

Birth Rates and Pregnancy Complications in Adolescent Pregnant Women Giving Birth in the Hospitals of Thailand

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Objective: To determine the rates of births in adolescent pregnant women in different regions of Thailand and assess the rates of complications occurring at pregnancy, childbirth, and postpartum in women admitted in the hospitals of Thailand. **Material and Method:** The secondary analysis of data from pregnant women aged 10 to 49 years, who were admitted to hospitals and recorded in the National Health Security Office database between October 2010 and September 2011 was carried out. Adolescent birth rate by the regions and rate of complications of pregnancy, delivery, and postpartum by age groups were analyzed.

Results: Highest birth rate was found among women aged 19 years (58.3 per 1,000 population). The distribution of adolescent births varied across regions of Thailand, which was high in central region. Rate of preterm delivery was highest (10%) in adolescent aged 10 to 14 years. Rate of diabetes mellitus (6%), preeclampsia (4%), and postpartum hemorrhage (3%) among women aged 35 to 49 years were substantially higher than those among women aged 34 years or less.

Conclusion: Adolescent birth rate varied across regions of Thailand. Complications occurred differently by ages of women. Holistic policy and planning strategies for proper prevention and management among pregnant women in different age groups are needed.

Keywords: Adolescent birth rate, Pregnancy complications, Hospital-based delivery

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Adolescent or teenage pregnancy defined as a pregnancy occurred in a woman aged 10 to 19 years, which is distinguished into early adolescent (10-14 years) and late adolescent (15-19 years)⁽¹⁾. Adolescent birth rate is one of the indicators of Millennium Development Goal 5 on the target of universal access to reproductive health. Average global birth rate among women aged 15 to 19 years was reported to be 49 per 1,000 teenage population⁽²⁾. Its rate was highest in Sub-Saharan Africa accounted for 120 births per 1,000 teenage population and 45 births per population in Southeast Asia in 2009⁽³⁾.

Adolescent pregnancy is a public health concern because it is associated with poor physical and mental health as well as social problem, especially in early adolescents. Anemia in pregnancy, preterm delivery, and fetal intrauterine growth retardation are more common in adolescents^(1,4-6). In addition,

adolescent pregnancy is attributed to unsafe abortions-related deaths^(7,8).

In Thailand, the birth rate for women aged 15 to 19 years in 2010 was 50.1 births per 1,000. Currently, most pregnant women in Thailand visit a hospital for delivery or treatment for complicated abortion⁽⁹⁾. Identifying rate of adolescent pregnancy and birth, as well as the complication rates in adolescents is important for the health system and service planning. The present study aimed to identify adolescent birth rate in different regions of Thailand and their complication rates.

Material and Method

Data of all pregnant women aged 10 to 49 years who were admitted to all hospitals in the country retrieved from the Thai National Health Security Office (NHSO) database during the fiscal year of 2011, between October 1, 2010 and September 30, 2011 were analyzed. This secondary analysis was approved by the Institutional Ethical Committee of the Faculty of Medicine, Prince Songkla University. Women were categorized into four groups, early adolescents

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(10-14 years), late adolescents (15-19 years), adults (20-34 years), and advance-aged adults (35-49 years). The International Classification of Diseases tenth edition (ICD-10) was used to extract the records of women with maternal conditions related to pregnancy, childbirth and the postpartum (O00-O99)^(10,11).

The main outcome measures were the adolescent birth rate and complication rate. Adolescent birth rate was defined as the number of deliveries per 1,000 women aged 10 to 19 years, classified into early and late adolescent birth rate. Region of Thailand is divided into northern, northeastern, central, southern region, and Bangkok as a capital city. The mid-year population for each region, including Bangkok, was obtained from the Thai Bureau of Registration Administration, Department of Provincial Administration. All pregnancy, delivery, and postpartum complications recorded in the database were taken into account. The ICD-10 codes were used to determine the number of complications during pregnancy (O10 to O48), during delivery (O60 to O75) and the postpartum period (O85 to O92). The rate of complications were calculated and presented as the percentage of deliveries. Statistical analysis was performed using R version 2.15.1 (R Foundation for Statistical Computing 2012, Vienna, Austria).

