

# Adolescent pregnancies: a 10-year single-center experience

Deha Denizhan Keskin 

Department of Obstetrics and Gynecology, Ordu University School of Medicine, Ordu, Turkey

## ABSTRACT

**Objectives:** To investigate adolescent pregnancy rate in last decade and emphasize the perinatal outcomes.

**Methods:** Our study was a retrospective investigation of all women with singleton pregnancies who gave birth at > 20 weeks gestation aged 13-16 years old (early aged adolescent pregnancy group, n = 107), aged 17-19 years old (late aged adolescent pregnancy group, n = 991) and aged 20-35 years old (control group, n = 1,098) at Ordu University School of Medicine, Training and Research Hospital Obstetrics and Gynecology Clinic between January 2008 and January 2018. The variables used to determine the perinatal outcomes were low birth weight (birth weight < 2,500 g), macrosomic fetus (birth weight > 4,000 g) and stillbirth (delivery of infant > 20 weeks gestation without cardiac activity) prevalences were investigated and compared between groups.

**Results:** Adolescent birth ratio to all births was 4.4% (1,098/24,560). Low birth weight rate was higher in the late aged adolescent group ( $p < 0.001$ ). Cesarean section rate was significantly lower in the adolescent age group (40.2% in early aged and 7.2% in late aged) whereas rate was 56.3% in the control group. We attributed this to the high parity in the control group and the surplus of the old cesarean section indication ( $p < 0.001$ ).

**Conclusions:** Adolescent pregnancy, especially late aged adolescents were found to be closely related with low birth weight but there was no significant difference with respect to stillbirth rate in adult age group. Skilled antenatal, childbirth and postnatal care is very necessary to reduce low birth weight and therefore perinatal mortality.

**Keywords:** Adolescent pregnancy, low birth weight, public health concern

Adolescence is a transformative process between childhood and adulthood with biological, psychological and social changes. This is a very special period that influences the adolescent's and their newborn's future health and life [1, 2]. The World Health Organization (WHO) identifies adolescence as the period between 10-19 years. Secondary sexual characteristics, reproductive ability, mental processes, identity and independence develops in this period. According to the WHO report adolescents account for

30% of the world population and 95% of adolescents lives in developing countries [3-5].

Adolescent pregnancy, typically defined as a pregnancy in a female within the ages of 13-19. This is not new but the most important global health concern among the adolescence girls that occurs in high, middle and low income countries. Additionally poverty, lack of education and employment increases the incidence of adolescent pregnancy. Although 90% of births occur within marriage, for many adolescents

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Address for correspondence: Deha Denizhan Keskin, MD., Ordu University School of Medicine, Department of Obstetrics and Gynecology, Cumhuriyet Campus, 52010 Altınordu, Ordu, Turkey. E-mail: denizhan@odu.edu.tr

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pregnancy is neither planned nor wanted. According to the WHO fact sheet updated February 2018; every year 23 million adolescent girl become pregnant and 18.5 million girls give birth each year in developing regions. Almost 4 million girls undergo unsafe abortions every year. The report also emphasized that the global adolescent birth rate has declined from 6.5% in 1990 to 4.7% in 2015. Despite this overall progress, because the global population of adolescents continues to grow, projections indicate the number of adolescent pregnancies will increase globally by 2030, with the greatest proportional increases in Africa [5].

No doubt pregnancy is the most important life event for women and necessitates physical, mental and socioeconomic adaptations. Yet the adolescent girls' adaptation capacity is not enough so lots of problems may occur. Complications during pregnancy and childbirth are the second leading cause of death for adolescent girls globally [6].

In our study we aimed to investigate adolescent pregnancy rate in last decade and emphasize the perinatal outcomes.

## METHODS

This study was conducted after receiving approval from the ethics committee of Ordu University School of Medicine, Training and Research Hospital.

