Differences in Socio-Economic Status, Service Utilization, and Pregnancy Outcomes between Teenage and Adult Mothers

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Background: *Teenage pregnancies put mothers at high-risks to many health-related complications and newborn infants to poor birth-outcomes.*
Objective: *The present study aimed to explore the relationship of socio-economic status, service utilization, and pregnancy outcomes between teenage and adult mothers.*
Material and Method: *The study design was a population-based prospective cohort study conducted in four districts located in different geographical areas of Thailand. All pregnancies occurring within one year, in each of the selected districts as of October 2000, were identified and recruited as the study's cohorts. Data was collected by interviewing cohort-respondents and through reviewing medical records.*
Results: *The present study showed that teenage pregnancies accounted for 13.3% of all pregnancies in the study area. Approximately two thirds of the teenage cohort (i.e. 68.8%) were 18-19 years of age, while the remaining cohort members were 14-17 years of age (i.e. 26.1% aged 16-17 years, and 5.1% aged 14-15 years). The percentage of low-birth weights for teenage and adult mothers were 15.1% and 8.8% respectively. A higher percentage of teenage mothers enrolled in or completed secondary or higher levels of education has had more abnormal deliveries in comparison with adult mothers. In comparison with the non-teenage mothers, a greater proportion of teenage mothers had insufficient income, did not own their homes/houses, were single parents, had fewer consultations with health personnel, did not plan their pregnancy, were pregnant for the first time, and delivered infants with low-birth weights.*
Conclusion: *The prevalence of teenage pregnancies in Thailand remains high. Most teenage mothers and their newborn infants are vulnerable to a variety of potentially serious health problems, and accordingly need appropriate help and support.*

Keywords: *Teenage mother, Socio-economic status, Service utilization, Pregnancy outcomes*

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Adolescent sexual activity has increased dramatically in many countries including Thailand. A review of sexual behavior among Thai adolescents revealed that in 1998 approximately 30% of males and 15% of females 15-18 years of age had already engaged in sexual intercourse, and the percentage of sexually active teenagers has substantially increased since 1990[1]. Without easy access to and use of effective contraceptive methods unplanned teenage pregnancies can easily occur. It is a well known fact that teenage pregnancies are at a high-risk to many health-related complications as well as poor birth outcomes for newborn infants. Some of these conditions include higher perinatal morbidity and mortality[2-5], low-birth weight and premature babies[6-14], stillbirths[15], and various complications during pregnancy[13,15]. Additionally

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teenage mothers frequently lack the necessary skills to properly take care of their babies, and this situation can affect a child's growth and development; such as poorer feeding behavior, earlier weaning, higher infant hospital admission rates, and higher child mortality[8,16,17].

Since 1997, Thailand's National Health Plan has established targets to reduce the prevalence of teenage pregnancies to less than 10% of all pregnancies. In 2002 hospital records indicated that teenage pregnancies accounted for 13% of the total pregnancies[18]. There have been few population-based prospective studies regarding birth outcomes among teenage mothers in Thailand. This population-based prospective study aimed to explore the differences in socio-economic status, service utilization, and pregnancy outcomes between teenage and adult mothers in order to identify and implement pro-active strategies and measures to prevent teenage pregnancies. The present study also hoped to serve as illustrative background data for the follow-up of growth and development of children born to teenage mothers.

Material and Method

The Prospective Cohort Study in Thai Children (PCTC) is an ongoing population based birth cohort study. It was designed to study the relationship of prenatal factors, labor and delivery, and child development from birth until 25 years of age. All pregnant women in the late trimester of pregnancy, with an expected delivery date within a 12-month period of recruitment, were included and followed-up in the present study. Although 3,522 pregnancies were initially included in the year 2000 from 4 districts across Thailand, data from 3,501 cases with maternal ages and giving live births were analyzed. Information was collected from interviews and maternal health records. Ethical approval was obtained from the study's Ethic Committees. The district in the central part, the south, and the northeast are all rural. The fourth district is in the northern part of Thailand. It is a mix of semi-urban and rural areas. The income levels are medium to low in all four districts. The main occupation of most people in all districts is farming.

Women were classified as teenage mothers if they were under 20 years of age at the time of their delivery. Socio-economic status covered education (i.e. grade six and lower, and beyond grade six), occupation (non-professional and professional career), family income (sufficient and insufficient in regard to respondents' perception), marital status (single-parent and live together), and house ownership (no and yes). Professional category includes teacher, doctor, nurse, business man, for example. Non-professional covers laborer, trader, vendor, farmer, gardener, and student. Single parent may be caused by separation, divorce, or death. Service utilization focused on prenatal care (seldom and often), consultation with health personnel (seldom and often based on self report), and iron supplement tablet intake (seldom and often). Reproductive health history included parity (first pregnancy and more than one pregnancy), planned pregnancy (no and yes), and past abnormal obstetric history (yes and no). Maternal pregnancy outcomes included anemia (hemoglobin less than 11 gram% and 11 gram% and more), weight gain during pregnancy (less than 10 kg and 10 kg and more), complications during pregnancy (hypertensive disorder and bleeding) and mode of delivery (abnormal and normal). Normal delivery means vaginal delivery with vertex presentation without using any assisted instruments. The rest are included in abnormal delivery. The pregnancy outcomes of newborn infants consisted of birth weight (less than 2500 grams and more than or equal to 2500 grams), 5-minute APGAR score (0 to 7 and 8 to 10), and early neonatal problems (yes and no).

