

# Adolescent Pregnancy's Ongoing Effects on the Depression and Anxiety Scores in Subsequent Pregnancy

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## ABSTRACT

**OBJECTIVE:** Child/adolescent “marriages” and following pregnancies have adverse effects both on the child and adolescent mother. The aim of this study is to detect whether the adult pregnant women who have previous adolescent pregnancy more susceptible to the depression and anxiety than current adolescent pregnant women and the adult pregnant women who have no adolescent pregnancy history.

**STUDY DESIGN:** This cross-sectional study evaluated a total of 163 pregnant women who attended to our antenatal clinic. Subjects aged between 16 and 43 years including both adolescent and adult pregnant women were divided into three groups. These groups are current adolescent pregnant women (Group I), adult pregnant women who have adolescent pregnancy history (Group II), adult pregnant women who have no adolescent pregnancy history (Group III). Three groups were compared in terms of the pregnancy status, socio-demographic variables and depression-anxiety scores.

**RESULT:** In the current study the highest depression and anxiety scores were observed in Group II [depression scores' median (IQR) values respectively 5 (8.5) points for Group I, 12.5 (8.5) for Group II, 9 (12) for Group III ( $p < 0.001$  between Group I and Group II for BDI comparison). Anxiety scores' median (IQR) values respectively 19.5 (15.5) for Group II, 9 (15.5) for Group I, 14 (15.25) for Group III ( $p = 0.005$  between Group I and Group II for BAI comparison)].

**CONCLUSION:** Marriage and pregnancy at an early age are considered as risk factors for psychiatric morbidity in the next pregnancy. Therefore, women with a history of teenage pregnancy should be carefully monitored for depression and anxiety symptoms.

**Keywords:** Adolescent, Anxiety, Depression, Pregnancy

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## Introduction

Child and adolescent marriages are most common in western and central Africa and South Asia, and they are regarded as a violation of human rights in civilized countries (1,2). According to UNICEF, 34% of girls under the age of 18 and 11% under the age of 11 are forced to marry all over the world

except for China. The incidence of child/adolescent marriage in Turkish female children under the age of 18 and 15 are 14% and 3%, respectively (2). Of the world's female adolescent population excluding that of China, 22% is married or living with their spouses. The corresponding incidence for Turkey is 10% (2).

Child/adolescent 'marriage' is a major obstacle for getting a further and better education as well as for attaining new living/surviving capabilities for females (3). Child/adolescent “marriages” and following pregnancies have hazardous effects both on the child/adolescent mother and their children (4,5). Various studies have consistently shown that child/adolescent pregnancies are a leading risk factor for low birth weight and infant mortality (5,6). Moreover, these pregnancies are significantly associated with higher maternal mortality rate and adverse pregnancy outcomes (7,8).

Depression and anxiety are common health problems in pregnant women (9). They have adverse effects on obstetric, fetal, and neonatal outcomes (10-13). There are various reports about the negative impact of depression and anxiety on

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maternal and perinatal outcomes which are premature rupture of membranes, preterm delivery, respiratory distress syndrome of the newborn among adolescent pregnant women (14,15). Antenatal depressive symptoms are shown to be associated with young maternal age, low education and income levels (16) traumatic life experiences and unemployment (17), unwanted pregnancies, and spouse/husband violence (18).

Even though the correlation between sociodemographic characteristics and depression and anxiety are well established, data about the incidence and risk factors for depression and anxiety among pregnant women, especially among adolescent pregnant women, is sparse (19-21). Child/adolescent 'marriages' and the associated pregnancies are still important health and social problems both in developing and underdeveloped countries. They represent serious violation of basic human rights, putting very serious social responsibilities on adolescents' shoulders.

This study was conducted to compare depression and anxiety scores between adolescent pregnant women, pregnant women who previously have adolescent pregnancy, and pregnant women who have no adolescent pregnancy history, and to identify factors affecting depression and anxiety scores in this population.

## Material and Method

This cross-sectional study evaluated a total of 163 pregnant women who attended to our antenatal clinic at Maternity and Children's Hospital. Subjects aged between 16 and 43 years including both nulliparous and multiparous women were grouped into three groups as follows:

1. Group I consisted of currently pregnant women less than 18 years of age (adolescent pregnant women).
2. Group II consisted of pregnant women older than 18 years of age who have a history of pregnancy before 18 years of age (adult pregnant women who have adolescent pregnancy history).
3. Group III consisted of pregnant women older than 18 years of age who have no pregnancy before 18 years of age (adult pregnant women who have no adolescent pregnancy history).