Our study was a retrospective investigation of all women with singleton pregnancies who gave birth at  $\geq 20$  weeks gestation aged 13-16 years old (early aged adolescent pregnancy group,  $n = 107$ ), aged 17-19 years old (late aged adolescent pregnancy group,  $n = 991$ ) and aged 20-35 years old (control group,  $n = 1,098$ ) at Ordu University School of Medicine, Training and Research Hospital, Obstetrics and Gynecology Clinic between January 2008 and January 2018. The control group was randomly formed aged 20-35 years old women from 24,560 births in the last

decade. Pregnant women  $\geq 35$  years old were excluded from the study for not to affect the pregnancy risks of control group. Maternal age was defined as the completed age of the pregnant at the time of delivery.

Parameters such as age, parity, fetal sex, fetal birth weight, birth pattern (cesarean and vaginal delivery) were examined from hospital registry system and file scanning. The variables used to determine the perinatal outcomes were low birth weight (birth weight  $\leq 2,500$  g), macrosomic fetus (birth weight  $\geq 4,000$  g) and stillbirth (delivery of infant  $\geq 20$  weeks gestation without cardiac activity) prevalences were investigated and compared between groups.

## Statistical Analysis

Statistical analyses were performed with the SPSS 20.0 program package. Mann Whitney-U test or independent samples-t test were used to compare continuous variables, chi square test was used to compare categorical variables.

## RESULTS

The records of 24,560 patients who delivered between January 2008 and January 2018 were reviewed. Adolescent birth ratio to all births was 4.4% (1,098/24,560). The mean age of adolescent pregnancies (under 19 years old) was  $17.9 \pm 1.1$  years (range; 13-19 years). Singleton pregnancies who gave birth at  $\geq 20$  weeks gestation were separated three groups; aged 13-16 years old (early aged adolescent pregnancy group,  $n = 107$ ), aged 17-19 years old (late aged adolescent pregnancy group,  $n = 991$ ) and aged 20-35 years old (control group,  $n = 1,098$ ) ( $p < 0.001$ ). Comparison of mean age among the groups were given in Table 1.

There was a significant difference between the groups according to parity. The average of parity was 1.22 (range; 1-3) (early aged) and 1.25 (range; 1-4)

**Table 1. Mean age and standart deviation of groups**

Parity of groups	All Adolescents	Early aged Adolescent	Late aged Adolescent	Control	<i>p</i> value
Mean age	17.9	15.57	18.19	26.42	<b>&lt; 0.001</b>
Standart deviation	1.1	0.72	0.78	4.25	

**Table 2. Mean parity and range of parity of groups**

Parity of groups	All Adolescents	Early aged Adolescent	Late aged Adolescent	Control	p value
Mean parity	1.24	1.22	1.25	2.18	< 0.001
Range of parity	1-4	1-3	1-4	1-7	

(late aged) in the adolescent pregnancy groups whereas 2.18 (range; 1-7) in control group ( $p < 0.001$ ). Comparison of parity average among the groups were given in Table 2.

Birth weight was significantly lower in the adolescent age group. The average of birth weight were  $3,201 \pm 445$  g (early aged) and  $3,158 \pm 500$  g (late aged) in the adolescent groups whereas  $3,312 \pm 523$  g in control group. The birth weight of the late aged adolescent group was lower than the birth weight of the early aged adolescent group ( $p < 0.001$ ).

Low birth weight incidence was significantly higher in the adolescent age group. The rates were 4.7% in early aged groups, 7.4% in late aged groups and 5.8% in control groups. Low birth weight rate was higher in the late aged adolescent group ( $p < 0.001$ ). Macrosomic birth weight incidence was significantly lower in the adolescent age group. The rates were 6.5%, 3% and 8.9% in groups. Macrosomic birth weight rate was higher in the early aged adolescent group ( $p < 0.001$ ).

Cesarean section rate was significantly lower in the adolescent age group (40.2% in early group and 37.2% in late groups)) whereas rate was 56.3% in the

control group. We attributed this to the high parity in the control group and the surplus of the old cesarean section indication ( $p < 0.001$ ).

