

OBSTETRICS

Risk of Low Birth Weight and Adverse Pregnancy Outcomes in Adolescent Pregnancies at Chainat Hospital

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ABSTRACT

Objective: To compare maternal and neonatal outcomes between adolescent and adult pregnancy, focused on the risk of low birth weight (LBW) infants.

Study design: Retrospective study.

Materials and Methods: A total cases of 594 from 625 pregnant women that delivered at Chainat Hospital between June 1 and November 30, 2008 were recruited in this study. Two groups were divided by aged, 259 cases aged below 20 years old and 335 cases aged between 20-25 years old. The demographic, obstetric and neonatal outcomes data were collected from all relevant inpatient records and were reviewed and compared between two groups. The statistical analysis used were unpaired student's t-test and Pearson Chi-square test.

Results: The adolescent mothers had significant lower mean hematocrit than the adult mothers (mean $34.7 \pm 3.7\%$ and $35.5 \pm 3.5\%$, $p=0.005$). The adolescent group had significant higher risk of preterm birth (RR 2.31, CI 1.25 -4.24, $p=0.006$) and LBW infants (RR 1.96, CI 1.16 -3.31, $p=0.010$). The maternal aged between 13-16 years had the highest relative risk of LBW infants (RR 2.49, CI 1.19 -5.21, $p=0.013$).

Conclusion: Adolescent pregnancy is one of the risk factor of LBW infants and preterm delivery.

Keywords: adolescent pregnancy, low birth weight infants, preterm birth

Introduction

LBW infants is the important public health problem in Thailand and one of the most common adverse pregnancy outcomes discussed worldwide. This condition is the cause of many neonatal morbidities and mortalities. The incidence of LBW infants in Thailand in 1998 was 8.1 %.⁽¹⁾ In attempt to lower this rate, the Ninth Five-Year National Health Development Plan 2002-2006, Thailand, plan to reduce the LBW infants to 7% of total live birth.

Adolescent mother is one of the important risk

factors of delivering low birth weight infants. Adolescent pregnancy, defined by maternal age less than 20 years old, is the cause of higher maternal risk and adverse neonatal outcomes in many countries. Each year, almost 750,000 women aged between 15-19 years become pregnant especially in the underdeveloped and the developing countries.⁽²⁾

In Thailand in 2002 the adolescent birth rates were 49 per 1000, which aged 15-19 years.⁽³⁾ Now adolescent pregnancy is a challenging public health issue around the world. Several studies looked for

the adverse outcomes associated with adolescent pregnancy such as preeclampsia, premature rupture of membranes (PROM), gestational diabetes mellitus and, more interesting in LBW infants, preterm birth, and small-for-gestational-age infants.⁽⁴⁻⁷⁾

The purpose of this study is to compare the maternal complications and fetal outcomes of the adolescent pregnancy to adult pregnancy delivered at Chainat Hospital and focusing on the LBW infants.

Material and Method

This study was a retrospective study. The data was collected from the labor records, inpatient records, perinatal records and patient's information charts from Unit of Obstetrics and Gynecology, Chainat Hospital. The study groups were the pregnant women aged below 20 years (adolescent group) and aged between 20-25 years (adult group), who delivered at Chainat Hospital between June 1 and November 30, 2008. Pregnant women aged between 20-25 years were the reference group in our study because they had the lowest risk of maternal and neonatal adverse outcomes. According to the previous study, prevalence of LBW infants in Thailand were 12% and 4% in adolescent and adult pregnancy, respectively.⁽⁶⁾

Demographic data, including maternal age, gravidity, parity, previous abortion, gestational age and number of antenatal care were collected. Maternal complications such as anemia (hematocrit less than 30%), pregnancy induced hypertension (PIH), premature rupture of the membrane (PROM), placenta previa, preterm birth, breech presentation, and mode of delivery were collected. Neonatal complications included LBW infants (less than 2500 grams) and birth asphyxia (Apgar score less than 7 at 1min.) were recorded.

Statistic analysis was undertaken using SPSS version 12 for Microsoft Windows, SPSS Inc, Chicago, USA. The prevalence of important demographic data, risk factors and adverse outcomes were compared between the study (adolescent) and control (adult) group. Variables

were compared using unpaired student's t-test and Pearson Chi-square test. Relative risk ratio and 95% confident interval of these complications were calculated. Level of significant was $p < 0.05$.