Results

From the database, 492,050 women including 118,054 adolescents and 373,996 adults were identified

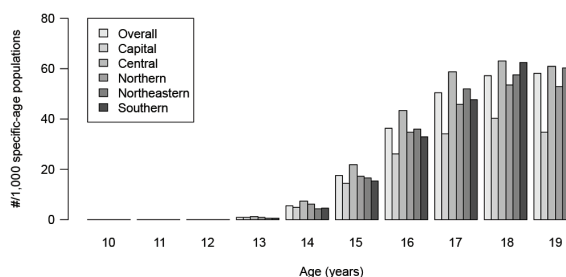


Fig. 1 Rate of adolescent birth by age and region.

with ICD-10 code O00-O99. Table 1 shows a comparison of the number of the adolescents and adults by pregnancy outcome, hospital level, and region. The majority of women (90%) were admitted to hospital for delivery and 10% were admitted due to abortive conditions. Of all 442,818 delivered women, 24% were adolescents. Among women in the four age groups, the percentage of women having an abortion was high in early adolescent and advanced-aged adults. Half of the women were admitted to community hospitals and one-third were from the northeastern region.

Pregnancy and birth rate in early adolescent was 1.7 and 1.4 per 1,000 women aged 10 to 14 years, and pregnancy and birth rate in late adolescents was 48.2 and 43.8 per women aged 15 to 19 years, respectively. Adolescent birth rate by age and region were shown in Fig. 1. Birth rates increased by age from ages 14 to 16. Highest birth rate was found among women aged 19 years (58.3 per 1,000 population).

Table 1. Characteristics of study women

Characteristic	Adolescents		Adults		Total n = 492,050 n (%)
	10-14 years n = 3,599, n (%)	15-19 years n = 114,455, n (%)	20-34 years n = 313,139, n (%)	35-49 years n = 60,857, n (%)	
Pregnancy outcome					
Delivery	2,980 (82.8)	103,995 (90.9)	285,612 (91.2)	50,231 (82.5)	442,818 (90.0)
Abortion	619 (17.2)	10,460 (9.1)	27,527 (8.8)	10,626 (17.5)	49,232 (10.0)
Hospital level					
Private	143 (4.0)	4,017 (3.5)	8,719 (2.8)	1,764 (2.9)	14,643 (3.0)
Community	1,791 (49.8)	59,262 (51.8)	158,442 (50.6)	28,513 (46.9)	248,008 (50.4)
General	878 (24.4)	27,129 (23.7)	76,132 (24.3)	15,926 (26.2)	120,065 (24.4)
Regional	587 (16.3)	18,839 (16.5)	56,566 (18.1)	11,988 (19.7)	87,980 (17.9)
Academic	52 (1.4)	1,297 (1.1)	3,316 (1.1)	719 (1.2)	5,384 (1.1)
Other	148 (4.1)	3,911 (3.4)	9,964 (3.2)	1,947 (3.2)	15,970 (3.2)
Region					
Capital	254 (7.1)	6,721 (5.9)	14,686 (4.7)	3,066 (5.0)	24,727 (5.0)
Central	1,101 (30.6)	30,447 (26.6)	68,544 (21.9)	12,546 (20.6)	112,638 (22.9)
Northern	676 (18.8)	18,624 (16.3)	48,659 (15.5)	9,167 (15.1)	77,126 (15.7)
Northeastern	1,081 (30.0)	40,592 (35.5)	109,703 (35.0)	20,544 (33.8)	171,920 (34.9)
Southern	487 (13.5)	18,071 (15.8)	71,547 (22.8)	15,534 (25.5)	105,639 (21.5)

Birth rate in adolescents aged 10 to 14 and 15 to 19 years by region were 1.3 and 29.8 in the capital, 1.9 and 49.3 in the central, 1.7 and 40.9 in the northern, 1.1 and 44.4 in the northeastern, and 1.1 and 45.1 per 1,000 populations in the southern region, respectively.