Descriptive statistics, Chi-square and Fisher-exact test were used to analyze the data.

Results

Magnitude of teenage pregnancy

Among the cohort of 3,501 pregnant women, there were 464 women under 20 years of age. Accordingly teenagers represented 13.3% of all pregnancies. The highest percentage of teenage pregnancies (i.e. 18%) was found in the district from the northeast region (Table 1). Most teenage mothers (68.8%) were 18 to 19 years of age, while 26.1% were 16 to 17 years old and 5.1% were 14 to 15 years old. Teenage mothers gave birth to a higher proportion of very low birth weight infants than did adult mothers (i.e. 15.1% and 8.8% respectively).

Differences in socioeconomic status, service utilization, and pregnancy outcomes

Table 2 shows the differences in socio-economic status, service utilization, and reproductive health history between teenage and adult mothers. A higher proportion of teenage mothers completed secondary school or higher levels of formal education, had insufficient family income, did not own their home/house, were single-parents, seldom consulted with

Table 1. Prevalence of teenage pregnancy according to geographic region

Site	Total pregnant women	Number of teenage	% Teenage pregnancy
District of the central part	784	104	13.3
District of the southern part	1076	117	10.9
District of the northeastern part	862	155	18.0
District of the northern part	779	88 11.3	
Total	3501	464	13.3

Table 2. Differences in exposures between teenage and adult mothers

Exposures	Teenage mothers n	%	Adult mothers n	%	p value
1) Socio-economic status					
1.1 Maternal education					
Grade six and lower	203	43.8	1904	62.9	<0.001
Grade seven and above	260	56.2	1121	37.1	
1.2 Maternal occupation					
Non-professional	464	100.0	2895	95.3	<0.001*
Professional	0	0.0	142	4.7	
1.3 Family income					
Insufficient	182	39.6	843	28.2	<0.001
Sufficient	178	60.4	2146	71.8	
1.4 House ownership					
No	417	90.1	1788	59.0	<0.001
Yes	46	9.9	1244	41.0	
1.5 Marital status					
Single parent	24	5.2	63	2.1	<0.001
Live together	440	94.8	2973	97.9	
2) Health service utilization					
2.1 Prenatal care					
Seldom	12	2.9	107	4.0	0.303
Often	396	97.1	2572	96.0	
2.2 Consultation with health personnel					
Seldom	343	84.1	2028	75.7	<0.001
Often	65	15.9	651	24.3	
2.3 Iron supplement tablet intake					
Seldom	82	20.1	495	18.5	0.436
Often	326	79.9	2183	81.5	
3) Reproductive health history					
3.1 Parity					
First	351	85.8	732	27.2	<0.001
Second and more	58	14.2	1958	72.8	
3.2 Planned pregnancy					
No	173	41.8	840	31.1	<0.001
Yes	241	58.2	1865	68.9	
3.3 Past abnormal obstetric history (for all pregnancies)					
Yes	32	6.9	680	22.6	<0.001
No	429	93.1	2335	77.4	
3.4 Past abnormal obstetric history (for second pregnancy and more)					
Yes	29	50.0	617	31.5	0.003
No	29	50.0	1341	68.5	
RR = 1.56 (95%CI: 1.22, 2.07)					

* Analyze by Fisher exact test

health personnel, and had an unplanned pregnancy compared with adult mothers. Most teenage mothers were pregnant for the first time. Among teenagers with two or more parity, there was a higher proportion or higher risk of previous obstetric problems than amongst the cohort of adult women, 1.56 times.

Table 3 illustrates the differences in pregnancy outcomes between teenage and adult mothers. Teenage mothers gave birth to a significantly higher proportion or higher risk of low birth-weight infants (15.1%) than the cohort of adult mothers (8.8%), or 1.7 times. However, there was no significant difference in the APGAR scores or neonatal problems, comparing infants born to teenage mothers versus adult mothers.

