

## Factors Associated with Adolescent Pregnancy in a Rural District of Kalasin Province, Thailand

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### Abstract

**Background:** Adolescent pregnancy is a major health problem which affects not only health of the girl and her babies, but also hinders social and economic development both in the short and long term aspects.

**Objective:** To study factors associated with adolescent pregnancy.

**Setting:** Thakhantho district, Kalasin Province, Thailand

**Material and Method:** The case control study of 170 adolescent girls aged 10- 19 years old (75 cases and 75 controls). Cases and controls were matched by age and living nearby. Data was collected by self-administrated questionnaires during 1<sup>st</sup> June to 30<sup>th</sup> November 2013. Data analysis included descriptive statistics, bivariate analysis (Pearson chi-square test, Fischer's exact test, and Mann Whitney U test), and multiple logistic regression analysis. The statistical significance was set at p-value < 0.05.

**Results:** The results of bivariate analysis showed that factors which were significantly associated with adolescent pregnancy were age, education, occupation, parental marital status, having pregnant or married friends, and high sexual risk behavior. On the other hand, knowledge about sex, attitude towards sex, and levels of friend's acceptance had no statistically significant association with adolescent pregnancy. When multiple logistic regression analysis was applied, factors which still had significant association with adolescent pregnancy included occupation (other than student) (OR= 3.0, 95%CI 1.4-6.6), parental marital status (separated or divorced) (OR= 3.5, 95%CI 1.3- 9.1), and having pregnant friends (OR= 2.9, 95%CI 1.1-7.9).

**Conclusion:** Adolescent pregnancy is associated with interrelated multidisciplinary factors. Delaying adolescent marriage, maintaining adolescent studying in school, and increasing family attachment could reduce the rate of adolescent pregnancy.

**Keywords:** Adolescents pregnancy, personal characteristics, family characteristics, peer characteristics.

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## Introduction

Having babies during adolescence has serious consequences for the health of the girl and her infants<sup>(1,2)</sup>. Globally, Complications related to pregnancy and childbirth account for the deaths of some 50,000 adolescent girls each year<sup>(3,4)</sup>. On the other hand, stillbirths and newborn deaths are 50% higher among infants of adolescent mothers than among infants of women aged 20-29 years<sup>(1,5)</sup>. Infants of adolescent mothers are more likely to be low weight birth, malnourished<sup>(6-8)</sup>, abandoned or neglected<sup>(9)</sup>. The social consequences of pregnancy in adolescence include school drop-out and subsequent both low education and low earning through her lifetime thus they limit their contribution to economic growth, and to the vicious cycle of ill-health and poverty<sup>(1,10)</sup>.

In Thailand, researchers found that in most modernizing society, norm and social sanctions toward premarital sex are shifting in the direction of permissiveness, especially in urban areas. Premarital sexual intercourse is more acceptable in Thai society which reported 40% of male adolescent and 36% of female adolescent endorsed premarital sex for engaged couples<sup>(11,12)</sup>. The report showed the proportion of adolescent mothers aged 15-19 years per 1000 teenagers of the same age has increased from 49.2 to 54.9 between 2005 and 2012. Surprisingly, the mean age of first sexual intercourse was 12.8 years for boys and 13 years for girls. These data has been shown that behavior had been jeopardizing sexual trends in the nation. There were differences in rate and practice of sexual intercourse as well as contraception among couples in the rural area compared to the metropolitans. Thakhantho district, a rural area, is located in Kalasin province whrer most residence work in agriculture area with low financial earnings. The statistic of delivery rate in hospitals of adolescents aged 10-19 years in Thakhantho district

has been increasing from 26% in 2010 to 28%, and 28% in 2012 compared to 16.5% among all Thai teens<sup>(13)</sup>.

## Material and Method

This research was a case control study. The objective was to study factors associated with pregnancy among adolescents aged 10-19 years old. The case group included 75 adolescents who were pregnant at the time of study, delivered her baby within 1 year or had an abortion within 6 months before the study.