There was no significant difference between the fetal sexes. The male fetus rate was 51.4% in early groups, 48.8% in late groups and 53.2% in control groups. Late aged adolescent group has a bit female dominance whereas the other groups have male dominance ( $p = 0.139$ ).

There was no significant difference between the stillbirth rates (0.1% vs.0.5%). There was no stillbirth in the early aged adolescent group ( $p = 0.209$ ).

Comparison of fetal sexes and perinatal outcomes (low birth weight, macrosomic fetus, stillbirth, (delivery of infant  $\geq 20$  weeks gestation without cardiac activity) prevalences among the groups were given in Table 3.

## DISCUSSION

According to the WHO report adolescents account for 30% of the world population and 95% of adolescents lives in developing countries. Because of

**Table 3. Mean birth weight, low/macrosomic birth ratios, cesarean ratio, still birth ratio, fetal sex among the groups.**

Other parameters	All Adolescents	Early aged Adolescent	Late aged Adolescent	Control	p value
Mean birth weight (gr)	3162 + 495	3201 + 445	3158 + 500	3312 + 523	< 0.001
Low birth ratio (%)	7.1	4.7	7.4	5.8	< 0.001
Macrosomic birth ratio (%)	3.3	6.5	3	8.9	< 0.001
Cesarean ratio (%)	37.5	40.2	37.2	56.3	< 0.001
Still birth ratio (%)	0.9	0	1	0.5	0.209
Fetal sex (male) (%)	49.1	51.4	48.8	53.2	0.139

this situation the adolescent population is important and the problems of this group are affecting the whole world population. Among adolescent population adolescent pregnancy is the most important public health concern with complications during pregnancy and childbirth serving as the second leading cause of mortality in the adolescent age group worldwide that can not be ignored because of the effects of whole world population [3-5].

Adolescent pregnancy is associated with many factors. Early marriages for cultural reasons, lack of information on contraception methods, inadequate information at school and family, low sociocultural and socioeconomic level, concern to approve collective adulthood, the effects of westernization and urbanization, ethnic factors and low education level are the related factors [7]. Prevention of adolescent pregnancies must be the first-line approach. According to a research (School-Based Teen Pregnancy Prevention Programme) combination of educational and contraceptive interventions seem to reduce adolescent pregnancy [8].

In the last 25 years the global adolescent birth rate has declined from 6.5% to 4.7%. But the global adolescent population continues to grow rapidly. Because of this reason projections indicate the number of adolescent pregnancies will increase globally (especially in Africa) by 2030 [9].

Adolescent pregnancies differ between recipient countries and even within the same country. According to the Turkey Demographic and Health Survey data adolescent birth rate has declined remarkably from 10.2% in 1993 to 4.6% in 2013 [10]. In several Turkish studies, the Adolescent birth rates are lower than literature; 1.3% (Tokat area), 1.3% (Van area), 2.9% (Eskisehir area) [11-13].

Adolescent pregnancies are high risk pregnancies and lead to many socioeconomic problems. These problems include emotional lability/depression, loneliness, social isolation, poverty, low-income/unemployment, financial dependence to partner, homelessness, domestic violence, familial/social stigmatization/boycott and inability to go to school and work [14]. According to a recent study from Mersin area in Turkey, approximately one-fifth adolescents were either illiterate or had dropped out of the primary school and all pregnant adolescents were housewives with a low economic status [15].

Therefore pregnant adolescents need social support from their friends and families. Pregnant adolescents and their families should be informed about the importance of social support and the ways to mobilize social support sources [15].

Adolescent pregnant face higher risks of maternal-fetal complications as indicated in the systematic review from Brazil. Although pre-eclampsia/eclampsia, HELLP syndrome, abortion, prolonged rupture of membranes, urinary tract infection, heart and thyroid disease, placenta previa, prolonged labor, breech presentation is more common in adolescent pregnant, with a predominance of articles emphasizing prematurity, low birth weight, and perinatal mortality [16]. Additionally prenatal care is mostly inadequate among adolescent pregnant and it is known that regular prenatal visits can decrease the complications of pregnancy in this age group. Skilled antenatal, childbirth and postnatal care is very necessary to reduce low birth weight and therefore perinatal mortality [17].

