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Original Research Article

Comparison of Outcome of Fetal and Maternal Risks in Teenage Pregnancy and Adult Pregnancy

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Abstract:

Background: Teenage pregnancy is a high-risk pregnancy as it has obstetric, physical, social, emotional and psychological effects on both baby and mother. This study was undertaken to investigate factors contributing to teenage pregnancy and to evaluate maternal complications during antenatal, intrapartum and postpartum periods and neonatal outcomes of teenage pregnancy when compared to adult pregnancy.

Materials and Methods: This prospective study included pregnant women between 13 and 30 years, who visited during study period. Participant's socio-demographic characteristics, medical, and menstrual histories were recorded. Routine blood investigations and radiographic evaluation were done for all patients as per standard protocol. Participants were monitored during all stages of labour and post-partum period. Perioperative and post-operative complications of mother and babies were compared between teenage and adult pregnancy groups.

Results: Incidence of teenage pregnancy in this study period was 2.8%. Maximum number of unmarried pregnancies belonged to teenagers. Incidence of abortion was 4.9 % in Teenage group and 4% in Adult group. Incidence of Anemia, PIH, and Eclampsia were significantly greater in Teenage group than Adult group ($p<0.001$). LBW was more common in Teenage group, with most of the neonates being <2.5kg (57.9%). Perinatal as well as maternal mortality was higher in teenage group (3.4%, 0.3%) than in adult group (3.1%, 0.1%).

Conclusion: Perinatal and maternal morbidity and mortality with teenage pregnancy is high than adult pregnancy. Female literacy should be encouraged and introduction of sex education is needed in schools. Knowledge of contraception should be given to prevent complications of pregnancy.

Keywords: Teenage pregnancy, Low birth weight, Pre-term delivery

Introduction

Teenage pregnancy refers to pregnancy in women aged ≤19 years. It includes pregnancy in adolescents. In developing countries like India, in addition to unintended pregnancies, there is larger problem of legitimate adolescent pregnancies due to practice of childhood marriages.[1,2]As most of the teenage pregnancies occur among married women, their pregnancies are welcomed by family and society. Although Government of India has banned marriage of girls below 18 years and boys below 21 years of age, practice of child marriage continues due to socio-economic reasons.[2]A report by "Save the children" found that annually 13 million children are born to women under 20 years worldwide. More than 90% of these births occur in developing countries,[3]with India constituting 8-14% of total pregnancies.[4]

Teenage pregnancy is a high-risk pregnancy as it has obstetric, physical, social, emotional and psychological effects on both baby and mother.[5]Being one of the high-risk pregnancies, antenatal, natal and postnatal complications are more in teenage pregnancy. Moreover, babies born to teenage mothers are at increased risk of low birth weight (LBW), congenital anomalies, early onset sepsis, respiratory distress and hyperbilirubinemia. There is an increased risk of neonatal deaths in such babies. Early motherhood can affect the psychological development of infant, may result in developmental disabilities, behavioral problems, and poor academic performance. This study was undertaken to compare the outcomes of both fetal and maternal risks in teenage pregnancy and adult pregnancy.

Materials and Methods

This prospective observational study was conducted at Government Maternity Hospital . All pregnant women in the age group of 13 to 30 years, who visited outpatient department during study period were included in the study. Patients with

multiple pregnancies, and those above 30 years of age were excluded from the study. Data collected from study participants included socio-demographic characteristics (age, educational status, occupation, marital status), menstrual history, medical and surgical histories. Expected date of delivery was calculated by Naegele's rule and was conveyed to patient with advice to attend antenatal OP regularly. At first antenatal visit, height, weight, and BP were recorded, followed by thorough physical examination. Investigations including haemoglobin, blood grouping and Rh typing, bleeding time, clotting time, Random blood sugar, Blood urea, HIV, HBS Ag, VDRL, and Urine analysis were done. At each visit, weight and BP were recorded and thorough obstetrical examination was done to rule out any complications. A routine USG was done at first visit for dating of pregnancy as most of them did not remember LMP, at 18-24 weeks of gestation for detecting any anomalies and serial USG to assess fetal growth when in doubt. All patients were given iron, folic acid prophylaxis, and immunization against tetanus. All cases were monitored during all stages of labour, nature of labour and post-partum period. Details of neonate were noted such as alive, still born, birth weight, APGAR score, congenital malformations, if any.

