

Adolescent pregnancies and perinatal outcomes: a study at tertiary hospital at the eastern part of Turkey

N. Peker¹, A. Demir², C. Aydın³, A. Biler², S. Gundogan¹

¹ Department of Obstetrics and Gynecology, Acibadem University Atakent Hospital, Istanbul

² Department of Obstetrics and Gynecology, Tepecik Training and Research Hospital, Izmir

³ Department of Obstetrics and Gynecology, Acibadem University Bahçeşehir Medical Centre, Istanbul (Turkey)

Summary

Objective: The authors evaluate the clinical features and obstetric outcomes of the adolescent pregnancies at the eastern part of Turkey. **Materials and Methods:** This is a retrospective study included 550 adolescent pregnant women aged less than 19 years who were followed up and gave birth at Elazig Research and Training Hospital between 2010 and 2013. **Results:** The 550 pregnant had a mean age of 18 ± 1.13 (13-19) years, a mean gravidity of 1.19 ± 0.57 (1-10), a mean parity of 0.15 ± 0.39 (0-2), and an average number of abortions of 0.03 ± 0.17 (0-1). Of the 550, 369 (67.1%) had a spontaneous vaginal delivery (SVD), 179 (32.5%) had a cesarean delivery, and two (0.4%) had an abortion. Of the 550, 539 (98%) had a term delivery and 11 (2%) had a preterm delivery at mean gestational week of 31 ± 2.4 (range, 27-34). No obstetric or postpartum complication occurred in 90.4% (n=497) of the patients. The most common obstetric complication was intrauterine growth restriction (IUGR) (n=28; 5.1%) and the most common postpartum complication was deep vaginal laceration (n=11; 2%). **Conclusion:** Although there is no marked difference between adolescent and adult pregnant women in terms of perinatal problems, adolescent pregnancies should always be regarded as risky pregnancies and these issues should be kept in mind in the management of adolescent pregnancies.

Key words: Adolescent; Pregnancy; Perinatal outcomes.

Introduction

Adolescence is the period of life between childhood and adulthood characterized by biological, psychological, and social changes and it is defined as the period between 10-19 years of age by World Health Organization (WHO). Adolescents account for 30% of the world population [1]. In Turkey, a report by the Turkey Population and Health Research (TPHR) revealed that adolescents comprise 26% of the population, 16% of them are married, and the adolescent birth rate increases with age [2].

A WHO report analyzing adolescent fertility based on countries and their level of development (2014) indicated that although most of the adolescents live in developing countries, adolescent pregnancy is a major problem for developed countries as well [3]. It has also been reported that most of the adolescent pregnancies in developed countries are premarital, unintended, and unplanned [4]. In these countries adolescent girls are given effective contraceptive trainings in order to reduce the adolescent pregnancy rates.

A recent report by the United Nations Population Fund (UNFPA), called the State of World Population Report (2014), showed that one-third of the married women in Turkey are aged less than 18 years and each year 91,000 women aged less than 18 years give birth. The report also indicated that the Turkish 15-19 year old birth rate is 28

births per 1,000 [5]. These findings suggest that most of the adolescent pregnancies in Turkey are planned resulting from early-age marriages. In order to reduce the adolescent pregnancy rates in Turkey, public awareness raising programs are being conducted to promote girls' education and to prevent child marriage.

The risk factors for adolescent pregnancy are multiple and complex. Although contradictory results have been reported for the maternal and perinatal effects of adolescent pregnancies, these pregnancies are mostly classified as risky pregnancies [6]. In these pregnancies, the incidence of preterm labor, low birth weight, anemia, postpartum hemorrhage, perinatal mortality and morbidity, dystocia, deep vaginal laceration, and smoking and substance use is remarkably high. The reason for this high incidence is associated with the psychological and social unreadiness of the adolescents to childbearing and inadequate access to pre- and post-partum child care. It has been shown that if adequate antenatal care is provided and the poor environmental conditions are improved, the perinatal outcomes in women aged over 17 years are not significantly different from those of women aged over 20 years [6].

The present hospital is a research and training hospital and also a regional referral center for the cases of adolescent pregnancy. In this study, the authors aimed to shed

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light on the contradictory issues related to adolescent pregnancy by evaluating the clinical features and obstetric outcomes of the adolescent pregnant women who were followed up and gave birth at Elazig Research and Training Hospital between 2010 and 2013.