Most common complications during pregnancy among women who delivered were premature rupture of membranes (3.7%), preeclampsia (1.7%), and diabetes mellitus (1.5%). The most common complications during labor and immediate delivery were perineal laceration (6.7%), obstructed labor due to pelvic abnormality (5.0%), preterm delivery (4.5%), and fetal distress (3.3%). Complications predominantly related to the postpartum were other puerperal infections (0.2%), urinary tract infection (0.1%), other disorders of breast and lactation (0.2%), and puerperal sepsis (0.1%).

Fig. 2 shows the prevalence of overall complications in women during pregnancy, delivery and postpartum across age groups. The highest

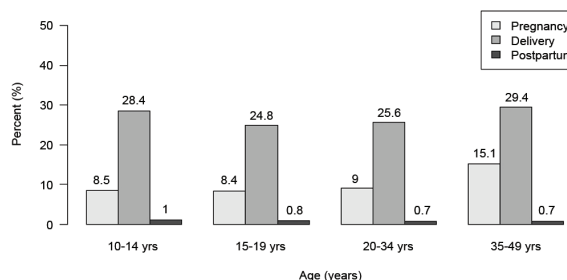


Fig. 2 Percentages of women with overall complications during pregnancy, delivery and postpartum across age groups.

complication rates occurred among women during labor and immediate delivery of which were 28.4%, 24.8%, 25.6%, and 29.4% among women aged 10 to 14, 15 to 19, 20 to 34, and 35 to 49, respectively. Table 2 presents the common complications by age group. Obstructed labor due to pelvic abnormality and preterm delivery were more common in early

Table 2. Percentage of most common complications during pregnancy, birth and postpartum by ICD-10 diagnoses across age groups (n = 442,818)

Complications	Adolescents		Adults		Total n = 442,818 n (%)
	10-14 years n = 2,980 n (%)	15-19 years n = 103,995 n (%)	20-34 years n = 285,612 n (%)	35-49 years n = 50,231 n (%)	
At pregnancy*	401 (13.5)	15,700 (15.1)	67,616 (23.7)	17,156 (34.2)	100,873 (22.8)
Premature rupture of membranes	100 (3.4)	3,904 (3.8)	10,303 (3.6)	1,865 (3.7)	16,172 (3.7)
Preeclampsia	56 (1.9)	1,431 (1.4)	4,398 (1.5)	1,760 (3.5)	7,645 (1.7)
Diabetes mellitus in pregnancy	5 (0.2)	261 (0.3)	3,589 (1.3)	2,746 (5.5)	6,601 (1.5)
Prolonged pregnancy	18 (0.6)	1,035 (1.0)	2,773 (1.0)	415 (0.8)	4,241 (1.0)
Gestational hypertension without proteinuria	20 (0.7)	688 (0.7)	2,378 (0.8)	1,016 (2.0)	4,102 (0.9)
At labor and immediate delivery*	847 (28.4)	25,809 (24.8)	73,140 (25.6)	14,788 (29.4)	114,584 (25.9)
Perineal laceration	122 (4.1)	4,910 (4.7)	20,692 (7.2)	4,008 (8.0)	29,732 (6.7)
Obstructed labor due to maternal pelvic abnormality	185 (6.2)	5,104 (4.9)	14,452 (5.1)	2,458 (4.9)	22,199 (5.0)
Preterm delivery	307 (10.3)	6,173 (5.9)	11,036 (3.9)	2,568 (5.1)	20,084 (4.5)
Fetal distress	86 (2.9)	3,786 (3.6)	8,874 (3.1)	1,762 (3.5)	14,508 (3.3)
Postpartum hemorrhage	56 (1.9)	1,687 (1.6)	5,090 (1.8)	1,605 (3.2)	8,438 (1.9)
Obstructed labor due to malposition and malpresentation of fetus	33 (1.1)	1,328 (1.3)	4,632 (1.6)	1,298 (2.6)	7,291 (1.6)
Other complications of labor and delivery	35 (1.2)	1,401 (1.3)	4,001 (1.4)	751 (1.5)	6,188 (1.4)
Abnormalities of forces of labor	34 (1.1)	1,342 (1.3)	3,956 (1.4)	769 (1.5)	6,101 (1.4)
Long labor	35 (1.2)	1,349 (1.3)	3,375 (1.2)	636 (1.3)	5,395 (1.2)
At postpartum*	31 (1.0)	840 (0.8)	1,945 (0.7)	367 (0.7)	3,183 (0.7)
Other puerperal infections	13 (0.4)	334 (0.3)	627 (0.2)	119 (0.2)	1,093 (0.2)
Other disorders of breast and lactation associated with childbirth	6 (0.2)	198 (0.2)	621 (0.2)	124 (0.2)	949 (0.2)
Puerperal sepsis	5 (0.2)	165 (0.2)	272 (0.1)	42 (0.1)	484 (0.1)