Results

The ratio of adolescent births and total births at Chainat Hospital during 3 years period (2006 - 2008) were 442/2,280(19.4%), 455/2,465(18.5%) and 490/2,409 (20.4%) respectively. Between June 1 and November 30, 2008, there were 1,204 total births at Chainat Hospital, of which pregnant women aged 25 years and less represented 625 birth cases, 259 adolescent pregnancies and 335 adult pregnancies were selected in this study. The 13 adolescent pregnancies and 18 adult pregnancies were excluded from the study because of inadequate data. Maternal demographic characteristics in both groups were presented in Table 1. The mean age of adolescent mothers was 17.4 ± 1.3 years old, with the youngest case was 13 years old, and the mean age of adult group was 22.5 ± 1.7 years old. The difference of mean hematocrit was significant lower in adolescent group than adult group (mean hematocrit 34.7 ± 3.7 % and 35.5 ± 3.5 %, $p=0.005$). Primipara or multipara pregnancy was significant higher in the adult group than adolescent group (119/335, 35.5% and 23/259, 8.9%, $p < 0.00$). There was no significant different of mean gestational age (GA), previous abortion, number of antenatal care visits and anemia between both groups.

Comparison of pregnancy outcomes between adolescent and adult groups were presented in Table 2. There were significant increase in risk of LBW infant (RR 1.96, 95% CI 1.16-3.31, $p= 0.010$) and preterm birth (RR 2.31, 95% CI 1.25-4.24, $p= 0.006$) in adolescent group but placenta previa (RR 0.35, 95% CI 0.13-0.95, $p= 0.031$) and cesarean section (RR 0.61, 95% CI 0.44-0.86, $p= 0.004$) were found significant higher in adult group. The differences for breech presentation, PROM, PIH and birth asphyxia between two groups were not statistically significant.

There were statistically significant risk of LBW infants in younger adolescent group (RR 2.49, 95% CI 1.19-5.21, p= 0.013) and older adolescent group (RR 1.79, 95% CI 1.01-3.16, p= 0.044) compared with the adult group, as shown in Table 3.

Table 1. Comparison of the demographic data

Demographic data	Adolescent group	Adult group	p-value
	n = 259(%)	n = 335(%)	
Mean age (years) \pm SD	17.4 \pm 1.3	22.5 \pm 1.7	< 0.001
Mean GA at delivery (weeks) \pm SD	38.3 \pm 1.9	38.4 \pm 1.7	0.614
Primipara or multipara	23 (8.9)	119 (35.5)	< 0.001*
Previous abortion	13 (5.0)	24 (7.2)	0.283
Antenatal care visit (\geq 4 times)	241 (93.4)	317(94.6)	0.425
Mean hematocrit (%)	34.7 \pm 3.7	35.5 \pm 3.5	0.005*
Anemia	19 (7.3)	13 (3.9)	0.064

p-value by T-test and Pearson Chi-Square; * statistically significant

SD = standard deviation; GA= gestational age

Table 2. Comparison of the pregnancy outcomes between both groups

Pregnancy outcomes	Adolescent group	Adult group	RR (95%CI)	p-value
	n =259	n = 335		
	(%)	(%)		
LBW infant	38 (14.7)	27 (8.1)	1.96(1.16-3.31)	0.010*
Preterm birth	30 (11.6)	18 (5.4)	2.31(1.25-4.24)	0.006*
Placenta previa	5(1.9)	18 (5.4)	0.35(0.13-0.95)	0.031*
Breech presentation	9(3.5)	5 (1.5)	2.38(0.79-7.18)	0.114
PROM	6 (2.3)	8 (2.4)	0.97 (0.33-2.83)	0.955
PIH	14(5.4)	11 (3.3)	1.68 (0.75-3.78)	0.202
Birth asphyxia	0(0)	2 (0.6)	N/A	0.213
Cesarean section	86(33.2)	150(44.8)	0.61(0.44-0.86)	0.004*

p-value by Pearson Chi-Square; * statistically significant

LBW = low birth weight; PROM = premature rupture of membrane;

PIH = pregnancy induced hypertension

Table 3. Relative risk (RR) of LBW infants in younger and older adolescent pregnancies compared with the adult group.