Discussion and Recommendation

The present study has indicated that the percentage of teenage pregnancies in some parts of Thailand is relatively high, especially in the northeastern part of the country. It is the same as the national figures

Table 3. Comparison of maternal and child outcomes between teenage and adult mothers

Pregnancy Outcomes	Teenage mothers n	%	Adult mothers n	%	p value
1) Maternal outcomes					
1.1 Anemia					
Hb less than 11 gram %	24	11.2	112	9.4	0.414
Hb 11 gram % and more	190	88.8	1077	90.6	
1.2 Albumin in urine					
No	395	97.3	2532	96.3	0.337
Yes	11	2.7	96	3.7	
1.3 Sugar in urine					
No	405	99.8	2622	99.6	1.0*
Yes	1	0.2	11	0.4	
1.4 Hypertensive disorder					
No	429	99.8	2833	99.4	0.715*
Yes	1	0.2	16	0.6	
1.5 Bleeding during pregnancy					
No	425	98.8	2812	98.7	1.0*
Yes	5	1.2	37	1.3	
1.6 Weight gain during pregnancy					
10 Kg and more	218	68.3	1412	71.9	0.188
less than 10 Kg	101	31.7	551	28.1	
1.7 Mode of delivery					
Abnormal	62	13.7	732	24.5	<0.001
Normal	391	86.3	2256	75.5	
RR = 0.56 (95%CI: 0.44, 0.71)					
1.8 Postpartum hemorrhage					
Yes	13	3.0	50	1.8	0.094
No	422	97.0	2739	98.2	
2) Child outcomes					
2.1 Birth weight					
< 2500 gm	68	15.1	257	8.8	<0.001
> or = 2500 gm	382	84.9	2665	91.2	
RR = 1.7 (95%CI: 1.34, 2.2)					
2.2 5-minute APGAR score					
<8	3	0.7	38	1.4	0.355*
8-10	423	99.3	2969	98.6	
2.3 Neonatal problem					
Yes	5	1.2	42	1.6	0.552
No	421	98.8	2667	98.4	

* Analyze by Fisher exact test

assessed by the Bureau of Health Promotion in 2002[18]. This suggests that existing efforts to reduce the number of teenage mothers may still be inadequate. More prevention programs focusing on delayed and safer sexual relations should be initiated for adolescents. The percentage of teenage mothers in Thailand, however, is nevertheless low compared to that of many other countries. Adolescent child bearing is more common, for example, in the United States and Great Britain, where respectively 22% and 15% of women reported having delivered their first child before 20 years of age[19].

Teenage mothers in the present study tended to complete higher formal education levels in comparison to the adult mother cohorts. This finding was in contrast to other studies that showed teenage mothers having a lower education level than adult mothers[17,20]. One explanation is that the present younger generation in Thailand has easy access to both formal and informal education. As such this cohort usually enroll, and often complete, secondary education levels required for future vocational opportunities.

A high proportion of teenage mothers were economically dependent. They did not have sufficient income and did not own their home/house in comparison with adult mothers. About 5.2% of the teenage mothers were single parents compared with 2.1% of adult mothers. These findings were in accordance with the studies conducted by Olaussen PO et al and Jimenez MA et al[4,20]. These studies showed that adolescent mothers tended to be unmarried, lived in their parents' home, and were unemployed in comparison with adult mothers.

A high proportion of both teenage and adult mothers attended the prenatal care clinics and took iron supplement tablets. In Thailand, every sub-district has a government health center staffed with health workers trained to provide routine prenatal care. Since transportation and road communications networks are quite good even throughout the rural country, there are no major impediments for pregnant women to obtain regular ante-natal care. These findings were in contrast to some other studies. Wang CS and Chou P in Taiwan[21] and LeGrand TK et al[16] illustrated that adolescent mothers made fewer prenatal care visits in comparison with adult mothers.

Most teenage mothers were encountering their first pregnancy. Thus, a small proportion from this cohort had previous abnormal obstetric histories. However, among those with second pregnancy or higher, the proportion of previous abnormal obstetric histories was larger than for adult mothers. A larger percentage of the teenage mothers did not plan their pregnancy. Some might have simply had casual sexual relations with a regular partner/spouse or some other individual with no intention of becoming pregnant or a mother. The study from Taiwan similarly showed that adolescent mothers initially become aware of their pregnancy at a later point in the gestation period[21].

In the present study the significant maternal outcome was mode of delivery. 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. The finding was in accordance with the studies of Ziadeh S, van Enk N, Wang CS and Jolly MC et al[3,8,21,22], but in contrast with that of Satin AJ et al and Scholl TO et al[13,23]. The latter found that a higher percentage of normal deliveries were found in the adult mother cohorts.

Other maternal outcomes such as complications and maternal weight gain during pregnancy were not different between teenage and adult mothers. The findings were in contrast with other studies that demonstrated higher proportions of pregnancy complications and low maternal weight gain[9,13,21-24]. This may be due to the fact that the majority of pregnant women, regardless of their age, regularly received prenatal care; so they were adequately monitored and received proper care and advice.