Statistical Analysis

The results were analyzed by using MS excel and Epi info 3, 3, 4 version and appropriate tests of statistical significance were applied. Whenever chi-square test was not suitable (expected value was below 5), fisher's exact was applied to derive p value to find the significance of differences between proportions.

Results

Study included total 11,462 pregnant cases, of which 322 were teenage pregnancies (13-19 years) and 11,140 were adult pregnancies (20-30 years). Thus, the incidence of teenage pregnancy in our study was 2.8%. Majority of women in Teenage group belonged to rural area, not working and had education up to primary level. The mean age at marriage was 18.6 years in teenage pregnancy group. (Table 1)

Table 1: Characteristics of Women in Teenage Pregnancy group

Age (years)	
15	2 (0.62%)
16	4 (1.24%)
17	7 (2.17%)
18	108 (33.54%)
19	201 (62.42%)
Total	322 (100%)
Locality	
Rural	232(72%)
Urban	90(27.9%)
Education	
Graduate/Postgraduate	0
XI-XII	3(0.9%)
VIII-X	78(24.2%)
I-VII	197(61.1%)
Illiterate	44(13.6%)
Occupation	
Non-working	319(99%)
Working	3(0.9%)
Marital Status	
Married	317 (98.44%)
Unmarried	5(1.55%)
Mean age at marriage	18.6 yrs

Incidence of Anemia, pregnancy induced hypertension (PIH), and Eclampsia were significantly greater in Teenage group than Adult group. 80% of teenagers had one or more risk factors during antenatal period in our study. (Table 2)

Table 2: Risk Factors During Antenatal Period

High Risk Factor	Teenage group	Adult group	P value
Anemia	107(33.2%)	2549(22.8%)	<0.01;S
PIH	81(25.1%)	1698(15.2%)	<0.01;S
Eclampsia	28(8.6%)	250(2.2%)	<0.001;S
APH	10(3.1%)	178(1.5%)	<0.001;S
Malpresentation	9(2.7%)	234(2.1%)	0.39;NS
GDM	0	14(0.1%)	*0.67;NS
Prolonged/ postdated pregnancies	9(2.7%)	1470(13.1%)	<0.001;S
Oligohydramnios	5(1.5%)	236(2.1%)	0.75;NS
Polyhydramnios	2(0.6%)	92(0.8%)	*0.50;NS
IUGR	4(1.2%)	98(0.8%)	*0.53;NS
HIV	3(0.9%)	48(0.4%)	*0.17;NS

Maximum number of unmarried pregnancies belonged to teenagers (1.55%). Spontaneous abortions were significantly higher in Adult group than Teenage group, whereas induced abortions were more common in Teenage group (p<0.01). Most of the teenagers delivered spontaneously(72%) (p<0.001).Cephalopelvic disproportion (CPD) accounted for 44.6% of Lower Segment Cesarian Section (LSCS) in teenagers. The incidence of CPD, malpresentation, obstructed labour, APH, and post c/s pregnancy were significantly higher in Teenage group. (Table 3)

