

Original Article

# Maternal and perinatal outcome in adolescent and adult primigravida

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## Abstract

**Background:** Improving maternal and child health is prioritized globally; however, adolescent pregnancies remain the prime one among the many obstacles. The study aimed to determine the maternal and perinatal outcomes in adolescent and adult primigravida.

**Methodology:** This cross-sectional study was carried out between 1<sup>st</sup> December 2018 to 30<sup>th</sup> November 2019, over a sample of 487 pregnant women (primigravida), presenting at the Jinnah Medical College Hospital, Karachi, for childbirth/delivery. The patients were categorized as adolescents (aged ≤19 years) and labelled as group A and adults (aged 20-34 years) labelled as group B, comprising 83 and 404 patients. Data were recorded using a structured questionnaire containing details pertaining to socio-demographic characteristics, labour, delivery and immediate postpartum period complications of pregnancy. The data was analyzed using SPSS version 23.0.

**Results:** A total of 1738 deliveries were completed in the study duration at Jinnah Medical College Hospital, Karachi. The mean age of the women was 18.35 ± 0.06 years, and the modal age was 27 years. The mean gestational age of the women was 36.86 ± 2.15 weeks among teens and 38.55 ± 0.55 weeks among adults. The incidence of adverse outcomes was higher among maternal [anemia; 46.9% (p-value 0.05)] and perinatal [preterm delivery (20%), low birth weight (22%), stillbirth (11.5%) and perinatal mortality (10%); p<0.05] was higher among teens.

**Conclusion:** It is concluded that teenage pregnancies are comparatively riskier than adult pregnancies for the child and the mother, as is apparent from the significant difference in maternal and perinatal adverse outcomes observed in the study.

## Keywords

Teenage Pregnancy, Adult Primigravida, Maternal Outcome, Perinatal Outcome, Maternal & Child Health.

## Introduction

Adolescence, a phase of life wherein crucial developments occur in the structure and function of the body, and the mind prepares a woman for assuming the responsibilities of motherhood<sup>1</sup>. Pregnancy in teenagers (up to 19 years of age) before achieving the prime of adulthood is common worldwide, regardless of social standing, economic level, racial group, or ethnicity. It is, presumably, linked to a heightened chance of poor perinatal and maternal outcomes<sup>2</sup>. As per the statistics put forth by the World Health Organization, an estimated 1,000,000 girls aged below 15 years and another 1,600,000 girls aged 15 to 19 years and 1 million girls aged under 15 years constitute more than a tenth of the global count of child-bearing women global births. A majority of the adolescent child-bearing women hail from low or middle-income countries<sup>3,4</sup>.

Pakistan is a developing country and stands seventh with regards to women achieving childbirth before attaining maturation (i.e., 18 years of age)<sup>5</sup>. Though much improvement has been achieved, with Pakistan having successfully pulled up the average age of marriage from 13.3 years to 23.1 years – over a third are still married prior to attainment of legal age. Consequently, more than a tenth of them bear their first child while being a mean age of just 15 years<sup>6</sup>. It must also be noted that child marriage and teenage pregnancy cases are grossly under-reported, and the real problem may far exceed these figures<sup>7</sup>.

Adolescent pregnancy is generally considered a high-risk group, with research having showcased impacts (stemming from biological immaturity and dietary/nutritional constraints) not only on the emotions, education, and financial situation but the health and wellbeing of the mother, child and the community as a whole<sup>1,8</sup>. While some have contradicted these claims and suggested that the poor outcome may rather be attributed to the concurring in-access to or inability to afford appropriate healthcare<sup>9</sup>.

In teenagers, complications pertaining to childbirth and pregnancy are the 2<sup>nd</sup> leading cause of death<sup>3</sup>.

Many studies have found a significant association between teenage pregnancy and adverse perinatal outcomes such as preterm birth, low birth weight, perinatal death and obstructed labor<sup>8,9</sup>. In one study, newborns of teenage mothers have a 50% risk of low birth weight and perinatal death than those of mothers of 20 to 29 years old<sup>3</sup>. Previous studies have also shown that teenagers are at high risk of fetal growth retardation, fetal distress, use of oxytocin during labour, perineal tears, episiotomy, cesarean delivery and stillbirth<sup>2</sup>.