Materials and Methods

The study included 550 adolescent pregnant women aged less than 19 years who were treated and followed up at Elazig Research and Training Hospital between 2010 and 2013. The clinical and perinatal records were retrospectively reviewed. The patients that were examined for a minimum of three times during pregnancy were accepted as the patients followed up during the antenatal period and thus were included in the study. Gestational age was calculated based on the last normal menstrual period (LMP). If the patient was unsure of her LMP, the gestational age was calculated based on the first- or second-trimester ultrasound examinations. For each patient, age, number of pregnancies, births, and abortions, gestational week at delivery, mode of delivery, indications for cesarean delivery (in the women that had cesarean delivery), newborn weight, and obstetric and postpartum complications (intrauterine growth restriction [IUGR], oligohydramnios, prematurity, placental anomaly, chromosomal abnormality, preeclampsia, placenta decolman, stillbirth, and deep vaginal laceration) were recorded. Data were analyzed using SPSS 19.0. Continuous variables were expressed as mean \pm standard deviation (SD) or median (minimum-maximum) and the nominal variables were expressed as count and percentage.

Results

The 550 women had a mean age of 18 ± 1.13 (13-19) years, a mean gravidity of 1.19 ± 0.57 (1-10), a mean parity of 0.15 ± 0.39 (0-2), an average number of abortions of 0.03 ± 0.17 (0-1), and a mean newborn weight of $3,139.63 \pm 491.54$ grams (900-4900) (Table 1). Most of the women were nulliparous and primigravida (gravida 1, 85.3%; parity 0; 86.7%) (Table 2). Table 3 presents the distributions of the number of childbirths according to the maternal age of the women. The results indicate that the pregnancy rate increased with age.

Of the 550 women, 369 (67.1%) had a spontaneous vaginal delivery (SVD), 179 (32.5%) had a cesarean delivery, and two (0.4%) had an abortion. The indications for cesarean delivery included nonprogressive labor (n=39; 7.1%), cephalopelvic disproportion (n=34; 6.2%), fetal distress (n=31; 5.6%), history of cesarean delivery (n=28; 5.1%), vertex presentation (n=20; 3.6%), fetal macrosomia (n=17; 3.1%), multiparity (n=49; 0.7%), prematurity (n=1; 0.2%), and other complications (n=5; 0.9%) (Table 4).

No obstetric or postpartum complication occurred in 90.4% (n=497) of the women. The complications occurred in 53 (9.6%) women, including IUGR (n=28; 5.1%), deep vaginal laceration (n=11; 2%), prematurity (n=11; 2%), in utero mort fetus (IUMF) (n=2; 0.4%), oligohydramnios (n=1; 0.2%), and placental decolman (n=1; 0.2%) (Table 5).

Table 1. — *Demographic characteristics of the women.*

	Mean \pm SD	Range
Age (years)	18.00 ± 1.13	13-18
Gravidity	1.19 ± 0.57	1-10
Parity	0.15 ± 0.39	0-2
Abortion	0.03 ± 0.17	0-1
Newborn weight (grams)	3139.63 ± 491.54	900-4900

Table 2. — *Reproductive histories of the women.*

Gravidity	Parity		Abortion		
1	469 (85.3%)	0	477 (86.7%)	0	533 (96.9%)
2	66 (12%)	1	65 (11.8%)	1	17 (3.1%)
3	14 (2.5%)	2	2 (1.5%)		
>3	1 (0.2%)				

Table 3. — *Distributions of the number of childbirths based on the maternal age of the women.*

Age	13	14	15	16	17	18	19
Parity	2	3	18	32	88	177	230
(%)	(0.4%)	(0.5%)	(3.3%)	(5.8%)	(16%)	(32.2%)	(41.8%)

Table 4. — *Indications for cesarean delivery (n=179).*

Nonprogressive labor	39 (7.1%)	Macrosomia	17 (3.1%)
Cephalopelvic disproportion	34 (6.2%)	Multiparity	4 (0.7%)
Fetal distress	31 (5.6%)	Prematurity	1 (0.2%)
History of cesarean delivery	28 (5.1%)	Others	5 (0.9%)
Vertex presentation	20 (3.6%)		

%; indication/total number of adolescent pregnant women (550)*100

Table 5. — *Obstetric and postpartum complications (n=550)*

IUGR	28 (5.1%)	Oligohydramnios	1 (0.2%)
Deep vaginal lacer.	11 (2%)	Placenta decolman	1 (0.2%)
Prematurity	11 (2%)	No complication	497 (90.2%)
IUMF	2 (0.4%)		

Table 6. — *Gestational week at delivery in the women that had a preterm delivery (n=11).*

Gestational week	27	28	29	30	31	32	33	34
Number of births	1	1	1	1	2	1	2	2

Of the 550 women, 539 (98%) had a term delivery and 11 (2%) had a preterm delivery. In the women that had a preterm delivery, mean gestational week at delivery was 31 ± 2.4 (range, 27-34) weeks (Table 6).