Table 3: Comparison of parameters between Teenage and Adult groups

Parameters		Teenage group	Adult group	p-value
Marital Status	**Married**	317	11138	
	Unmarried	5(1.55%)	2(0.01%)	
Abortions	**Spontaneous Abortions**	11(68.7%)	416(90.8%)	0.01 S
	Induced Abortions	5(45.5%)	42(9.1%)	<0.001 S
	Total	16 (4.96%)	458 (4.11%)	0.44 NS
Mode of Delivery	**Spontaneous delivery**	232 (72%)	6704 (60.1%)	<0.001;S
	LSCS	56 (17.3%)	2402 (21.5%)	0.07;NS
	Outlet forceps	19(5.9%)	1361(12.2%)	<0.001;S
	Assisted breech	2 (0.6%)	167(1.6%)	0.11;NS
	Vacuum	2 (0.6%)	48 (0.4%)	0.28;NS
Indications For Caesarean Section	**CPD**	25(44.6%)	492(20.5%)	<0.001;S
	Malpresentation	7(12.5%)	89(3.7%)	<0.001;S
	Fetal distress	7(12.5%)	288(12%)	0.90;NS
	PROM	2(3.6%)	127(5.3%	0.56;NS
	Obstructed labour	4(7.1%)	51(2.1%)	*0.01;S
	Severe oligohydromnios	0	118(4.9%)	*0.11;NS
	Eclampsia	2(3.6%)	62(2.6%)	*0.65;NS
	APH	7(12.5%)	169(7%)	*0.04;S
	HELLP	0	8(0.3%)	*0.83;NS
	IUGR	1(1.8%)	84(3.5%)	*0.41;NS
	Post c/s Pregnancy	1(1.8%)	914(38.1%)	<0.001;S

LBW babies were more common in Teenage group than Adult group. Most of the neonates in adult group participants were >2.5kg (85.5%), while in Teenage group, majority were <2.5kg (57.9%). (Figure 1)

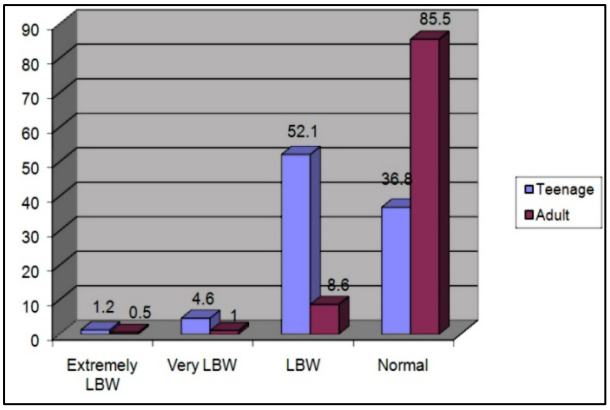

Figure 1: Perinatal Outcome

CPD and Preterm labour were significantly higher in Teenage than Adult group. Atonic post-partum haemorrhage (PPH) was more in Teenage group than Adult group. 48.7% of teenagers had complications during labor in our study. Incidence of PPH was 4.34% in Teenage group and 3.84% in Adult group. Postpartum complications were more in Teenage group than Adult group. Urinary tract infection and local sepsis were significantly higher in Teenage group when compared to Adult group (p<0.001). Incidence of congenital anomalies was 0.9% in Teenage group and 0.2% in Adult group. Main reasons favouring admission in NICU were LBW, prematurity and respiratory distress, which were significantly higher in babies born to teenage mothers (p<0.001). (Table 4)

Table 4: Perioperative and post-operative complications in Study groups

Complications		**Teenage group**	**Adult group**	**p value**
Complications during labour (Fisher)	CPD	25(7.7%)	492(4.4%)	<0.001;S
	PROM	29(9.1%)	935(8.3%)	0.69;NS
	Preterm labour	83(25.7%)	1103(9.9%)	<0.001;S
	Prolonged labour	6(1.8%)	158(1.1%)	*0.46;NS
	Cord prolapse	0	9(0.08%)	*0.77;NS
	Complete perineal Tear	0	11(0.09%)	*0.73;NS
	PPH			
	Atonic	10(3.1%)	260(2.3%)	<0.001;S
	Cervical Tear	1(0.3%)	38(0.3%)	*0.31;NS
	Paraurethral Tear	2(0.6%)	108(0.9%)	*0.39;NS
	Retained placenta	1(0.3%)	22(0.1%)	*0.48;NS
Post-partum Complications	**Post operative Fever**	11(3.4%)	235(2.1%)	0.11;NS
	UTI	10(3.1%)	182(1.6%)	0.042;S
	Local sepsis	4(1.2%)	38(0.3%)	*0.029;S
Congenital anomalies		2 (0.9%)	28 (0.2%)	
Neonatal Complications	Prematurity	21 (6.7%)	98 (0.9%)	*<0.001;S
	LBW	32 (10.2%)	421(3.9%)	<0.001;S
	Respiratory distress	12 (3.8%)	48(0.4%)	*<0.001;S
	IUGR	1 (0.3%)	62(0.5%)	* 0.46;NS
	Neonatal Jaundice	5 (1.6%)	108(1%)	*0.24;NS
	Birth Asphyxia	12(3.8%)	216(2%)	0.02;S
	Congenital anomaly	1 (0.3%)	12(0.1%)	*0.30;NS