The control group included 75 adolescents who had never been pregnant or had an abortion before. They all resided in the Thakhantho district, Kalasin province. The data was collected using self-administered questionnaires in which 3 experts verified content validity. Reliability of questionnaire about sexual knowledge about sex and attitude towards sex were 0.68 and 0.74, respectively. The data were analyzed using the SPSS program version 18 of Mahidol University. Data analysis included descriptive statistics using frequency, percentage, mean, and standard deviation. Bivariate analysis included Pearson chi-square test, Fischer's exact test, Mann Whitney U test. Multiple logistic regression used to calculate adjusted odds ratio and 95% confidence interval. The statistical significance was set at p-value < 0.05. 10 questions about knowledge sexuality which included sexual devices, masturbation, puberty, contraception (pills, condom, emergency pills) and STI. 10 questions about attitude towards sex included premarital sexual relationship, STI, and use of contraceptive. 10 questions about risk sexual behaviors which included enjoy night life, stay outside home with friends, multiple lovers and sex partners, watching or reading pornographic contents.

## Results

The mean age of cases was  $17.85 \pm 1.24$  years compared to  $17.34 \pm 1.65$  years of controls. The rate of adolescent pregnancy was lowest in the 13-16 years old group (31.4%) which served as a referent group. Adolescent aged 17-19 years old had 2.6 times higher risk of pregnancy which was statistically significant. About half of cases graduated from secondary school (48.2%), while 45.9% of controls finished high school. The rate of pregnancy was lowest in adolescent who finished primary school.

Adolescent who finished secondary school had 3.5 times higher chance of pregnancy which was statistically significant. Most of the cases were not students and worked (78.8%), but most of controls (50.6%) were students. The result showed adolescents who were farmers or laborers had 3.3 times (95%CI: 1.2-7.4) higher chance of pregnancy (95%CI: 2.7-14.6). Sixty eight percent of cases lived with parents compared to 81.7% of controls who had the lowest rate of adolescent pregnancy. However, there was no significant difference on income and resi-

**Table 1** Personal characteristics among cases and controls

Personal characteristics	Case (n= 85) No. (%)	Control (n= 85) No. (%)	OR	95%CI	P
<b>Age (Years)</b>					
13-16	11 (13.0)	24 (28.2)	Ref.		
17-19	74 (87.0)	61 (71.8)	2.6	1.2- 5.5	.014 <sup>a</sup>
Mean $\pm$ SD	17.85 $\pm$ 1.24	17.34 $\pm$ 1.65			
Range	14- 19	13- 19			
<b>Education</b>					
Primary	5 (5.9)	14 (16.5)	Ref.		
Secondary	41 (48.2)	32 (37.6)	3.5	1.1- 11.0	.038 <sup>b</sup>
$\geq$ High school	39 (45.9)	39 (45.9)	2.8	0.9- 8.5	.076 <sup>b</sup>
<b>Occupation</b>					
Student	17 (20.0)	43 (50.6)	Ref.		
Farmer/ laborer	28 (32.9)	21 (24.7)	3.3	1.5- 7.4	.002 <sup>a</sup>
Others	40 (47.0)	21 (24.7)	6.3	2.7- 14.6	<.001 <sup>a</sup>
<b>Income (Baths per month)</b>					
$\leq$ 6,000	51 (60.0)	54 (63.5)	Ref.		
>6,000	34 (40.0)	31 (36.5)	1.2	0.6- 2.1	.636 <sup>a</sup>
<b>Residence ( Living with)</b>					
Parents	58 (68.2)	67 (78.8)	Ref.		
Others	27 (32.8)	18 (21.2)	0.9	1.1- 4.3	.114 <sup>a</sup>

n = number, SD = standard deviation, <sup>a</sup> Pearson chi-square test, <sup>b</sup> Fisher's Exact test,  
Ref. = reference group

