The Incidence and Complications of Teenage Pregnancy at Chonburi Hospital

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Objective: *This study aimed to determine the incidence of teenage pregnancy and compare obstetric and neonatal complications of teenage mothers with adult mothers.*
Material and Method: *This is a retrospective study conducted at the Department of Obstetrics and Gynecology, Chonburi Hospital, Thailand. The study group consisted of primigravida women aged 13-20 years who gave birth at Chonburi Hospital from 1 January 2000 to 31 December 2005. The control group consisted of primigravida women aged 20-25 years who gave birth during the same period. Demographic, obstetric, and neonatal complications information were collected and compared between the study and control groups.*
Results: *The study group consisted of 2,490 women and the control group consisted of 3,909 women. The study found that incidence of teenage pregnancy at Chonburi Hospital was 90 cases per 1,000 mothers. The study group had a lower gestational age at delivery than the control group and a higher preterm delivery rate (20.1% vs 13.9%, $p < 0.001$). The study group had more inadequate antenatal care than control group (25.9% vs 13.4%, $p < 0.001$). Vaginal delivery was the major route of delivery in study group. Anemia was a significant difference between the study and control groups (17.1% vs 11.1%, $p < 0.001$). Low birth weight infant rate in study group was higher than control group significantly.*
Conclusion: *The incidence of teenage pregnancy was found to be 9%. Teenage mothers had lower levels of education and higher levels of inadequate antenatal care. Preterm labour and anemia were the obstetric complications in the teenage pregnancy. Low birth weight was the only neonatal complication in teenage pregnancy in the study.*

Keywords: *Teenage pregnancy, Preterm labor, Low birth weight*

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Teenage pregnancies are a common public health issue, in developed and developing countries (e.g. teenage sexual activity is increasing in Thailand leading to a larger number of teenage pregnancies). A review of sexual behaviour among Thai adolescents revealed that in 1998 approximately 30% of males and 75% of females aged 15-18 years had already engaged in sexual intercourse, had a lack of knowledge about fertility, and infrequent use of contraception[1]. Thailand's Ministry of Health reported incidence of teenage pregnancy of 104.4, 117.6, 108, and 107 births per 1,000 women in the years 2000, 2001, 2002, and 2003 respectively[2].

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Previous studies of pregnancy complications in teenage mothers have yielded conflicting results. The study of Osborne et al revealed that anaemia was a significantly complication in teenage pregnancy[3]. The study of Smith et al found that teenage mothers had higher rates of stillbirths than adult mothers[4]. The study of Reichman et al found that teenage pregnancies had a higher risk of a low gestational age, low birth weight, perinatal morbidity and anaemia[5]. The study of Eure et al found that common complications in teenage pregnancies were preterm labour and pre-eclampsia[6].

In 1999 the incidence of teenage pregnancy at Chonburi Hospital was 11%. The aim of this study was to determine the incidence of teenage pregnancy and assess the specific maternal and neonatal compli-

cations in teenage pregnancies at Chonburi Hospital, during the period from 1 January 2000 to 31 December 2005.

Material and Method

This is retrospective study set at the Department of Obstetrics and Gynecology, Chonburi Hospital, Thailand. The authors reviewed the electronic medical records from the hospital's labour room database. The research proposal was approved by ethical committee of Chonburi hospital.

The study group consisted of primagravida (teenage) women aged 13-20 years and the control group consisted of primigravida (adult) women aged 20-25 years. Both the study group and the control group consisted of women who gave birth at Chonburi Hospital from January 1, 2000 to December 31, 2005.

The following variables were extracted from medical records: maternal age, gestational age at delivery, level of education, hematocrit, numbers of antenatal care, route of delivery, obstetric complications (including cephalopelvic disproportion (CPD), fetal distress, premature rupture of membrane (PROM), abnormal presentation, placenta previa, preeclampsia, postpartum hemorrhage (PPH) and neonatal complications (including low birth weight, extremely low birth weight, birth asphyxia and stillbirth).

Statistical analysis was undertaken using SPSS computer software (SPSS Version 12 for Microsoft Windows, SPSS Inc, Chicago, USA). Data was analysed using descriptive statistics and expressed in terms of mean, standard deviation and percent Chi-square (or student's test) for comparing mean values. Results were considered to be statistically significant at $p < 0.05$.