Discussion

Adolescent pregnancy remains a challenging problem both for developed and developing countries and accounts for 10% of all births worldwide. According to TPHR, the rate of adolescent pregnancy in Turkey was 10.2% in 1993 and decreased to 4.6% in 2013 [2]. In the present study, the adolescent pregnant women accounted for 5.5% of all the births delivered at the present hospital between 2010 and 2013. These findings suggest that the rate of adolescent pregnancy in the authors' region was higher than the Turkish average and lower than the world average in the period between 2010 and 2013. Similarly, two studies assessed the rate of adolescent pregnancy over the same period and indicated that the mean rate for Manisa Province was 7.19% [7] and the rate for Denizli Province was 5% [8]. The discrepancies between the studies may be associated with the differentiation in the time periods of the studies and the regional differences.

In the present study, the highest number of pregnancies was in the women aged 19 years (41.8%) and the lowest in the women aged 13 years (0.4%). According to the 2013 report by TPHR, the rate of adolescent pregnancy in the women aged less than 17 years was remarkably low but this rate sharply increased in women aged 18 years or over. The report also noted that 16% of the women aged 19 years had given a birth or were primigravida [2]. In the present study, the pregnancy rate was significantly higher in the women aged 18 years or over. Of the 550 women, 26% were aged less than 18 years and 74% were aged 18 years or over. The present authors consider that this difference could be attributed to the fact that the minimum legal age for marriage in Turkey is 18 years. However, the finding that indicated that 13% of the women in the present study were multiparous and 14.7% of them were multigravida suggests that these women had their first delivery in their early adolescent periods.

Studies have shown that the pelvic bone does not reach full development in some adolescent pregnancies, thus leading to higher rates of cesarean delivery due to cephalopelvic disproportion. However, in recent reports, the rates of cesarean delivery have been shown to be lower compared to control groups [9-11]. Zeteroglu *et al.* evaluated 40,391 pregnant women and reported that the rates of cesarean delivery were lower in adolescent pregnant women [12]. In the present study, 32.5% of the women had a cesarean delivery and this rate was consistent with the literature and with the rates of cesarean delivery in Turkey. Today, the most common indication for cesarean delivery in all women is the history of cesarean delivery and the most

common indication in adolescent pregnant women is cephalopelvic disproportion. In the present study, the most common indication for cesarean delivery was nonprogressive labor (7.1%), followed by cephalopelvic disproportion (6.2%). Interestingly, the history of cesarean delivery was the fourth most common indication for cesarean delivery (5.1%). These findings indicate that most of the multiparous women that accounted for 13.3% of the women in the present study had a history of SVD.

The induced abortion rate in Turkey is reported to be 0.14 per pregnant woman. However, the abortion rate among the adolescent pregnant women living in urban areas has been shown to be relatively lower and it has been reported to be 0.2% among the adolescent pregnant women living in rural areas [2]. In the present study, two (0.4%) women had an abortion and this rate was higher than the Turkish average.

Studies have shown that low birth weight in adolescent pregnant women can result from lack of antenatal care. Florian *et al.* investigated 775 pregnant women in Middle Africa and found that the rate of low birth weight was higher in adolescent pregnant women compared to the control group [13]. In the present study, the mean birth weight was 3,100 grams, which indicates that the women in this study received good antenatal care since most of the adolescent pregnancies in the authors' region are planned pregnancies and thus the adolescents are married during early adolescence.

Adverse obstetric outcomes including preeclampsia, premature rupture of membranes, preterm labor, and increased risk of perinatal mortality have been reported in adolescent pregnancies. Literature shows that there are numerous studies suggesting that adolescent pregnant women aged less than 18 years have an increased risk for preterm labor [14-16]. Satin *et al.* analyzed the perinatal outcomes of 16,500 nulliparous women and reported that the adolescent pregnant women had a significantly higher risk of preterm labor compared to older pregnant women [17]. Demir *et al.* conducted a study at Cukurova University Medical School Hospital in 2000 and revealed that the preterm labor rate in adolescent pregnant women was 7% [18]. In the present study, the preterm labor rate was 2%, which was consistent with the low preterm labor rate. The discrepancy between these rates may be associated with the high frequency of home deliveries in the present region. This issue is the limitation of this study.