Age groups	Number of LBW infant (%)	RR(95%CI)	p-value
13-16 years	12/67 (17.9)	2.49 (1.19-5.21)	0.013*
17-19 years	26/192 (13.5)	1.79 (1.01-3.16)	0.044*
20-25 years	27/335 (8.1)		

p-value by Pearson Chi-Square; * statistically significant

Discussion

This study showed that the complications of pregnancy especially the LBW infants and preterm birth were associated with adolescent pregnancy. From the study, there was the higher rate of anemia in adolescent group than adult group which may caused by poor nutrition. We found that pregnancy outcomes such as LBW infants and preterm birth in adolescent group were significant higher than adult group. The relative risk of breech presentation and PIH in the adolescent group was higher than the adult group, but not significant. This results may be explained by that the adolescent group tended to be unmarried, still in high school, unplanned pregnancy and they also have the problems of biological immaturity concomitant with inadequate nutrition and poor maternal self care. There are many studies that reports the same result of this study about the association between adolescent pregnancy and LBW infants.^(4,8,9) In Thailand, our results were similar with the study of Watcharaseranee et al⁽¹⁰⁾ at Chonburi Hospital in 2001-2005, which found significantly increase incidence of preterm birth and LBW infants in women aged between 13-20 and 20-25 years old. Although some studies concluded that adolescent pregnancy are not at an appreciably increased risk of preterm,^(11,12) most studies had found elevated rates, particularly among the youngest teen.^(4,13,14) Our study also showed this increased risk of preterm in adolescent group.

No statistically significant difference in breech presentation, PIH, PROM and birth asphyxia were

found in this study. This might be limited by inadequate sample size for these uncommon outcomes in our study.

In summary adolescent pregnancy is associated with LBW infants and preterm birth. They also have higher risk of some conditions such as anemia, breech presentation and PIH. Obstetrician should pay attention in all adolescent pregnancies to prevent these problems.

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ความเสี่ยงต่อทารกแรกเกิดน้ำหนักน้อยและผลเสียจากการตั้งครรภ์ของมารดาวัยรุ่นที่โรงพยาบาลชัยนาท

มาในช่วงสิทธิ์ล้ำค่า

วัตถุประสงค์ : เพื่อศึกษาเปรียบเทียบผลของการตั้งครรภ์ต่อมารดาและทารก ในกลุ่มมารดาวัยรุ่น กับ กลุ่มมารดาผู้ใหญ่ โดยมุ่งประเด็นการศึกษาไปที่ความเสี่ยงต่อทารกแรกเกิดน้ำหนักน้อย

รูปแบบการศึกษา : การศึกษาแบบย้อนหลัง

วัสดุและวิธีการ : ศึกษาจากสตอรี่ที่ตั้งครรภ์และคลอดที่โรงพยาบาลชัยนาท จำนวน 594 ราย จากทั้งหมด 625 ราย ที่คลอดที่โรงพยาบาลชัยนาทระหว่างวันที่ 1 มิถุนายน ถึงวันที่ 30 พฤศจิกายน พ.ศ. 2551 โดยแบ่งเป็น 2 กลุ่ม กลุ่มแรกเป็น สตรีตั้งครรภ์ที่ อายุน้อยกว่า 20 ปี จำนวน 259 ราย และกลุ่มที่สองเป็นสตรีตั้งครรภ์ที่อายุ 20-25 ปี จำนวน 335 ราย ข้อมูลทั้งหมดของมารดาและภาวะแทรกซ้อนทางมารดาและทารกจะว่างกลุ่มทั้งสองเก็บรวบรวมจากเวชระเบียนคนไข้ใน และได้นำมาศึกษาเปรียบเทียบกัน

ผลการศึกษา : ในกลุ่มมารดาวัยรุ่นพบความเข้มข้นของเลื่อน้อยกว่ากลุ่มมารดาผู้ใหญ่อย่างมีนัยสำคัญ ($34.7 \pm 3.7\%$ และ $35.5 \pm 3.5\%$, $p=0.005$) และพบความเสี่ยงต่อการคลอดก่อนกำหนด ($RR 2.31$, $CI 1.25 - 4.24$, $p=0.006$) และทารกแรกเกิดน้ำหนักน้อยมากกว่าอย่างมีนัยสำคัญ ($RR 1.96$, $CI 1.16 - 3.31$, $p=0.010$) มารดาวัยรุ่นที่อายุ 13-16 ปี พบรisk ความเสี่ยงต่อการคลอดทารกแรกเกิดน้ำหนักน้อยมากที่สุด ($RR 2.49$, $CI 1.19 - 5.21$, $p=0.013$)

สรุป : มารดาวัยรุ่นมีความเสี่ยงต่อการตั้งครรภ์หลายประการโดยเฉพาะอย่างยิ่ง ภาวะการคลอดก่อนกำหนดและการคลอดทารกแรกเกิดน้ำหนักน้อยกว่าปกติ