Encountering stillbirths and perinatal death (within 6 weeks of childbirth) is 50% more common among teenage mothers than their adult counterparts<sup>10</sup>. Therefore, the present study aimed to evaluate the adverse maternal and perinatal outcomes in adolescent and adult primigravida to improve their management.

## Methodology

This cross-sectional study was conducted from 1<sup>st</sup> December 2018 to 30<sup>th</sup> November 2019, involving 487 pregnant women (primigravida), presenting at the Jinnah Medical College Hospital, Karachi, for childbirth/delivery. The patients were categorized and placed into two groups, i.e. adolescents (aged  $\leq 19$  years) labelled as group A and adults (aged 20-34 years) labelled as group B, comprising 83 and 404 patients. All consenting patients falling within the above-mentioned age ranges were included. While the nulliparous women aged 35 years or above, women with multiple pregnancies, having medical disorders before pregnancy (based on history), and fetal congenital anomalies (diagnosed on ultrasound) were excluded from the study.

The data regarding sociodemographic characteristics, labour, delivery, maternal outcome measures and immediate postpartum period complications of pregnancy were obtained via patient interviews, patient files, labour ward register and hospital maternal health medical records and recorded onto a structured questionnaire. The maternal outcome measures included pregnancy-induced hypertension (BP > 140/90 mmHg on 2 spontaneous vaginal delivery

(SVD) and cesarean section and perinatal outcome measured were preterm delivery (< 37 completed weeks), low birth weight ( $\leq 2.5$ kg at any gestational age); Perinatal death (stillbirth and early neonatal death classified as death during the first 7 days of life).

All ethical guidelines were followed and written informed consent was obtained from the participants after explaining the objective of the study. The statistical analysis was done on SPSS version 23.0. Results were expressed as frequencies and percentages, and possible associations were assessed using the chi-square test, where p-value < 0.05 was considered significant.

## Results

During the study period of one year, there were a total of 1738 deliveries at Jinnah medical hospital in Karachi. The teenage pregnancies in group A (19 years) were 83 with a prevalence rate of 4.77%, while in group B (20-34 yrs), there were 404 pregnancies with a prevalence rate of 23.24%. The mean age of the women was 18.35 years  $\pm$  0.06 years and ranges 17-19 years, and the values for the control group were 26.9  $\pm$  3.2 years. The mean gestational age of the women was 36.86  $\pm$  2.15 weeks vs 38.55  $\pm$  0.55 weeks in teenagers and adults. The socio-demographic variables, including antenatal profile, educational levels, socio-economic status, antenatal care and maternal/neonatal outcomes, were studied; inferences are presented in table 1.

**Table 1: Baseline characteristics and maternal outcome of the study population.**

Variables	Maternal Age		p-value
	$\leq 19$ years (n=83)	20-34 years (n=404)	
Vaginal Delivery	55(66.26)	190(47)	0.10
Instrumental Vaginal Delivery	09(8.1)	07(6.3)	0.05*
Caesarean Section	28(33.73)	214(52.9)	0.10
<b>Mode of delivery</b>			
Emergency Lower Segment Caesarean Section	26(93)	198(92.5)	0.13
Elective Lower Segment Caesarean Section	02(7.0)	16(7.5)	0.08
None	41(49.4)	226(56)	-
<b>Adverse maternal outcome</b>			
Anemia	39(46.9)	170(42)	0.05*
Gestational diabetes	1(1.2)	8(2.0)	0.001*
Pregnancy-induced hypertension	2(2.5)	27(6.7)	0.01*
<b>Booking status</b>			
Booked > 4 visits	48(57.8)	228(56.4)	0.01*
Unbooked < 4 visits	35(42.2)	176(43.6)	0.10

\*p-value < 0.05 is considered significant.

The neonatal outcomes among teenage and adult women were significantly different, with neonates borne by teenage mothers encountering poor outcomes in all the below-mentioned regards.

**Table 2: Neonatal outcome with respect to maternal age.**

Neonatal outcome	Maternal Age		p-value
	$\leq 19$ years (n=83)	20-34 years (n=404)	
<b>Preterm</b>	17 (20%)	24 (6%)	0.03*
<b>Low birth weight (&lt;2,500)</b>	18 (22%)	67 (17%)	0.05*

<b>Stillbirths</b>	10 (11.5%)	40 (10%)	0.02*
<b>Perinatal mortality</b>	8 (10.5%)	38 (9.5%)	0.01*

\*p-value<0.05 is considered significant.