Results

During the five year study period there were 27,666 births at Chonburi Hospital, of which teenage mothers represented 2,490 birth cases. The incidence of teenage pregnancies (the study group) during the study period therefore averaged 9%. In the control group, there were 3,909 birth cases. Maternal demographic data is shown in Table 1.

A higher proportion of the study group completed primary or secondary school, significantly more than the control group (91.9% vs 67.5%, $p < 0.001$). The study group had higher levels of inadequate antenatal care (less than 4 times) than control group (25.9% vs 13.4%, $p < 0.001$). Route of delivery was shown in Table 2.

Obstetric outcomes and neonatal outcomes were shown in Table3 and Table 4 respectively.

Preterm labour was the most common obstetric complication in the study group (20.1% vs 13.5%, $p < 0.001$). Anaemia was significantly different between the two groups (17.1% vs 11.1%, $p < 0.001$). On the other hand, cephalopelvic disproportion (CPD) rate was higher in the control group than the study group (4.9% vs 7.8%, $p < 0.05$).

The mean birth weight of infants in the study and control groups was 2,890 and 2,975 grams respec-

Table 1. Maternal demographic data

	Study group (n = 2,490)	Control group (n = 3,909)	p-value
Maternal age (years)	18.03 ± 1.38	22.50 ± 1.45	-
Level of education			
Primary school	763 (30.6)	730 (18.7)	<0.001
Secondary school	1,527 (61.3)	1,908 (48.8)	<0.001
Diploma	199 (8)	1,065 (27.7)	<0.001
Bachelor degree	1 (0.03)	206 (53)	<0.001
Gestational age at delivery (week)	38.61 ± 6.85	39.19 ± 2.85	0.001
Hematocrit (%)	36.65 ± 5.91	37.71 ± 9.27	<0.001
VDRL positive	4 (0.12)	8 (0.8)	0.500
HIV positive	20 (0.6)	30 (0.8)	0.614
Antenatal care visit			
No ANC	179 (7.2)	134 (3.4)	<0.001
ANC < 4 times	466 (18.7)	389 (10.0)	<0.001
ANC ≥ 4 times	1,845 (74.1)	3,386 (86.6)	<0.001

Data present as mean ± SD and n (percentage)
NS: Not statistically significant

Table 2. Route of delivery

	Study group (n = 2,490)	Control group (n = 3,909)	p-value
Normal delivery	1,649 (66.2)	1,835 (46.9)	<0.001
Operative vaginal delivery	417 (16.7)	899 (23.0)	<0.001
Cesarean section	424 (17.1)	1,175 (30.1)	<0.001

NS: Not statistically significant

Table 3. Obstetric complications

	Study group (n = 2,490)	Control group (n = 3,909)	p-value
Preterm labor	353 (20.1)	425 (13.5)	<0.001
Cephalopelvic disproportion (CPD)	121 (4.9)	304 (7.8)	<0.001
Anemia (Hct < 33%)	427 (17.1)	432 (11.1)	<0.001
Fetal distress	80 (3.0)	127 (3.2)	0.014
Premature rupture of membrane (PROM)	14 (0.6)	28 (0.7)	0.140
Abnormal presentation	81 (3.3)	149 (3.8)	0.135
Placenta previa	51 (0.7)	12 (0.3)	0.295
Preeclampsia	33 (1.3)	46 (1.2)	0.339
Multiple gestation	52 (1.8)	58 (1.5)	0.300
Postpartum hemorrhage (PPH)	11 (0.4)	11 (0.3)	0.197

Data present as mean $\pm$ SD and n (percentage)
NS: Not statistically significant

Table 4. Neonatal Complications

	Study group (n = 2,490)	Control group (n = 3,909)	p-value
Birth weight (grams)	2,890 $\pm$ 523	2,975 $\pm$ 491	<0.001
Birth weight < 1,500 grams	64 (2.6)	55 (1.4)	0.001
Birth weight 1,500-2,500 grams	357 (14.3)	465 (11.9)	0.003
Birth weight > 2,500 grams	2,069 (83.1)	3,389 (86.7)	<0.001
Apgar score at 1 min < 7	127 (5.1)	189 (4.8)	0.337
Apgar score at 5 min < 7	42 (1.7)	70 (1.8)	0.419
Stillbirth (Apgar at 1 min = 0)	20 (0.8)	34 (0.9)	0.400

