

Are teenage pregnancies at high risk? A comparison study in a developing country

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Abstract

Objective The aim of this study was to compare obstetric and perinatal outcome in teenage and non-teenage pregnancies.

Methods We analyzed retrospective data of 15,498 pregnant patients who delivered from March 2008 to April 2009 in Jawaharlal Institute of Postgraduate Medical Education and Research, a referral tertiary care and teaching hospital in Pondicherry, South India. Girls aged ≤ 19 years were compared with pregnancy outcomes in women aged > 19 years who delivered in the same hospital during the study period. A total of 620 teenage pregnancies were compared with 14,878 non-teenage women. The obstetric and perinatal outcome was compared in the study and control groups using *t* test with Yates correction. We calculated Odds ratio (OR), 95% confidence intervals (CI) and *p* values; $p < 0.005$ was considered significant.

Results The incidence of teenage pregnancy in the study was 4%. A significant proportion of teenage mothers were in

their first pregnancies and their mean age was 18.04 years. Our study showed a significantly higher incidence of anaemia, past dates, premature rupture of membranes (PROM), normal vaginal delivery, episiotomy, low birth weight, and a significantly lower incidence of caesarean sections/perineal tears in teenage mothers compared to other mothers. In contrast, the incidence of hypertension, intrauterine growth restriction of fetus, pre-term labour and postpartum haemorrhage were similar in both the groups.

Conclusion The data in our study should throw more light on the current thinking of the obstetrical problems facing teenage mothers, in which some of our results support and others refute several long held beliefs about the risks in teenage pregnancy. Early booking, adequate antenatal care and delivery by trained people should improve the obstetric and perinatal outcome in teenage pregnancies, which is still an unresolved problem in spite of various government programmes in developing countries.

Keywords Teenage pregnancy · Obstetric outcome · Perinatal outcome · Anaemia · Pre-term labour

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Introduction

Teenage pregnancy poses a great challenge to the health professionals. An estimated 16 million girls aged between 15 and 19 years give birth every year, with 95% of these births occurring in the developing countries. This makes up to 11% of all births worldwide. However, global averages mask important regional differences, the percentage of which varies from 2% in China to 18% in Latin America and the Caribbean. In spite of improving trends in modern obstetrics, teenage pregnancies are still on the rise and there is no conclusive evidence regarding the outcome of these

pregnancies. Worldwide, just seven countries account for half of all adolescent births: India, Bangladesh, Brazil, the Democratic Republic of the Congo, Ethiopia, Nigeria and the United States of America [1]. A WHO study stated that adolescents aged <16 years face four times the risk of maternal death than women aged in their 20 s, and the death rate of their neonates is about 50% higher [1]. Several studies have found an increased incidence of anaemia, pre-term labour and prematurity, hypertensive disorders, low birth weight and an increased incidence of operative deliveries among teenagers [2, 3]. In contrast, some of the authors have stated that there is no increased risk in teenage pregnancies after controlling for confounding variables [4] and others have stated that the risks persist even after adjusting for confounders [5]. The aim of this study is to provide more data for a definitive conclusion of the maternal and fetal risks associated with teenage pregnancies and the differential trends in developing countries.

Materials and methods

This was a retrospective study of records of pregnant women who delivered between March 2008 to April 2009 in JIPMER, a major tertiary care center and teaching hospital in Pondicherry, South India which has an annual delivery rate of 15,000. The pregnant women were divided into two groups, over and under 19 years of age. Of the total 15,498 pregnancies, 620 pregnancies were in women aged <19 years (study group) and 14,878 pregnancies were in women more than 19 years of age (control group) respectively. Women with all the medical and obstetric complications were included in this study. Women who had minimum of four visits in this pregnancy with at least two visits in the last trimester were classified as booked. Women with no antenatal visits and presented for first time during confinement were classified as unbooked.

A diagnosis of pre-labour rupture of membranes (PROM) was made on clinical examination. Delivery before 37 weeks was classified as pre-term and more than 40 weeks were classified as postdatism. Induction methods included foley, prostaglandin (PGE₂) gel and artificial rupture of membranes with or without oxytocin. Patients are classified as having anaemia with an Hb < 10.5 g/dl. Babies weighing <2,500 g were labeled as lowbirth weight babies. Doctors, postgraduate trainees, and interns conducted all the deliveries under supervision and all deliveries were monitored with intermittent auscultation with cardiotocograph for high risk patients. The records were analyzed and the obstetric and perinatal outcome was compared in the study and control groups using *t* test with Yates correction. Odds ratio, 95% confidence interval (CI) and *p* values were calculated (*p* < 0.005 was considered to be significant).