Perinatal as well as maternal mortality was more in Teenage group (3.4% vs 3.1%) than in Adult group (0.3% vs 0.1%). Rate of perinatal mortality was higher than maternal mortality in both the study groups. (Figure 2)

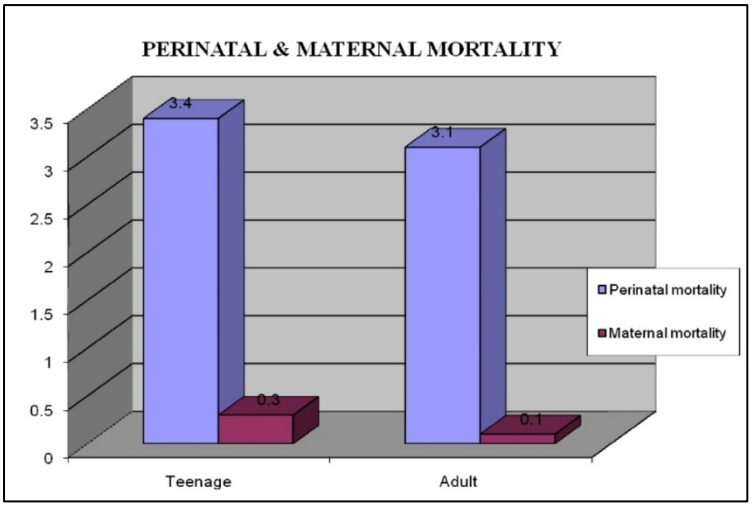

Figure 2: Perinatal and Maternal Mortality

Discussion

Adolescence (or) Puberty is the transitional period linking childhood to adulthood and involves physical, biological and psychosexual changes in a girl.[1]Teenage pregnancy is a topic of concern to pediatrician, obstetrician, social scientists, health care providers and also to the government.[6]Our study on teenage pregnancy was undertaken with a view to understand the factors contributing to teenage pregnancy and to study maternal complications during antenatal, intrapartum and postpartum periods and neonatal outcomes of teenage pregnancy.

Pregnancy in a female with age ≤19 years is referred as teenage pregnancy. Incidence of teenage pregnancy in our study was 2.8%. Previous studies have observed an incidence rate of teenage pregnancy ranging from 4.1% to 52%.[4,7-9] The decreased incidence in our study may be due to increased awareness, higher literacy, increased prenatal care and urbanization in our population. Teenage pregnancy can have significant effect on the level of education of women, their employment opportunities and marital stability and it increases their economic and social dependency on family and neighbours. Girls born to teenage mothers often become teenage mothers themselves and the problem gets carried on for generations. In our study, 33.5% of women in teenage group were unbooked and most of them had their first visit to hospital only at the time of delivery.

No teenage pregnant women was below 15 years in our study, and only 4% were in 15-17 years age group, while 33.5% were 18 years old, and 62.4% were 19 years old. Similar observations were made in the study by Bhalorao AR et al[4], wherein, 7% of teenage pregnant women were 15-17 years, while 93% were 18-19 years old. This improvement was probably due to better awareness about risk of teenage pregnancy and higher literacy rate in todays generation. However, Kumar A et al[10] have found 33% of their teenage pregnant women were between 15 and 17 years, while 66% were in the age group of 18-19 years.