Data present as mean$\pm$ SD and n (percentage)
NS: Not statistically significant

tively. Low birthweight (1,500-2,500 grams) was higher in the study group (14.3% vs 11.9%, p = 0.003). Extremely low birthweight (less than 1,500 grams) was higher in the study group (2.6% vs 1.4%, p = 0.001).

Discussion

From this study, the incidence of teenage pregnancy was found to be 90 per 1,000 mothers. This is lower than that observed in the study by the Thai Ministry of Health, where the incidence rate of Thai teenage pregnancy in the year 2003 was found to be 107 per 1,000 mothers[7], but is higher than that observed in the United States (41.7 per 1,000 mothers)[2].

Chonburi Hospital is located in an urban area which may have higher levels of education than other more rural areas of Thailand, whereby they may have more knowledge about contraception (in order to prevent unwanted pregnancies).

This study found that teenage mothers had significantly lower levels of education than adult mothers, similar to the findings of Taffa. et al[8] and Supadit et al[9]. Teenage mothers were also found to

have a higher level of inadequate antenatal care, similar to the findings in Simoes et al[10]. The former observation may be due to the lower levels education among teenage mothers and because teenage pregnancies tend to be "unwanted" pregnancies.

The study by Supadit et al also showed that low levels of education and inadequate antenatal care increased the risk of low birth weight infants and preterm labour[9].

This study found that teenage mothers had a higher incidence of anemia. The incidence rate of anaemia among teenage pregnancies was 17.1%, similar to that found by Suebnukarn et al[11] and Berenson et al[12]. The increased risk of this complication was most likely to have resulted from poor nutritional habits and low calorie intake by teenage mothers[12].

Preterm labour is common complication in teenage pregnancy. The incidence of preterm labour among teenage pregnancies was 20%, similar to that observed by Eure et al[6], Suebnukarn et al[11], Hedinger et al[13], and Khunawitikul et al[14]. The increased risk of preterm labour may be due to poor nutrition, inadequate antenatal care and lower levels of education. Other reasons may be connected to marital and socioeconomic status, but are not considered in this study.

In this study, teenage mothers had a higher proportion of normal deliveries compared to adult mothers. This may be due to the fact that teenage mothers give birth to smaller infants. These findings were in accordance with the studies of Ziadeh[17] but in contrast to studies of Scholl et al[18]. The proportion of operative deliveries was higher in adult mothers, and may be due to adult mothers having higher rates of cephalopelvic disproportion (CPD) and because adult mothers have higher rates of elective caesarean sections.

This study found that cephalopelvic disproportion (CPD) was found more prevalent in the adult control group than in the teenage study group, similar to the findings of Horon et al[15] and Fraser et al[16]. Our explanation for this observation is that teenage mothers in this study delivered smaller infants and had a high proportion of preterm labour cases. From this study, the mean maternal age of the teenage study group was 18.03 years, therefore indicating that the majority of mothers may have a bony pelvis that would be completely developed. This can also explain the low incidence for cephalopelvic disproportion (CPD) in this group.

The significant difference in neonatal outcomes between teenage and adult mothers was birth weight. A higher proportion of teenage mothers gave birth to low birth weight infants. This may be due to biological immaturity and poor socioeconomic environment. This finding is consistent with many other studies[1,12,19].

The key advantage of this study is its large number of subjects (i.e. large study and control group sample sizes) and therefore the associated statistical reliability of its results. The key disadvantage of this study is that it is retrospective by design and therefore there is no control over the collection of the data for the purposes of the study. The inability to specify the design of the study means that confounding factors cannot be controlled (i.e factors that are associated with pregnancy outcomes such as smoking and socioeconomic static). Another disadvantage of the study is that our control group may not represent all adult pregnancy (20 to 35 years). Thus, a wider sample would provide a better comparison between adult and teenage pregnancy.