* Not all complications at pregnancy, labor and immediate delivery and postpartum were listed

adolescents. Diabetes mellitus, preeclampsia, postpartum hemorrhage, and obstructed labor due to malposition and malpresentation of fetus were substantially higher among women aged 35 to 49 years than those in the younger age groups.

Discussion

Highest birth rate was found in adolescents aged 19 years and late adolescents living in central region of Thailand. Complications occurred during pregnancy, delivery and postpartum variously in adolescents and adults. Adolescent birth rate was reported differently in previous studies due to different definition of age for adolescent used and data collection methods^(1,9,12-15). In the present study, age range of 10 to 19 years based on World Health Organization (WHO) criteria was applied⁽¹⁾. Age of 15 to 19 years has been more commonly used in for adolescent birth rate^(1,9,12) but in some studies, different ages were used for adolescent pregnancy and birth rates⁽¹³⁻¹⁵⁾.

In the present study, increasing birth rate was found by adolescent age, which was similar to the studies in Australia and Finland^(15,16). A national report of Thailand by the Department of Health⁽⁹⁾ showed an 18% difference in the rate of adolescent birth compared to the present study. This discrepancy may be explained by the different source of data and period of study. The data in our study was obtained from the NHSO and referred to fiscal year but the national report retrieved the data from Department of Local Administration, Ministry of Interior and referred to calendar year.

The adolescent birth rate in the present study was close to the rate shown by WHO estimates for Thailand⁽¹⁷⁾. The highest rate was found in the central region of Thailand in the present study, which was consistent with the national report from Thailand⁽⁹⁾. This may be because the central region is highly urbanized⁽¹⁸⁾. However, a previous report in Thailand showed higher birth rates among early adolescents in the northern, northeastern, and central regions compared to other regions⁽¹⁹⁾. The national report of Thailand reported that the rates of adolescent birth are increasing⁽⁹⁾; but the WHO estimated the decreasing rate from 45.8 in 1995 to 43.3 per 1,000 population in 2010⁽¹⁷⁾.

One study in Thailand found that the complications of pregnant women were most common during the delivery phase in both adolescents and adults⁽⁶⁾. In the present study, the rate of preterm delivery in adolescents was higher than that in adults. This finding was supported by the studies in both

developing and developed countries^(5,6,20). Likewise, diabetes mellitus, preeclampsia, and postpartum hemorrhage were common complications in advanced-aged adults^(21,22).

Thailand has the policy of universal health coverage and high accessibility to facility-based maternity services^(9,23). The data used in this analysis was retrieved from the national database responsible for the Universal Coverage Scheme (UCS). UCS covers almost all adolescents and provides the beneficiary on maternity services, thus our results can represent the nature and number of admissions in facility-based maternity services for birth rate and complications. However, the present study was a secondary analysis of available database. The classifications depended on diagnosis coding from individual hospitals registered to NHSO. This may have caused an underestimation of the pregnancy and birth rates⁽²⁴⁾.

Information of adolescent birth in facility-based services among regions of Thailand is useful for the national policy makers to recognize the magnitude and areas of problem in order to carry out relevant strategies to the individual adolescents and their families within health facilities. Further research on the health and economic burden in terms of physical, mental, and social perspectives for adolescent pregnancy needs to be studied to encourage the women, family, health providers, and policy makers to cooperate mutually on improving maternal health.