**Table 2** Family characteristics among cases and controls

Family characteristics	Case (n= 85)	Control (n= 85)	OR	95%CI	P
	n (%)	n (%)			
Family income (Baht/ month)					
≤6,000	34 (40.0)	31 (36.5)	Ref.		
>6,000	51 (60.0)	54 (63.5)	1.1	0.6- 2.1	.636 <sup>a</sup>
Parental marital status					
Living together	57 (67.1)	72 (84.7)	Ref.		
Separated (divorce, death)	28 (32.9)	13 (15.3)	2.7	1.3- 5.7	.007 <sup>a</sup>
Father's occupation					
Farmer/ labor	63 (88.7)	68 (91.9)	Ref.		
Others	8 (21.3)	6 (8.1)	0.7	0.3- 2.1	.582 <sup>b</sup>
Mother's occupation					
Farmer/ labor	70 (82.4)	61 (71.8)	1.8	0.9- 3.8	.101 <sup>a</sup>
Others	15 (17.6)	24 (28.2)	Ref.		
Family type					
Nuclear family	52 (61.2)	49 (57.6)	1.1	0.5- 1.6	.639 <sup>a</sup>
Extended family	33 (38.8)	36 (42.4)	Ref.		
Number of sibling					
1	9 (10.8)	10 (12.0)	Ref.		
2	41 (49.4)	37 (44.6)	1.3	0.3- 2.2	.684 <sup>a</sup>
>3	33 (39.8)	36 (43.4)	1.0	0.4- 2.7	.972 <sup>a</sup>
Mean± SD	2.5± 1.3	2.5± 2.5			
Range	0 - 8	0 - 7			
Order of sibling					
Eldest/ one child	38 (44.7)	42 (49.4)	Ref.		
Others	47 (55.3)	43 (50.6)	1.2	0.7- 2.2	.539 <sup>a</sup>

n = number, SD = standard deviation, <sup>a</sup> Pearson chi-square test, <sup>b</sup> Fisher's Exact test,  
 Ref. = reference group

**Table 3** Peer characteristics among cases and controls

Peer characteristics	Case (n= 85)	Control (n= 85)	OR	95%CI	P
	n (%)	n (%)			
Number of close friend					
0-2	26 (30.6)	24 (28.2)	1.1	0.6- 2.2	.736 <sup>a</sup>
≥3	59 (69.4)	61 (71.8)	Ref.		
Mean± SD	1.69± 0.89	1.72± 0.88			
Range	1 – 4	1 - 4			
Close friends' location					
Nearby	45 (52.9)	47 (55.3)	Ref.		
Far away	40 (47.1)	38 (44.7)	1.1	0.5- 1.7	.758 <sup>a</sup>
Having pregnant friends					
Yes	58 (68.2)	39 (45.9)	2.5	1.4- 4.7	.003 <sup>a</sup>
No	27 (31.8)	46 (54.1)	Ref.		
Having married friends					
Yes	60 (71.4)	40 (47.1)	2.8	1.5- 5.3	.001 <sup>a</sup>
No	24 (28.6)	45 (52.9)	Ref.		

n= number, SD = standard deviation, <sup>a</sup> Pearson chi-square test, Ref.= reference group

dence between cases and controls. Table 2 shows family characteristics which found that only parental marital status had statically significant whereas a case group had 2.7 times higher chance to be pregnant than a control group p.007 (95%CI: 1.3- 5.7). Table 3 shows peer characteristics. The result presented two factors had statically associated with adolescent pregnancy were adolescent having pregnant friends had 2.5 higher risk and having married friends had 2.8 higher risk to be pregnant than control group (95%CI: 1.4-4.7) and (95%CI: 1.5-5.3), respectively.

The results showed that the factors of level of knowledge, level of attitude towards sex, and level of friends' acceptance had no significant association with adolescent pregnancy. On the other hand, high level of sexual behaviors was 1.3 times higher risk of pregnancy which was statically significant (95%CI: 1.2-6.5). (Table 4)

Table 5 shows the results of the final model when potential confounders were adjusted by multiple logistic regression analysis. Three factors still had statically significant were occupation (not students), and parental marital status (separated), and having pregnant friends.

## Discussion

The objective of the study was to study factors associated with adolescent pregnancy in a rural area of Kalasin province where is a developing area in the northeastern part of Thailand. Significant factors associated with adolescent pregnancy analyzed by multiple logistic regression analysis were occupation, parental marital status, and having pregnant friends. The finding were in accordance with previous studies which found that adolescents who had low level education were more associated with pregnancy than

**Table 4** Comparison of level of knowledge about sex, attitude towards sex, risk sexual behaviors, and friends' acceptance among cases and controls