## Discussion

Pregnancy and childbirth among women before the attainment of adulthood is a problem faced by women globally<sup>5</sup>. However, the prevalence varies, being as high as 14.3% in Nigeria and as low as 0.3% in South Korea<sup>1</sup>. Our research revealed the rate to be 4.77%, which corresponds to Shaikh et al. study from Pakistan wherein the prevalence (just like in most other research from the sub-continent) does not peak above 10%<sup>11</sup>. Women in the developing world (especially south-east Asia) marry early in their lives. Though the legal age of marriage in most developing countries is set at 18 years, divulgences are common<sup>12</sup>. In this research, the mean age of the women (teenage group) was 18.35 ± 0.06 years, reflecting the on-ground scenario at hand<sup>11</sup>.

Pregnancy in the early years of life is rife with problems that are faced by the mother and consequently by the child and society at large. The problems are compounded by the poor socio-economic condition, the under-developed and under-funded healthcare system leading to many problems<sup>13</sup>. One such issue is anemia. During pregnancy, anemia persists as a pressing problem, with its incidence rates being reported to be rather high<sup>14</sup>. In our research, 46.9% of the women suffered from anemia, which is synonymous with the statistics yielded by other developing countries<sup>5,6,13</sup>.

The risks of hypertensive disorders vary widely among adolescents; according to studies, some reported increased risk and others decreased<sup>14</sup> while in our study, the risk was markedly lesser, i.e., 2.5% as compared to 6.7% among the younger age group than the adults respectively. This is substantiated by similar results yielded by other studies<sup>9,15</sup>. Maternal gestational diabetes is found to be very lower in our study, i.e., 0.2% VS 2% among the young mothers' group, as is supported by matching results in the international literature<sup>5,7,14</sup>.

Adolescent pregnancy is regarded as a hallmark for fetomaternal complications such as low birth weight and prematurity worldwide<sup>1</sup>. In our research, there is a greater risk of low birth weight babies in mothers belonging to younger age group ( $\leq 19$  years), i.e. 22%, which was supported by other studies done by Johnson et al.<sup>16</sup> Others reported that young mothers less than 20 years were related to low birth weight<sup>5,17</sup>.

In our study, maternal anemia was the positive finding for low birth weight, which is also seen in various other studies<sup>17,18</sup>. Adolescents were also found to be associated with an increased risk of preterm birth, i.e. 20% and 6%, which is in keeping with the results of several other studies<sup>6,8,11,18</sup>. In our study, more than 50% of patients in both groups found were booked, i.e., (57.8%) and (56.4%) which is also observed in other studies<sup>8,9</sup>.

The perinatal mortality rate for Pakistan is estimated to be 95 per 1000 births<sup>19</sup>. In our study frequency distribution of stillborn were (11.5%) and perinatal mortality is (10.5%), which is much higher than 1.39<sup>15</sup> and 8.6%<sup>1</sup> and significantly lower than population-based multi-country research study conducted in south Asian countries<sup>9</sup>. The association of adolescent pregnancy with poor socioeconomic conditions is observed in the developing countries, and also in this study<sup>12</sup> the reasons may be medical, communal and conventional as well there is lack of general health care facilities in such compromised circumstances prevalent in the developing world<sup>5</sup>.

The study is not without limitations as it is a hospital-based study, and the sample size of our research is small, so limiting the other areas of the community as it may not expose the accurate problems in the community. Further studies are needed for more elaboration of the factors involved in obstetric and perinatal outcomes.

## Conclusion

In the study, increased risks of maternal and perinatal adverse outcomes identified among adolescent mothers. Adolescent mothers encountered anemia, emergency cesarean section, low birth weight babies and preterm delivery markedly more often than their adult counterparts. As antenatal care directly contributes to adverse maternal and perinatal outcomes thus for better outcomes, young mothers should have proper antenatal follow-up visits and taking proper doses of iron and calcium supplements during the natal and postnatal period. So, to improve outcomes and to decrease complications, the importance of health care facilities and improvement interventions are recommended to optimize birth outcomes.

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