Conclusion

The distribution of adolescent births varied across regions of Thailand. Although birth rate was highest in adolescents aged 19 years, it was increased from ages 14 to 16. Preterm delivery was the most common in early adolescents while diabetes mellitus, preeclampsia, and postpartum hemorrhage were common in advanced-aged adults. A holistic policy and planning approach for preventing and proper management for pregnancy in adolescents and adults are essential.

What is already known on this topic?

Adolescent pregnancy rate is a public health issue in developing countries particularly in Asia. Increasing trends of pregnancy and birth rate among adolescent is concerned worldwide. However, age of adolescent or teens in previous studies was applied and reported variously. In most studies, adolescent birth rate was calculated using a total number of delivered

adolescents as the denominator, not the number of specific-age adolescents.

What this study adds?

The utilization of the Thai National Health Security Office (NHSO) database was useful to calculate the adolescent birth rate, which was in accordance with the World Health Organization estimation. Although adolescent birth rate was high in adolescent aged 18 to 19 years, the increasing rate from 14 to 16 years should not be ignored. This study found the complications during pregnancy, delivery and postpartum are confidence due to big sample size and generalize across the country.

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Potential conflicts of interest

None.

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อัตราการคลอดและการเกิดภาวะแทรกซ้อนในสตรีตั้งครรภ์วัยรุ่นที่คลอดในโรงพยาบาล ในประเทศไทย

รักมณี บุตรชน, ทิพวรรณ เลียบสี่ตระกูล, เอ็ดเวิร์ด แม็กเนลล์, ยลศิลป์ สุขนวนิช

วัตถุประสงค์: เพื่อหาอัตราการคลอดของสตรีวัยรุ่นที่ตั้งครรภ์ในแต่ละภาคของประเทศไทยและความชุกของภาวะแทรกซ้อนที่เกิดขึ้นขณะตั้งครรภ์ คลอด และหลังคลอดในสตรีที่เข้ารับการรักษาในโรงพยาบาลในประเทศไทย

วัสดุและวิธีการ: การศึกษานี้เป็นการวิเคราะห์ข้อมูลระดับทุติยภูมิของสตรีตั้งครรภ์อายุ 10-49 ปี ที่เข้ารับการรักษาในโรงพยาบาลและบันทึกลงในฐานข้อมูลของสำนักงานประกันสุขภาพถ้วนหน้าช่วงระหว่างเดือนตุลาคม พ.ศ. 2553 ถึงเดือนกันยายน พ.ศ. 2554 โดยวิเคราะห์หาอัตราการคลอดในวัยรุ่นในแต่ละภาคและอัตราของภาวะแทรกซ้อนที่พบบ่อยที่เกิดขึ้นขณะตั้งครรภ์ ขณะคลอด และหลังคลอดตามกลุ่มอายุ

ผลการศึกษา: อัตราการคลอดเกิดขึ้นสูงที่สุดในสตรีอายุ 19 ปี เท่ากับ 58.3 ต่อสตรีอายุ 19 ปี จำนวน 1,000 คน การกระจายของการคลอดในสตรีวัยรุ่น มีความหลากหลาย แตกต่างกันในแต่ละภาคโดยพบสูงสุดในเขตภาคกลาง ส่วนการคลอดก่อนกำหนดเป็นภาวะแทรกซ้อนที่พบบ่อยที่สุดในสตรีวัยรุ่นอายุ 10-14 ปี (ร้อยละ 10) ส่วนเบาหวาน พิษแห่งครรภ์ และตกเลือดหลังคลอดพบบ่อยในสตรีอายุ 35-49 ปี เท่ากับร้อยละ 6 ร้อยละ 4 และร้อยละ 3 ซึ่งสูงกว่าสตรีที่อายุน้อยกว่าหรือเท่ากับ 34 ปี

สรุป: อัตราการคลอดในสตรีวัยรุ่นแตกต่างกันในแต่ละภูมิภาคของประเทศไทย และการเกิดภาวะแทรกซ้อนหลากหลายไปตามอายุของสตรี การวางแผน นโยบายและแนวทางปฏิบัติเพื่อป้องกันและดูแลสตรีตั้งครรภ์ต้องคำนึงถึงอายุของสตรีด้วย