The mean age at marriage among teenage women in our study was 18.6 years. (Table 1) The mean age at marriage was 16.5 years and 16.71 years in the studies by Thakkekara T [8] and Sharma AK et al[11], respectively. In our study, 1.55% of teenage pregnant women were unmarried, similar to the study by Bhalerao AR et al[4], wherein, 3% teenage pregnancies were unmarried. However, in the study by Kumar A et al[10], all teenagers were married. The main reason for unmarried pregnancies was lack of sex education and illiteracy. In our study, incidence of Anemia, PIH, and Eclampsia were significantly higher in Teenage group than Adult group ($p<0.001$). (Table 2) These findings are in agreement with previous studies. [5,10,12,13] Most of the cases of eclampsia in our study belonged to lower socioeconomic status, who took irregular antenatal check-up, inadequate antenatal care and lacked awareness about imminent symptoms of eclampsia.

In our study, incidence of spontaneous vaginal delivery in teenage pregnancies were more, which may be attributed to LBW babies. The incidence of LSCS was more in adult pregnancy than teenage pregnancies, which is in accordance with previous studies.[3,14] This may be because most of the adult pregnancies were referral cases with complications, and caesarean section was done with regard to maternal and fetal wellbeing in adult pregnancies. CPD accounted for most of the LSCS in teenagers. The slightly higher incidence of malpresentations (2.7%) in Teenage group in our study, may be attributed to prematurity, preterm labour and under developed pelvis in teenagers. Similar observations were made by Pal MN et al[15]andNayak AH et al[16]**.** There were 10 cases of PPH in our study, which were controlled by

prostaglandins. All PPH cases needed blood transfusions. There was one case of cervical tear and two cases of paraurethral tear which were promptly sutured. There was one case of retained placenta in Teenage group, which was treated by manual removal under short general anesthesia and blood transfusion.

The incidence of induced abortions was slightly higher in Teenage group (4.9%) than Adult group (4%). (Table 3) Majority of women who reported with recent history of induced abortions, it was handled by unprofessionals, so the complications were more. We had two cases of septic abortions, amongst which one case was of ruptured uterus that came in shock, and was revived. Most of the neonates of Teenage group were LBW (57.9%), whereas neonates of Adult group were above 2.5 kg (85.5%). These findings are in accordance with previous studies.[3,10,13] The incidence of preterm labour (25.7%), CPD (7.7%), and PROM (9.1%) was higher in teenage group than adult group ($p<0.001$), which is in accordance with previous studies by Mukhopadhyay P et al[3], Chahande MS et al[5], Kumar A et al[10],Watcharaseranee N et al[12], and Kovavisarach E et al[13].The increased risk of preterm labour may be due to low socioeconomic status, poor nutrition, inadequate antenatal care and lower levels of education. In our study, increased incidence of PROM in teenage pregnancies might be due to increased incidence of infections, inadequate antenatal care and preterm labour. Higher incidence of LBW in our study can be attributed to increased incidence of poverty, malnutrition, anemia, PIH, constitutional LBW in Teenage group. Incidence of congenital anomalies was higher in Teenage group (0.9%) than Adult group (0.2%). Similar observations were made by Mukhopadhyay P et al[3], andKovavisarach E et al[13]. The congenital anomalies encountered in Teenage group were two cases of anencephaly and one case of spinabifida in our study. All cases were induced and delivered vaginally.

Conclusions

Being a high risk pregnancy, Teenage pregnancy is a serious problem today all over the world, especially in developing countries like India. Complications were more in teenage pregnancies than in adult pregnancies particularly in terms of anemia, PIH, eclampsia, antepartum hemorrhage, CPD and preterm labour. Perinatal and maternal morbidity and mortality with teenage pregnancy is higher than adult pregnancy. As teenage pregnancy is a multifaceted problem, it demands a comprehensive approach to prevent. Female literacy should be encouraged and introduction of sexual education is needed in schools. Knowledge of contraception should be given to prevent complications of pregnancy. Antenatal care should be focused on medical, nutritional and educational needs of teenagers. Close intrapartum monitoring is needed in teenage pregnancy to avoid complications.

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