Level (scores)	Case (n= 85) n (%)	Control (n= 85) n (%)	OR	95%CI	P
<b>Knowledge about sex</b>					
Low (0- 5)	21 (24.7)	17 (20.0)	1.8	0.8- 4.2	.162 <sup>a</sup>
Moderate (5-7)	43 (50.6)	37 (43.5)	1.7	0.8- 3.5	.133 <sup>a</sup>
High (8-10)	21 (24.7)	31 (36.5)	Ref.		
Mean± SD	6.49± 1.45	6.83± 1.52			
Range	2 - 9	3 - 10			
<b>Attitude towards sex</b>					
Low (≤25)	15 (17.6)	16 (19.1)	1.1	0.4- 2.8	.853 <sup>a</sup>
Moderate (26- 29)	52 (61.2)	47 (55.9)	1.3	0.6- 2.8	.465 <sup>a</sup>
High (≥30 )	18 (21.2)	21 (25.0)	Ref.		
Mean± SD	26.34± 2.12	26.86± 2.39			
Range	18- 34	18- 31			
<b>Risk sexual behaviors</b>					
Low (≤17)	17 (20.0)	20 (23.5)	Ref.		
Moderate (18-25)	45 (52.9)	55 (64.7)	0.9	0.5- 2.2	.921 <sup>a</sup>
High (≥26)	23 (27.1)	10 (11.8)	1.3	1.2- 6.5	.045 <sup>a</sup>
Mean± SD	20.68± 6.70	18.70± 5.71			
Range	10- 47	10- 40			
<b>Friends' acceptance</b>					
Low (≤10)	9 (63.3)	7 (43.8)	1.8	0.5- 6.5	.361 <sup>a</sup>
Moderate (11- 15)	65 (51.2)	62 (48.8)	1.5	0.6-3.5	.398 <sup>a</sup>
High (≥16)	11 (40.7)	16 (59.3)	Ref.		
Mean± SD	13.04± 2.14	13.73± 2.64			
Range	7- 19	8- 21			

n = number, SD = standard deviation, <sup>a</sup> Pearson chi-square test, Ref. = reference group**Table 5** Factors associated with adolescent pregnancy by multiple logistic regression analysis

Variables	OR adj	95%CI
Age (17- 19 years old)	1.5	0.6- 3.8
Education (more than primary)	2.6	0.9- 6.9
Occupation ( other than student)	3.0	1.4- 6.6*
Parental marital status (separated or divorced)	3.5	1.3- 9.1*
Having pregnant friends	2.9	1.1- 7.9*
Having married friends	1.8	0.8- 3.8
Having high risk behaviors	1.1	0.5- 2.5

OR adj= Adjust odds ratio \* significant association

those who had higher education<sup>(14,15)</sup>. It is known that keeping girls in school can reduce the rate of adolescent pregnancy<sup>(16)</sup>. Furthermore, WHO suggested that preventing early marriage is one of alternative choices to delayed adolescent pregnancy and suggested that maintaining youths in educational system can delay engaging sexual activity and adolescent pregnancy. Both formal and informal education are crucial factors in guiding the sexual development of adolescence<sup>(17,18)</sup>.

The findings confirmed a significant association between adolescents who were raised by a single parent<sup>(11)</sup>. The study of Patricia et al. found that parental death had an association with adolescent pregnancy because lack of parents guidance which cause stress and provoke risk behavioral problems including initiated and unprotected sexual intercourse in female adolescents<sup>(19)</sup>. However, the study also found that parental divorce or separation had no significant association with adolescent parenthood because one of parents might support those adolescents. Young mothers viewed giving births of their babies could help them to cope with loneliness, and to improve their poor family situations.

Abbey S M et al. showed that adolescent behaviors and adolescent premarital pregnancy can be linked to characteristics of friends and neighborhoods<sup>(16)</sup>. Disadvantaged friends and neighborhoods

do influence adolescent's values which are conducive to risky sexual behavior. Adolescents in these contexts are at risk for exposure to unprotected sexual intercourse and unplanned pregnancy.

Prasartkul et al. found that knowledge levels were low for both rural and urban adolescents<sup>(11)</sup>. Attitude and behavior showed that single provincial urban females were increasingly more engaging in health risk behavior (sexual intercourse and substance use) compared to their rural counterparts. They also found that predisposing factors of premarital sexual activities among female adolescents were older age, living away from parents and relatives and residing in urbanized areas.