Exclusion criteria included being unwilling to participate, being not a primary school graduate (being illiterate), and having a previous diagnosis of psychiatric or neurologic disorder. Yuzuncu Yil University ethics committee approved the study on September 2013. The approval decision number was 22. The participants were randomly allocated to the study. Informed consent was taken from those who accepted to participate. The study was conducted in accordance with the Declaration of Helsinki. All of the patients were first evaluated by an obstetrician-gynecologist as part of a pregnancy visit. After the evaluation of the status of pregnancy and socio-demographic data,

the patients were evaluated by a psychiatrist who interviewed with the patients to screen depression and anxiety disorders defined by DSM-IV (Diagnostic and Statistical Manual of Mental Disorders). Socio-demographic characteristics of the patients were recorded and their symptoms were evaluated using Beck depression scale and Beck anxiety scale.

Socio-demographic data form: A socio-demographic questionnaire developed by the authors was used to collect data concerning the pregnant women and their partners: age, parity, educational level, age at marriage, duration of the the marriage, if pregnancy was planned or not, nausea status during the first trimester, fear of weight gain during pregnancy, presence of a supporting partner, folic acid intake, age of male partner, presence of a crowded family, monthly income, and substance addiction (smoking) were questioned.

Beck depression scale was developed by Beck et al. (22) and adapted to Turkish by Hisli (23). This scale is made up of 21 questions. The score range is between 0-63 points. BDI score was used to identify factors affecting depression.

Beck anxiety scale was developed by Beck et al. (24) to evaluate the frequency of anxiety symptoms. The Turkish validation of this scale was carried out by Ulusoy et al. (25). The scale is composed of 21 questions, each of which is assigned with a score of zero to three. Beck anxiety inventory (BAI) score was used to identify factors affecting anxiety.

Variables like BDI score, BAI score, gravidity, parity, number of voluntary early termination of pregnancy were compared between groups using the Kruskal-Wallis nonparametric analyses of variance. After Kruskal-Wallis test, to find out which of the groups showed a significant difference, Post-Hoc pairwise comparison was done with Bonferroni correction. Linear regression analysis was used to find out the factors causing the differences found between the groups' BDI and BAI scores.

Statistical analyses and calculations were carried out using IBM SPSS Statistics 21.0 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.) and MS-Excel 2007 programs. Statistical significance was set at  $p < 0.05$ .

## Results

The number of subjects in Group I, Group I, and Group III was  $n=49$ ,  $n=28$ , and  $n=86$ , respectively. Table 1 showed the comparison of median and IQR (interquartile range) values of age, education level, age at marriage, gravidity, parity age difference between partners/husbands, and gestational weeks between groups. Post-Hoc Bonferroni correction of the comparisons showed that median age in Group I was statistically lower than in Group II and Group III; the educational level in Group II was statistically lower than in Group III and Group I. The median numbers of gravidity and parity were significantly higher in Group II than that of the other groups. The median

gestational week at interview of Group I was significantly lower than that of the other groups.

The comparisons regarding the socio-demographic and obstetric variables were shown on table 2. The percent of unplanned pregnancies was significantly greater in Group II than those in other groups. Spouse/husband support was less in Group II than those in the other groups. The incidence of a nuclear family was significantly higher in Group III compared to that of the other groups. The monthly income was significantly lower in Group I than in Group III.

The Post-Hoc Bonferroni corrections of the comparison of BDI and BAI scores' median (IQR) showed that both BDI scores of Group II 12.5 (8.5) and Group III 9 (12) were significantly higher than those of Group I 5 (8.5) ( $p<0.001$ ). Group II had significantly higher BAI score 19.5 (15.5) compared to Group I 9 (15.5) ( $p=0.005$ ).

A linear regression analysis was performed to find out fac-

tors related to BDI scores that were detected by correlation analyses and predicted clinical parameters. The linear regression model was found statistically significant ( $R^2=0.645$ ,  $F=23.757$ ;  $p<0.001$ ). While education years and having a crowded family have negatively affected BDI scores; smoking, gestational age, and gravidity had positive linear regression with BDI scores. Variables that predict the high BDI scores were shown on table 3.

