from the formal education, preventive health knowledge needs to be improved through health counseling and seminar for pregnant lady or her family members. For example, Chile was able to reduce 93.8% MMR in 50 years drastically from 293.7 to 18.2 per 100,000. Learning all contributing factors, women educational attainment was the main factors. Educational status will affect birth rate, delivery process attended by skill professional health, sanitation, and personal hygiene.<sup>11</sup>

Medical disorders in this study were 38% consisting of 34.6% cases of hypertension. However, the prevalence of hypertension in pregnancy was reported to be 10-15% in England.<sup>2</sup> It was two to three times more frequent. Therefore, the further prospective study should be conducted to determine the causes of this event. The prevalence of diabetes on pregnancy in AMA was 1.1%, as this

number was lower than in United Kingdom (2-5%) in spite of same screening guideline between Indonesia and United Kingdom.<sup>2</sup> This finding was not correlated with the fact that being older and Asian had more prone to diabetes. Diabetes screening may not performed well in daily practice.

This study found 0.1% of pregnancy in AMA suffering from HIV. In Indonesia, the HIV prevalence in pregnancy was 0.38% which was reported by Ministry of Health (MOH) in 2011. The HIV screening should be offered to all pregnant women as HIV in society like iceberg phenomena whereas the actual incidence is higher.<sup>12</sup>

There was also an increasing trend of miscarriages from 10.8% in 35-40 years old, 16.9% in 40-45 years old to 25% after 45 years old. These numbers were lower than other countries such as Denmark which had 24.6%, 51%, and 93.4%; respectively, because of poor documentation and low educational level in society.<sup>2</sup>

In this study, the prevalence of ectopic pregnancy was 1.1%. This was also documented lower than other countries such as Denmark which showed 1.4% at the age of 21 and 6.9% at the age of more than 44.<sup>2</sup>

Molar pregnancy in this study was reported 4 per 1,000 at the age of 35-40 and 30 per 1,000 at the age of 40-45. This number was much higher than 1 per 1,000 in United Kingdom.<sup>13</sup>

Multiple pregnancy was reported 32 per 1,000 live births which was three times higher on pregnancy in AMA than younger women. However, it was lower than other developed countries as in developed countries had higher Artificial Reproductive Therapy (ART) for pregnancy in AMA, such as in England which was resulting 110 per 1,000 live births.<sup>7</sup>

The prevalence for placenta previa was 7.1% which showed almost twice than reported in Europe, such as 3.7% in Turkish because pregnancy in AMA in Indonesia had the characteristics of higher parity, CS, and curettage. They were the risk factors for placenta previa.<sup>14</sup>

In 1995-2005, Yaniv, et al. reported higher risk of fetal malpresentation in nulliparous in AMA group (6.9% in younger than 35 year-old women and 12.4% in AMA).<sup>15</sup> In this study, the result described 16.6% of fetal malpresentation cases. Higher fetal malpresentation may be caused by

multiparity as the tonus and elasticity of abdominal wall were malformed by age, trauma, and stretch due to repeatedly being pregnant.

Caesarean section rate in this study pointed out 33.6%. Majority of the causes were due to cephalopelvic disproportion, previous CS, malpresentation, and fetal distress.<sup>16</sup> Previous CS was documented to be 14.8% in AMA and 4.9% in younger women.<sup>6</sup>

The maternal mortality rate (MMR) in Tangerang general hospital was calculated to be 607.5 per 100,000 live births equal to 1.7 times than MMR in Indonesia globally which counted for 359 per 100,000 live births.<sup>10</sup> This was occurred due to the Tangerang General hospital is a tertiary hospital in Banten Province. As a comparison to other tertiary hospitals in a developing country such as Western Maharashtra Hospital India in 2001-2010, the MMR was 302.23/100,000 live births equal to 1.42 times higher than MMR globally (212 per 100,000 live births).<sup>17</sup>

There were 66 maternal near-missed cases (55.9 in 1,000 live births) that required special care in ICU or HCU during admission, contributing to 11 maternal mortality cases (MMR 932.2 per 100,000 live births in AMA population). It showed that AMA carries high risk for complications.

There was no difference for prevalence of congenital anomaly in older women for this study compared to general population since fetal anomaly and chromosomal screening was not offered to the patients. Premature delivery was 55 per 1,000 deliveries lower than reported by Laopai-boon, et al. which indicated 67 per 1,000 delivery.<sup>1</sup> This was due to the limitation of NICU availability in the observed hospital.

There was no difference for prevalence of congenital anomaly in older women, while the prevalence of stillbirth in AMA was twice than younger women.<sup>18</sup> The perinatal mortality in AMA population was 12.9%. This data was associated with study by Reddy and Ko, et al. in 2001 that they showed the increment of IUFD was 1.28 times in 35-39 year-old women and 1.79 times in 40 year-old women compared to younger women.<sup>19</sup>

The limitations of the study were not included all AMA cases in population; as retrospective study highly depended on consistency and accuracy of documentation. Incorrect entries may lead to wrong conclusion.

## CONCLUSIONS

Adverse maternal and fetal outcomes such as maternal near-missed, maternal death, stillbirth, and perinatal mortality were higher in AMA, as it needs special attention and multidiscipline-approached care started from preconception, antenatal, preparation of delivery, and postpartum care.

A meticulous documentation is vital for formulating epidemiological and management strategies that may have considerable implications for the provision of resources in the obstetric and pediatric specialties.

It is also useful for hypotheses-generating studies, or studies directed at one specific association between risk factors and maternal or fetal outcomes in order to confirm or refute possible association. This is in view of the future planning and implementation of the policies and guidelines in the management of advanced maternal age as high risk group.

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