Fetal anomalies constitute a major issue in adolescent pregnancy. Canbaz *et al.* evaluated the presence of fetal anomalies in 357 neonates of adolescent pregnant women and reported that no anomalies of central nervous system, gastrointestinal system, and musculoskeletal system were found in any neonate [19]. However, a study conducted in Izmir Aegean Obstetrics and Gynecology Hospital found fetal anomalies in four out of 402 adolescent pregnant women, but this finding was not significant for the pregnant women in reproductive age [20]. Similarly, the present

authors found no fetal anomalies in any of the women in this study.

Preeclampsia has been shown to be more common in adolescent pregnant women due to the immaturity of their immune system and the lack of maternal antibodies that block chorionic villi [19]. Ingec *et al.* found that the eclampsia rate was significantly higher in adolescent pregnant women than in adult pregnant women, but no significant difference was found between the two groups in terms of the development of HELLP syndrome and preeclampsia [15]. In the present study, no signs of preeclampsia, eclampsia, and HELLP syndrome were found in any woman.

IUGR is also an important issue in adolescent pregnancy. Fraser *et al.* reported that the IUGR rate was significantly higher in adolescent pregnant women compared to adult pregnant women [21]. Conversely, a study conducted at Kanuni Sultan Suleiman Research and Training Hospital in 2014 reported that the IUGR rate in adolescent pregnant women was as 4.6% and this rate was similar to that of adult pregnant women [22]. Gordon *et al.* reported that no difference was found between adolescent and adult pregnant women in terms of IUGR rate when corrected for smoking status discrepancies. In the present study, IUGR was the most common obstetric complication (5.1%) and this rate was consistent with the IUGR rate in general population.

Pelvic bones and tissues do not reach full development in adolescent pregnancies, thus leading to higher incidence of prolonged and nonprogressive labor [23]. Obstetric interventions including forceps and vacuum extraction are performed to facilitate childbirth during vaginal delivery. In the present study, no obstetric intervention was required in the childbirth of any woman but deep vaginal laceration was the most common postpartum complication. Nevertheless, there was no marked increase in the incidence of complications including in utero mort fetus, oligohydramnios, and placenta decolman in the women included in this study.

The present study is retrospective analysis that reviewed the adolescent pregnant women in a single region over the period between 2010 and 2013. The present hospital is a regional referral center for the individuals married during early adolescence and for adolescent pregnant women. Nevertheless, the findings presented in this study might have been adversely affected by the high frequency of home deliveries and the lack of antenatal care in this region. The authors consider that when adolescent pregnant women have access to adequate maternal and antenatal care, there would be no marked difference in perinatal problems between these women and adult pregnant women. However, it is a common fact that most of the adolescent pregnant women do not have access to adequate antenatal care due to their low educational level and the difficulties in obtaining ac-

cessing health services. Therefore, adolescent pregnancies should always be regarded as risky pregnancies and thus utmost care should be taken for the problems they may encounter during the prenatal, perinatal, and postpartum periods.