A linear regression model was performed for factors related to BAI scores that were detected by correlation analyses and predicted clinical parameters. The linear regression model was found statistically significant ( $R^2=0.674$ ,  $F=20.796$ ;  $p<0.001$ ). The duration of marriage negatively affected BAI scores; a positive linear regression was shown between BAI scores and gestational age. Variables that predict the high BAI scores were shown on table 4.

A strong positive correlation was detected between BDI and BAI ( $Rho=0.617$ ;  $p<0.001$ ).

**Table I:** Comparison of variables between groups

Variable	group			Test statistics	p values
	Group I Median (IQR)	Group II Median (IQR)	Group III Median (IQR)		
Age	17 (1)	36 (11.5)	31 (13)	103.913	<0.001
Education level (years)	5 (6.5)	0 (5)	5 (3)	15.266	<0.001
Age at marriage	16 (1)	16 (1.75)	21 (5)	121.753	<0.001
Gravidity	1 (0)	7 (3.75)	2.5 (4)	83.496	<0.001
Parity	0 (0)	5 (3)	1 (2)	85.859	<0.001
Age difference between partners/ husbands	7.79 (3.43)	5.53 (3.54)	3.08 (3.54)	28.617	<0.001
Gestational weeks at interview	17 (12.5)	26 (17.75)	28 (15.75)	20.917	<0.001

**Table II:** Comparison of some socio-demographic and obstetric variables

	Groups			x <sup>2</sup>	p
	Group I n (%)	Group II n (%)	Group III n (%)		
Pregnancy planned					
Yes	40(81.6)	8(28.6)	56(65.1)	21.858	<0.001
No	9(18.4)	20(71.4)	30(34.9)		
Support of spouse/husband					
Yes	45(91.8)	18(64.3)	73(84.9)	10.062	0.007
No	4 (8.2)	10(35.7)	13(15.1)		
Crowded family					
Yes	32(65.3)	16(57.2)	27(31.4)	16.136	<0.001
No	17(34.7)	12(42.8)	59(68.6)		
Monthly income					
Less than the minimum wage	39(79.6)	21 (75)	49(56.9)	8.215	0.013
At least equal to the minimum wage	10(20.4)	7 (25)	37(43.1)		

**Table 3:** Variables that predict the high beck depression inventory scores

MODEL 1 (BDI score)	B	Std. Err	$\beta$ (standardized coefficients)	t	p
Education level (years)	-0.437	0.188	-0.221	2.328	0.021
Gestational week	0.173	0.061	0.351	2.839	0.005
Gravidity	1.557	0.750	0.540	2.075	0.040
Crowded family	-2.648	1.278	-0.140	2.071	0.040
Cigarette smoking	4.150	1.919	0.111	2.163	0.032

**Table 4:** Variables that predict the high beck anxiety inventory score

MODEL 1 (BAI score)	B	Std.Err	$\beta$ (standardized coefficients)	t	p
Duration of marriage	-0.524	0.235	-0.312	2.230	0.027
Gestational week	0.422	0.087	0.581	4.866	<0.001

## Discussion

In this cross-sectional study, we compared the incidence of depression and anxiety between adolescent pregnant women, adult pregnant women who have previous adolescent pregnancy, and adult pregnant women who have no adolescent pregnancy. The highest depression and anxiety scores were observed in adult pregnant women who have adolescent pregnancy history. Some socio-demographic and obstetric factors were also found to contribute to depression and anxiety scores. Low education level and high median gravidity and parity number, not having crowded family compared to the Group I, low-level spouse/husband support, high level unplanned pregnancy were detected to contribute to the high depression and anxiety level in Group II. Additionally, linear regression analysis showed that the higher gestational week cause to increasing level of depression and anxiety in Group II compared to Group I. Current study stressed that in spite of depression and anxiety didn't observe in first pregnancy of adolescents by the aim of some sociodemographic variables, they can be observed in long term and subsequent pregnancy.

In accordance with a previous study by Akbas et al., it was observed that having a crowded family significantly decreased the depression score during pregnancy (26). This finding may be explained by the social support of the family during pregnancy. As the couples get older, the incidence of living with the parent decreases and the incidence of a nuclear family increases. In this study, depression and anxiety scores were the lowest in Group I where the incidence of having a crowded family was the highest.