Educational system and female life skills should be established in the primary school such as contraceptive use, enhance life skills (negotiation and safer sex)<sup>(20)</sup>. Maintaining student status for female adolescents as long as possible may be helpful to protect unplanned pregnancy. Family support is also a crucial factor to protect adolescent engaging in risk sexual behaviors. Parents should act as a good model which would perform and enhance the self and spiritual well-being of their children. Community of sufficient organization and specialist services of sexual information, counseling and management when problems occur will also be valuable to alleviate adolescent sexual problems.





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## ปัจจัยที่มีความสัมพันธ์ต่อการตั้งครรภ์วัยรุ่นในชนบท ของจังหวัดกาฬสินธุ์

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### บทคัดย่อ

**ความเป็นมา** การตั้งครรภ์ในวัยรุ่นเป็นปัญหาสำคัญที่ส่งผลกระทบต่อสุขภาพของมารดาและทารก รวมไปถึงปัญหาด้านเศรษฐกิจและสังคมซึ่งเป็นอุปสรรคในการพัฒนาประเทศทั้งในระยะสั้นและระยะยาว

**วัตถุประสงค์** เพื่อศึกษาปัจจัยที่เกี่ยวข้องกับการตั้งครรภ์ในวัยรุ่นที่อาศัยอยู่ในชนบท อำเภอท่าคันโท จังหวัดกาฬสินธุ์

**วิธีการศึกษา** การศึกษาวิจัยครั้งนี้เป็นแบบ case - control กลุ่มศึกษาเป็นวัยรุ่นหญิงอายุ 10-19 ปี ตั้งครรภ์ครั้งแรก คลอดบุตรคนแรกภายใน 1 ปี หรือเพิ่งแท้งบุตรภายใน 6 เดือน จำนวน 75 ราย กลุ่มควบคุมได้แก่วัยรุ่นหญิงจำนวน เท่ากันอายุใกล้เคียงกันที่ไม่เคยตั้งครรภ์ และมีที่อยู่อาศัยใกล้เคียงกับกลุ่มศึกษา เก็บข้อมูลจากแบบสอบถามที่ตอบเอง ระหว่างวันที่ 1 มิถุนายน ถึง วันที่ 30 พฤศจิกายน 2556 วิเคราะห์ข้อมูลโดยใช้สถิติพรรณนา การวิเคราะห์แบบพหุ ตัวแปร (Pearson chi-square test Fisher's exact test และ Mann Whitney U test) และการวิเคราะห์ด้วย สถิติถดถอยลอจิสติก โดยกำหนดนัยสำคัญทางสถิติที่ระดับ 0.05

**ผลการศึกษา** พบปัจจัยที่มีความสัมพันธ์อย่างมีนัยสำคัญทางสถิติกับการตั้งครรภ์ในวัยรุ่นได้แก่ อายุ การศึกษา อาชีพ สภาพสมรสของบิดามารดา การมีเพื่อนที่ตั้งครรภ์หรือแต่งงานและพฤติกรรมเสี่ยงทางเพศ แต่ความรู้ ทักษะคิดเรื่อง เพศและการยอมรับของเพื่อนไม่มีความสัมพันธ์อย่างมีนัยสำคัญทางสถิติ เมื่อทดสอบทางสถิติถดถอยลอจิสติก พบว่า ปัจจัยที่ยังคงมีความสัมพันธ์อย่างมีนัยสำคัญทางสถิติกับการตั้งครรภ์ของวัยรุ่นคือ อาชีพ (OR= 3.0, (95%CI 1.4-6.6)) สภาพสมรสของบิดามารดา (OR= 3.5, (95%CI 1.3-9.1)), และการมีเพื่อนที่ตั้งครรภ์ (OR= 2.9, (95%CI 1.1-7.9))

**สรุปผลการศึกษา** การตั้งครรภ์ในวัยรุ่นมีความสัมพันธ์หลายปัจจัยที่มีความเกี่ยวข้องกัน จากการศึกษาครั้งนี้จะนำไปสู่ การแก้ไขปัญหาการตั้งครรภ์ในวัยรุ่น ได้แก่ ควรมีการส่งเสริมให้วัยรุ่นแต่งงานช้าลงได้มีการเรียนหนังสือในโรงเรียนให้นานที่สุด ส่งเสริมให้คนในครอบครัวมีปฏิสัมพันธ์ที่ดีต่อกัน เพื่อลดอุบัติการณ์การการตั้งครรภ์ในวัยรุ่นในประเทศไทยได้

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