The significant difference in child outcomes between teenage and adult mothers was birth weight. A higher proportion of teenage mothers gave birth to LBW. This is usually due to biological immaturity and poor socio-demographic environment. The finding is consistent with many other studies[6,8,10,11,13,14]. Birth asphyxia and neonatal problems were not associated with maternal age in the present study. This was in accordance with some other studies. The study of van Enk N also found no difference in APGAR score in both groups[8]. The study of Bukulmez O and Deren O showed that teenage women, who received adequate prenatal care, were at no greater risk of adverse obstetric outcomes than adult mothers[5]. However, the low birth weight babies are at risk of some diseases in adult life. The studies of Barker DJ have suggested that the consequences of LBW probably continues throughout life as a risk factor for hypertension, coronary heart disease, stroke, and non-insulin dependent diabetes[25,26].

Compared with four previous studies conducted in Thailand since 1985, three studies were hospital-based studies while one was a one population-

based cross sectional survey[27-30]. The current study showed a high prevalence of teenage pregnancy, but a low proportion of teenagers only enrolled in or completing primary education in comparison to the previous studies. The most consistent finding, in all of the studies, was the high incidence of low birth weight babies among teenage mothers, varying from 9.5% to 24.2%; except for the study conducted by Piyasil V where the percentage of LBW babies was only 4.8%[29].

It is noted that the number of respondents in each variable are vary according to the incompleteness of such information especially the data collected from hospital reports or records. Thus, the completeness of information should be strengthened as it is important for service quality control.

In conclusion teenage mothers have a poor socio-economic status and a high incidence of low birth weight babies.

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ความแตกต่างของลักษณะทางสังคม เศรษฐกิจ การใช้บริการสุขภาพ และผลลัพธ์การตั้งครรภ์ ระหว่างมารดาวัยรุ่น และมารดาวัยผู้ใหญ่

ศิริกุล อิศรานุรักษ์, ลัดดา เหมาะสุวรรณ, จันทร์เพ็ญ ชูประภาวรรณ

***ที่มา**: การตั้งครรภ์ในวัยรุ่นมีความเสี่ยงสูงต่อการเกิดภาวะแทรกซ้อนในขณะตั้งครรภ์ คลอด และหลังคลอด*

***วัตถุประสงค์**: เพื่อศึกษาความแตกต่างของลักษณะทางสังคม เศรษฐกิจ การใช้บริการสุขภาพ และผลลัพธ์การตั้งครรภ์ ระหว่างมารดาวัยรุ่น และมารดาวัยผู้ใหญ่*

***วัสดุและวิธีการ**: เป็นการศึกษาไปข้างหน้าในกลุ่มประชากรที่ตั้งครรภ์ในระยะเวลา 1 ปี ตั้งแต่เดือนตุลาคม พ.ศ. 2543 ใน 4 อำเภอในแต่ละภาคของประเทศไทย มีหญิงตั้งครรภ์ที่เป็นกลุ่มศึกษา จำนวน 3,522 คน มีข้อมูลอายุเมื่อตั้งครรภ์ 3,501 คน มารดาวัยรุ่นในที่นี้ คือ หญิงที่มีอายุน้อยกว่า 20 ปี เก็บข้อมูลโดยการสัมภาษณ์ และการตรวจสอบจากบันทึกทางการแพทย์ วิเคราะห์ข้อมูลโดยสถิติ Chi square และ Fisher exact test*

***ผลการศึกษา**: พบความชุกของการตั้งครรภ์ในวัยรุ่นร้อยละ 13.3 ร้อยละ 68.8 มีอายุ 18-19 ปี ร้อยละ 26.1 มีอายุ 16-17 ปีและร้อยละ 5.1 มีอายุ 14-15 ปี มารดาวัยรุ่นคลอดทารกแรกเกิดน้ำหนักน้อยสูงถึงร้อยละ 15.1 ในขณะที่มารดาวัยผู้ใหญ่คลอดทารกน้ำหนักแรกเกิดน้อยร้อยละ 8.8 และพบว่ามารดาวัยรุ่นมีการศึกษาระดับประถมและต่ำกว่าในสัดส่วนที่ต่ำกว่ามารดาวัยผู้ใหญ่ แต่มารดาวัยรุ่นมีสถานะทางเศรษฐกิจไม่ดี ไม่แต่งงาน ไม่ปรึกษาเจ้าหน้าที่สาธารณสุข ไม่ได้วางแผนการตั้งครรภ์ เป็นครรภ์แรก และคลอดทารกน้ำหนักแรกเกิดน้อย ในสัดส่วนที่สูงกว่ามารดาวัยผู้ใหญ่*

***สรุป**: ความชุกของการตั้งครรภ์ในวัยรุ่นยังคงสูง และเป็นการตั้งครรภ์ที่เสี่ยงต่อภาวะแทรกซ้อนต่าง ๆ*