There are reports showing teenage pregnancy as a risk factor for depression during pregnancy (19,27). However, in the present study, the depression score was significantly lower in adolescent pregnant women compared to adult pregnant women who have history of adolescent pregnancy and adult

pregnant women who have no adolescent pregnancy history. This is probably caused by the lower gestational week, lower gravidity number, higher education years and higher having crowded family according to Group II and socio-demographic characteristics of the study population. The median age at marriage was 16 in this group. Because girls living with their family have to perform unpaid work within their household and suffer financially, they consider marriage an escape from the burden of living with their family, and they are usually dreaming of having a rich husband as well (28). Traditionally, young-age marriages are supported by many of Turkish societies (29). The majority of adolescent pregnancies occur within their family's knowledge (5,30). Just after their marriages, girls become pregnant due to the fear of facing the social pressure to conceive also the lack of knowledge of using oral contraceptive medicine (31). For these reasons planned pregnancy ratio is higher in the Group I than the Group II in the current study. Teenage pregnant women perceive their condition as 'normal' since adolescence marriages are common and approved by families. In addition to these factors, this group had a lower gestational age and did not have experience with the labor process. Linear regression analysis showed that the higher gestational week cause to increasing level of depression and anxiety. Labor is quite a painful and traumatic process for pregnant women (32). The pregnant adolescent group had lower depression and anxiety scores because they did not experience any labor process yet. For all these reasons, depression and anxiety scores were low in pregnant women less than 18 years of age.

High educational level has shown to be protective against depression in some studies, due to being able to communicate with others better to get social support (33-35). In accordance with this result, the current study showed that a higher education level had a protective effect against depression and anxiety among pregnant women. As these women get older, they start to realize the opportunities lost about education and the

burden of having many children at an early age. BDI score was highest among adult pregnant women who have adolescent pregnancy history. Lower educational level, higher parity, later gestational weeks and a lower ratio of living in a crowded family, having labor process compared to Group I were factors responsible for higher BDI scores for Group II. This group had more responsibilities compared to adolescent pregnant women and experienced all the negative effects of having a child at an earlier age compared to adult pregnant women without history of adolescent pregnancy. This might be one of the reasons for higher depression score in this group. Moreover, this group received less support from spouses/husbands compared to Groups I and III. All these factors may contribute to the higher depression scores among Group II (adult pregnant women who have adolescent pregnancy history).

The anxiety scores were found to be highest among Group II (adult pregnant women who have adolescent pregnancy history ( $p=0.004$ ). As the pregnancy progresses over weeks, anxiety might increase. An increased gestational age in weeks in Group II compared to Group I was one of the factors explaining higher BAI scores. However, as the age at marriage got older, BAI score decreased. This may be due to having more realistic expectations and less concern about pregnancy.

The most commonly coexistent psychiatric disorders among teenagers are depression and anxiety (36). More than 75% of people with depression have also been reported to have anxiety symptoms (37). In the current study, BDI and BAI scores showed a positive correlation with each other ( $Rho=0.617$ ;  $p<0.001$ ).

The strongest aspects of this study were the large number of adolescent pregnant women, evaluation of subjects both by an obstetrician-gynecologist and by a psychiatrist, and use of different scales for the evaluation of depression and anxiety. Moreover, psychosocial aspects and risk factors were also evaluated. The limitations of the study were that it was a cross-sectional study carried out at a specific region and among subjects who applied to a hospital for antenatal follow-up. Moreover, the groups were heterogeneous with respect to gestational age.

Marriage, pregnancy, and labor process at an early age are considered as risk factors for increased life-long psychiatric morbidity in spite of this morbidity has not been observed because of the early gestational week, having crowded family and some socio-demographic characteristics of the regional population, in the current study. Women with a history of teenage pregnancy should be carefully monitored for depression and anxiety during subsequent pregnancies. Screening programs should be developed for these psychiatric disorders in these groups of women. However, the primary aim should be to focus on measures to prevent teenage marriages and pregnancies, which impose both social and health problems on individuals and societies. The greatest responsibility is for the

families and the teachers, who contact with teenagers mostly. The other preventive measures are perhaps legal punishments for families who allow/force their teenager children to marry and increasing the number of years of compulsory education.

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