References

- [1] McIntyre P.: "Pregnant adolescents. Delivering on global promises of hope". Geneva: WHO Library Cataloguing-in-Publication Data, 2006, 4. Available at: http://apps.who.int/iris/bitstream/10665/43368/1/9241593784_eng.pdf
- [2] TNSA 2013 rapor. Available at: http://www.hips.hacettepe.edu.tr/tnsa2013/rapor/TNSA_2013_ana_rapor.pdf [In Turkish]
- [3] World Health Organization (WHO): "World health statistics 2014" Available at: http://apps.who.int/iris/bitstream/10665/112738/1/9789240692671_eng.pdf
- [4] Jolly M.C., Sabire N., Harris J., Robinson S., Regan L.: "Obstetric risks of pregnancy of women less than 18 year old". *Obstet. Gynecol.*, 2000, 96, 9626.
- [5] United Nations population Fund (UNFPA): "The State of World Population 2014" Available at: http://www.unfpa.org/sites/default/files/pub-pdf/EN-SWOP14-Report_FINAL-web.pdf
- [6] Treffers P.E., Olukoyab A.A., Ferguson B.J., Liljestrand J.: "Care for adolescent pregnancy and childbirth". *Int. J. Gynecol. Obstet.*, 2001, 75, 111.
- [7] Eskicioğlu F.: "Our five-year results in approach to adolescent deliveries". *Pam. Tıp. Derg.*, 2015, 8, 199. Available at: http://www.journalagent.com/ptd/pdfs/PTD_8_3_199_203.pdf [In Turkish]
- [8] Karabulut A., Ozkan S., Bozkurt A.I., Karahan T., Kayan S.: "Perinatal outcomes and risk factors in adolescent and advanced age pregnancies: comparison with normal reproductive age women". *J. Obstet. Gynaecol.*, 2013, 333, 346.
- [9] Smith G.C., Pell J.P.: "Teenage pregnancy and risk of adverse perinatal outcomes associated with first and second births: population based retrospective cohort study". *BMJ*, 2001, 323, 476.
- [10] Satin A.J., Leveno K.J., Sherman M.L.: "Maternal youth and pregnancy outcomes: middle school versus high school age groups compared with women beyond the teen years". *Am. J. Obstet. Gynecol.*, 1994, 171, 184.
- [11] Lubarsky S.L., Schiff E., Friedman S.A., Mercer B.M., Sibai B.M.: "Obstetric characteristics among nulliparas under age 15". *Obstet. Gynecol.*, 1994, 84, 365.
- [12] Zeteroglu S., Sahin I., Gol K.: "Cesarean delivery rates in adolescent pregnancy". *Eur. J. Contracept. Reprod. Health Care*, 2005, 10, 119.
- [13] Kurth F., Belard S., Mombo-Ngoma G., Schuster K., Adegnika A.A., Bouyou-Akoté M.K., *et al.*: "Adolescence as risk factor for adverse pregnancy outcome in Central Africa—a cross-sectional study". *PLoS One*, 2010, 5, e14367.
- [14] Jolly M.C., Sebire N., Harris J., Robinson S., Regan L.: "Obstetric risks of pregnancy in women less than 18 years old". *Obstet. Gynecol.*, 2000, 96, 962.
- [15] İngeç M., Börekçi B., Yılmaz M., Kadanalı S.: "Adölesan gebeliklerde anne yaşının perinatal sonuçlara etkisi". *J. Turkish. German Gynecol. Assoc.*, 2005, 6, 290. [In Turkish]
- [16] Meydanlı M.M., Çalışkan E., Ecemiş T., Arlıer S., Dölen İ., Haberal A.: "Adölesanlarda gebelik sonuçlarının değerlendirilmesi". *Türkiye Klinikleri J. Gynecol. Obstet.*, 2000, 10, 98. [In Turkish]
- [17] Satin A.J., Leveno K.J., Sherman M.L.: "Maternal youth and pregnancy outcomes: middle school versus high school age groups compared with women beyond the teen years". *Am. J. Obstet. Gynecol.*, 1994, 171, 184.
- [18] Demir S.C., Kadayıfci O., Özgünen T., Evrücke C.: "Pregnancy outcomes in young Turkish women". *J. Pediatr. Adolesc. Gynecol.*,

- 2000, 13, 177.
- [19] Canbaz S., Sunter A.T., Cetinoglu C.E., Peksen Y.: "Obstetric outcomes of adolescent pregnancies in Turkey". *Adv. Ther.*, 2005, 22, 636.
- [20] Taner E.A., Kırmızı, A.D., İriş A., Başoğul Ö.: "Adölesan gebeliklerin sonuçları". *Göztepe Tıp Dergisi*, 2012, 27, 6.
- [21] Fraser A.M., Brockert J.E., Ward R.H.: "Association of young maternal age with adverse reproductive outcomes". *N. Engl. J. Med.*, 1995, 332, 1113.
- [22] Şeşkin K.D., Yücel B., Karşlı F.M., Özdemir Ç., Toğrul C., Çelik E., et al.: "Adölesan doğumların demografik özellikleri ve maternal-fetal sonuçları: İstanbul'da referans bir hastanede gerçekleştirilen olgu-kontrol çalışması". *Okmeydanı Tıp Dergisi*, 2016, 32, 14. [In Turkish]
- [23] McIntyre P.: "Health problems associated with adolescent pregnancy. Pregnant adolescents Delivering on Global Promises of Hope. Geneva: WHO Library Cataloguing-in-Publication Data, 2006, 10.

Corresponding Author:

N. PEKER, M.D.

Department of Gynecology and Obstetrics

Acibadem University, Istanbul

34000 Istanbul, (Turkey)

e-mail: dr.ata1980@hotmail.com