Results

There were 620 pregnancies in women aged <19 years (study group) compared with 14,878 pregnancies in women aged >19 years (control group). The incidence of teenage pregnancy was 4.17%. There were 539 primigravidas, 68 s gravidas and 13 women were in their third or subsequent pregnancies in the study group. In the control group there were 6,739 primigravidas and 8,139 multigravidas. The proportion of primigravidas was higher in the study group (OR 8.04, 95% CI = 6.35–10.17, *p* < 0.0001) as compared to the control group. In the study group 579 women were booked (minimum of four visits in this pregnancy with at least 2 visits in the last trimester) and there was no significant difference when compared to 13,403 women in the control group (OR1.55, 95% CI = 1.12–2.17, *p* 0.0082). The remaining women were classified as unbooked.

Complications in the antenatal period are charted in Table 1. Past dates and anaemia in pregnancy were the most common problems noted. The incidence of past dates was 167 (26.9%) in the study group when compared to 3,017 (20.3%) in the control group, which is statistically significant (OR 1.45, 95% CI = 1.20–1.75, *p* 0.0007).

In contrast to the established studies the incidence of anaemia was high in the non-teenage pregnancy group (29%) as compared to the teenage pregnancy group (5.5%) which is statistically significant. Similarly, the incidence of premature rupture of membranes (PROM) was high in the control group as compared to the study group which is statistically significant (OR 0.54, 95% CI = 0.40–0.73, *p* 0.0003). Even though not statistically significant, the incidence of hypertensive disorders in pregnancy was 65 (10.5%) in the study group and 1,493 (10%) in the control group (OR1.04, 95% CI = 0.81–1.37, *p* 0.7672). There was no significant difference in the incidence of malpresentations, Rh incompatibility, polyhydramnios, oligohydramnios, intrauterine growth restriction (IUGR), antepartum or postpartum haemorrhage. There was also no significant difference in the incidence of ectopic pregnancy, vesicular mole, septic induced abortion, medical termination of pregnancy (MTP) and maternal death. There was 1 maternal death in the study and 20 maternal deaths in the control groups respectively.

Mode of delivery and its complications are charted in Table 2. In the study group, 81.5% women delivered vaginally as compared to 68.3% women in the control group which is statistically significant (OR 2.04, 95% CI = 1.66–2.51, *p* < 0.0001). The need for episiotomy was significantly more in teenage pregnancies (82.9%), but the incidence of perineal tears (4.7%) was significantly less. The incidence of operative vaginal delivery was 10.6% and there was no statistically significant difference between the study and control groups. The incidence of

Table 1 Antenatal complications

Characteristics	Teenage pregnancies N = 620 (%)	Other pregnancies N = 14,878 (%)	OR	CI	p value
Primi	539 (86.9)	6,739 (45.3)	8.04	6.35–10.17	<0.0001
Booked	579 (93.4)	13,403 (90.1)	1.55	1.12–2.17	0.0082
Ectopic pregnancy	2 (0.32)	81 (0.54)	0.59	0.15–2.41	0.645
Vesicular mole	2 (0.32)	22 (0.15)	2.19	0.51–9.31	0.574
Septic induced abortion	1 (0.16)	7 (0.05)	3.43	0.42–27.95	0.745
MTP	9 (1.45)	153 (1.03)	1.42	0.72–2.8	0.416
Pre-term labour	53 (8.5)	1,578 (10.6)	0.79	0.59–1.06	0.116
PROM	50 (8.1)	2,077 (14)	0.54	0.40–0.73	0.0003
Malpresentation	26 (4.2)	720 (4.8)	0.86	0.56–1.30	0.521
Past dates	167 (26.9)	3,017 (20.3)	1.45	1.20–1.75	0.0007
Hypertension	65 (10.5)	1,493 (10)	1.04	0.81–1.37	0.7672
Anaemia	34 (5.5)	4319 (29)	0.14	0.10–0.203	<0.0001
RH incompatibility	32 (5.2)	639 (4.3)	1.21	0.83–1.77	0.348
Polyhydramnios	2 (0.3)	86 (0.6)	0.56	0.09–2.30	0.586
Oligohydramnios	22 (3.5)	562 (3.8)	0.94	0.56–1.47	0.852
IUGR	27 (4.4)	490 (3.3)	1.34	0.88–2.02	0.184
APH	6 (1)	237 (1.6)	0.61	0.24–1.4	0.28
Maternal death	1 (0.16)	20 (0.13)	1.20	0.16–8.96	0.859

Table 2 Mode of delivery and its complications

Characteristics	Teenage pregnancies N = 620 (%)	Other pregnancies N = 14,878 (%)	OR	CI	p value
Normal Vaginal delivery	505 (81.5)	10,155 (68.3)	2.04	1.66–2.51	<0.0001
Caesarean section	49 (7.9)	2,373 (15.9)	0.45	0.33–0.61	<0.0001
Operative vaginal delivery	66 (10.6)	1,725 (11.6)	0.91	0.69–1.19	0.468
Episiotomy	514 (82.9)	7,635 (51.3)	4.60	3.7–5.72	<0.0001
Perineal tear	29 (4.7)	1,262 (8.5)	0.53	0.36–0.78	0.001
Postpartum haemorrhage (PPH)	8 (1.3)	135 (0.9)	1.432	0.65–3.02	0.445
Atonic PPH	8 (1.3)	88 (0.6)	2.20	0.98–4.71	0.057