Conclusion

The incidence of teenage pregnancy at Chonburi Hospital from 1 January 2000 to 31 December 2005 was 9%. Teenage pregnancies pose complications that include anemia, preterm labour and low birth weight infants.

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อุบัติการณ์การตั้งครรภ์และภาวะแทรกซ้อนของสตรีตั้งครรภ์วัยรุ่นในโรงพยาบาลชลบุรี

ณหทัย วัชระเศรณี, พิชา ปิ่นจันทรา, สมคิด ปิยะมาน

วัตถุประสงค์: *เพื่อศึกษาอุบัติการณ์การเกิดทารกของสตรีตั้งครรภ์วัยรุ่นครรภ์แรกที่มาคลอด ณ ห้องคลอด โรงพยาบาลชลบุรี ระหว่างวันที่ 1 มกราคม พ.ศ. 2543 ถึง 31 ธันวาคม พ.ศ. 2548 โดยมีวัตถุประสงค์รองเพื่อศึกษาเปรียบเทียบภาวะแทรกซ้อนทางมารดาและทารกระหว่างสตรีตั้งครรภ์วัยรุ่นและสตรีตั้งครรภ์อายุระหว่าง 20-25 ปี*

วัสดุและวิธีการ: *การศึกษาฉบับนี้เป็นการศึกษาแบบย้อนหลัง กลุ่มศึกษาประกอบด้วยสตรีตั้งครรภ์ที่มีอายุระหว่าง 13-20 ปี ครรภ์แรกที่มาคลอด ณ ห้องคลอดโรงพยาบาลชลบุรี กลุ่มเปรียบเทียบประกอบด้วยสตรีตั้งครรภ์ ครรภ์แรก อายุระหว่าง 20-25 ปี ที่มาคลอดช่วงเวลาเดียวกัน โดยศึกษาข้อมูลทั่วไปของมารดาและเปรียบเทียบภาวะแทรกซ้อนทางมารดาและทารกระหว่างทั้ง 2 กลุ่ม*

ผลการศึกษา: *กลุ่มศึกษาประกอบด้วยสตรีตั้งครรภ์วัยรุ่นทั้งหมด 2,490 คน กลุ่มเปรียบเทียบมีผู้เข้าร่วมการศึกษา 3,909 คน อุบัติการณ์การเกิดทารกของสตรีตั้งครรภ์วัยรุ่นคิดเป็น 9% กลุ่มศึกษามีอายุครรภ์เฉลี่ยเมื่อคลอดน้อยกว่ากลุ่มเปรียบเทียบและมีอัตราทารกคลอดก่อนกำหนดมากกว่ากลุ่มเปรียบเทียบ (20.1% vs 13.9%, $p < 0.001$) ด้านการฝากครรภ์ พบว่า กลุ่มศึกษามีการฝากครรภ์ที่ไม่เพียงพอมากกว่า กลุ่มเปรียบเทียบ (25.9% vs 13.4%, $p < 0.001$) ภาวะแทรกซ้อนทางด้านมารดา พบว่า กลุ่มศึกษามีภาวะซีดมากกว่ากลุ่มเปรียบเทียบอย่างมีนัยสำคัญทางสถิติ (17.1% vs 12.1%, $p < 0.001$) นอกจากนี้ กลุ่มศึกษามีการคลอดทารกแรกคลอดน้ำหนักน้อยกว่ากลุ่มเปรียบเทียบอย่างมีนัยสำคัญทางสถิติ (14.3% vs 11.9%, $p = 0.003$)*

สรุป: *อุบัติการณ์การเกิดทารกของสตรีตั้งครรภ์วัยรุ่นในโรงพยาบาลชลบุรีคิดเป็น 9% สตรีตั้งครรภ์ วัยรุ่นมีการฝากครรภ์น้อยกว่าสตรีตั้งครรภ์อายุ 20-25 ปี ภาวะแทรกซ้อนทางมารดาที่พบในสตรีตั้งครรภ์วัยรุ่นได้แก่ การคลอดก่อนกำหนดและภาวะซีด สำหรับภาวะแทรกซ้อนทางด้านทารกที่พบได้แก่ ทารกแรกเกิดน้ำหนักน้อย*