Additionally many previous studies have shown that smoking, drug addiction and alcohol misuse are also more common among adolescent girls that increases the risk of maternal-fetal complications [18].

Low birth weight is one of the most determined parameter that associated with adolescent pregnancies [19, 20]. There is a consensus among the Turkey's data; almost all of the researchers have detected relation between adolescent pregnancy and low birth weight [21-26]. In the recent study we have founded a significant relation between low birth weight and adolescent pregnancy (3,201 - 3,158 vs 3,312) like the literature.

Increasing cesarean rate is a major problem in all over the world. For many years there was the belief that cesarean was more common in adolescent pregnancies. According to some studies, this excess was attributed to the incomplete development of bone pelvis in adolescents and the excess of cephalopelvic distosia indication. But recently most of studies have showed that the cesarean ratio of adolescents is lower than the adult population [27, 28]. When we look the Turkey data; Ergen *et al.* [21], Taner *et al.* [22], Melekoğlu *et al.* [23] and Seçkin *et al.* [24] have founded lower cesarean rates in adolescents, whereas Keskin *et al.* [25] and Akdemir *et al.* [26] and have founded higher cesarean rates. In our study, lower

cesarean rate was similar to the general literature (40.2% - 37.2% vs 56.3%).

Adolescent pregnancy has further long term consequences for mothers and newborns. Adolescent mothers have higher risks of negative mental health outcomes. Almost half of adolescent mothers experienced moderate to severe depression during the first postpartum year. Teenage mothers are less likely to complete their education and are more likely to be unqualified [29]. Newborns of adolescent mothers are also disadvantaged that they have a higher infant mortality and are less likely to be breast fed [30]. According to the United Kingdom report adolescent mothers were more likely to have a stillbirth and neonatal death than adult mothers [31]. According to our study, higher stillbirth risk among late aged adolescent pregnant exists yet it was not significant.

Adequate contraception after childbearing is essential for all adolescent mothers. Approximately 25% of adolescent mothers have a second child within two years. Additionally the repeat pregnancy is associated with increase in adverse pregnancy outcomes [32]. Interventions to reduce the incidence of adolescent pregnancy is the most important issue. The National Campaigns advocates to reduce adolescent pregnancy by focusing on sexual education in family and school, counseling contraception options, providing youthfriendly clinical services, implementing communitywide programs, and providing national support for programs [33, 34]. The American Congress of Obstetricians and Gynecologists recommends LARC (Long-acting reversible contraceptives) - include intrauterine devices (IUDs) and the etonogestrel implants - be offered as first-line contraceptive options for all adolescents [35].

On the other hand sexual violence is widespread and especially affects adolescents. According to WHO data 20 % of adolescent girls around the world exposed to sexual abuse including incest. Regulation of adolescent protection laws is very important in this regard [36].

Adolescent who decided to continue pregnancy should be referred as soon as possible to a clinic where comprehensive pregnancy counselling is available. All risks about continuing the pregnancy should be discussed. Optimal antenatal care must be given to improve perinatal outcomes [37].

## CONCLUSION

The prevalence of adolescent pregnancy for 10 years was 4.4% in our study. Although the cesarean rate of adolescent pregnancies seems to be less than that of the adult age group, 37.5% is higher than the acceptable primary cesarean rate. Policies to reduce cesarean rates should be supported. Adolescent pregnancy, especially late aged adolescents were found to be closely related with low birth weight but there was no significant difference with respect to stillbirth rate in adult age group. Finally, the level of awareness about contraceptive methods should be increased among the adolescent population and if the continuation of pregnancy is planned, it should be considered as high-risk pregnancy and close follow-up should be provided.

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