Table 3 Perinatal outcome

Characteristics	Teenage pregnancies N = 620 (%)	Other pregnancies N = 14,878 (%)	OR	CI	p value
Stillbirth	21 (3.4)	577 (3.9)	0.87	0.54–1.38	0.0003
Low birth weight	205 (33.1)	2,274 (15.3)	2.74	2.30–3.27	<0.0001
Small for gestational age	2 (0.3)	159 (1.1)	0.30	0.05–1.23	0.0007
Congenital anomalies	7 (1.1)	112 (0.8)	1.51	0.64–3.36	0.33

caesarean section was lower in the study group (7.9%) than in the control group (15.9%) which was statistically significant (OR 0.45, 95% CI = 0.33–0.61, p 0.0001). The incidence of post partum haemorrhage was lower in the teenage pregnancy group but the difference was not statistically significant.

Perinatal outcome is charted in Table 3. The incidence of low birth weight babies (LBW) babies in the study group was 205 (33.1%) when compared to 2,274 (15.3%) in the control group (OR.2.74, 95% CI = 2.29–3.27, p 0.0001). There was no significant difference in stillbirths, large for

gestational age babies (LGA) babies and incidence of anomalies between both groups.

Discussion

The incidence of teenage pregnancies was 4.17% in our study which compares with the figures of 10% worldwide [6] although according to the National Census 2001, India, a higher incidence of 14.7% has been reported. There was no significant difference in the booking status between

teenage and other mothers which is in contrast with other studies which found that teenage mothers were less likely to utilize health services [7–10]. Teenage pregnancies have been shown to be associated with lesser prenatal care by the Modified Kessner Index [5] whereas in our study 579/620 women in the teenage group had received adequate prenatal care.

The incidence of anaemia was significantly lower in teenage pregnancies in our study which is in contrast to all studies which stated higher incidence in teenage pregnancies [2, 3, 11]. Many causes have been put forth to explain this, including suboptimal nutritional status at the start of pregnancy [2], the decreased compliance with taking oral iron supplements, and the use of essential substrates by the adolescent mother who is herself still in her growth phase [2, 3]. A possible explanation in our study is the intake of iron supplements prenatally since majority of our teenage group women were booked. Hypertensive disorders of Pregnancy were not significantly increased in our study similar to the other studies [2], although there was a higher incidence of pre eclampsia in women under 18 years of age, the difference was not statistically different after controlling for confounding variables.

The incidence of past dates was significantly higher in teenage women in our study, which is a finding not found in other studies. A possible explanation is that teenage women are less likely to be sure of their gestational age than older women [5]. The results of our study show a higher incidence of PROM. This is corroborated in some studies [2, 3] and refuted by others [11].

There was no significant difference in the incidence of malpresentations, Rh incompatibility, polyhydramnios or oligohydramnios, IUGR, antepartum or postpartum haemorrhage as in most other studies [11, 12]. There was a lower incidence of post partum haemorrhage but the difference was not statistically significant. This may be attributed to better myometrial function in younger women which causes a lower incidence of uterine hypotonia [2].

Teenage mothers were significantly more likely to have a vaginal delivery than a caesarean section than their older counterparts. The same findings were reported in other studies [14] and were attributed to better myometrial function, greater connective tissue elasticity and lower cervical compliance [2], a higher incidence of low birth weight babies [3, 10, 13] and obstetricians' reluctance to perform surgical procedures on teenagers [13]. The incidence of episiotomy is significantly higher in teenagers in our study which is in contrast to other studies which showed a lower incidence [13].

The higher incidence of low birth weight is likely to be a reflection of the pre-term delivery than due to IUGR, as the incidence of fetal growth restriction and small for gestational age was not significantly increased in teenage preg-

nancies. This is in agreement with some authors [2, 3, 7] although others have found either a higher incidence in small for gestational age babies in teenagers [5]. Some authors have found no significant difference in the birth weights of infants born to teenage mothers and others [8, 11]. As in other studies, there was no increased incidence of still birth [2, 3, 11, 13] or anomalous babies [5, 11].

Studies in Finland [12], and Nigeria [7] comparing teenage pregnancies and mothers over the age of 20 in a high quality maternal care setting came to the conclusion that many of the obstetrical complications in a teenage pregnancy can be overcome by means of high-quality maternity care with complete coverage and that the poor obstetric outcome of teenage pregnancy is related to non-utilisation of prenatal care rather than their biological age.

The pattern of obstetrical problems faced by the teenage pregnant women in our study shows some difference than the usually held notions, notably the higher incidence of post term pregnancies, hypertensive disorders in teenage women, good prenatal care and lower incidence of anaemia, maternal mortality and pre-term labour, but most of our results agree with other studies in terms of increased vaginal deliveries and low birth weight, and fewer caesarean sections and operative vaginal deliveries.

Conflict of interest We declare that we have no conflict of interest.

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