

## A comparative study of teenage pregnancy

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### Summary

Teenage pregnancy is a global problem and is considered a high-risk group, in spite of conflicting evidence. Our objective was to compare obstetric outcomes of pregnancy in teenagers and older women. This was a retrospective study of case records of pregnancies from August 2000 to July 2001. Girls aged  $\leq 19$  years were compared with pregnancy outcomes in older women (19–35 years) in the same hospital. The study took place in the Government General Hospital, Sangli, India, a teaching hospital in rural India, with an annual delivery rate of over 3,500. A total of 386 teenage pregnancies were compared with pregnancies in 3,326 older women. Socioeconomic data, age, number of pregnancies, antenatal care and complications, mode of delivery, and neonatal outcomes were considered. The incidence of teenage pregnancy in the study was 10%. A significant proportion of teenage pregnant mothers were in their first pregnancies. The teenage mothers were nearly three times more at risk of developing anaemia (OR = 2.83, 95% CI = 2.2–3.7,  $p < 0.0001$ ) and delivering pre-term (OR = 2.97, 95% CI = 2.4–3.7,  $p < 0.0001$ ). Teenage mothers were twice as likely to develop hypertensive problems in pregnancy (OR = 2.2, 95% CI = 1.5–3.2,  $p < 0.0001$ ) and were more likely to deliver vaginally with no significant increase in the risk of assisted vaginal delivery or caesarean section. Young mothers were nearly twice at risk of delivering low birth weight babies (OR = 1.8, 95% CI = 1.5–2.2,  $p < 0.0001$ ) and 50% less likely to have normal birth weight babies (OR = 0.5, 95% CI = 1.2–2.9,  $p < 0.0001$ ). The outcome of this study showed that teenage pregnancies are still a common occurrence in rural India in spite of various legislations and government programmes and teenage pregnancy is a risk factor for poor obstetric outcome in rural India. Cultural practices, poor socioeconomic conditions, low literacy rate and lack of awareness of the risks are some of the main contributory factors. Early booking, good care during pregnancy and delivery and proper utilisation of contraceptive services can prevent the incidence and complications in this high-risk group.

### Keywords

Teenage pregnancy, anaemia, preclampsia, preterm labour, low birth weight babies, teenage pregnancy in India

### Introduction

Teenage pregnancy is a global problem. The teenage pregnancy rate varies from 8% to 14% in India. Under the prevailing economic conditions in rural India and the poor availability and utilisation of health services, adolescent motherhood is linked with poor child survival and increased maternal mortality. Untrained personnel attend  $> 50\%$  of the deliveries in rural India, which again affects maternal and infant mortality rates. Young age is recognised as a risk factor for adverse outcomes. The general well-being, literacy rate and the socioeconomic status of the teenage population are affected.

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. In contrast, there are studies, which have shown that teenage pregnancy is no different from other pregnancies. Relative immaturity is implicated as a cause for most of these problems. Unplanned pregnancy, poor socioeconomic status and poor healthcare are also contributory factors noted in some studies. Cultural practices are unique to certain areas of the world and present added variables. The aim of this study was to find out whether pregnancies in teenagers are at a higher risk in the given prevailing cultural and socioeconomic conditions.

### Material and methods

This study was a retrospective review of all pregnancies in Government General Hospital, Sangli, India during the period August 2000 to July 2001. All pregnancies in girls aged less than 19 years were included in the study group. Women between 19 and 35 years constituted the control group. Maternal age was noted from records. Gestational age was determined from menstrual age or from scans. A total of 143 women were excluded from the study for varying reasons: there were four twins in the study group and 21 in the control, who were excluded. All mothers with medical complications were excluded from the study. There were three maternal deaths who all had medical problems and were not included in this study. Women who had more than five pregnancies were excluded from the study. It was not possible to obtain the records of miscarriages and hence these were not included in the study.

Women who had at least one antenatal clinic visit and rest of the care by healthcare workers were classified as booked. Women with no antenatal visits and presented for confinement were classed as unbooked. Anaemia was noted with an Hb  $< 10.5$  g/dl. Pre-eclampsia was diagnosed with a BP  $> 140/90$  mmHg with  $\geq 1+$  proteinuria. Eclampsia was also included in the same group.

A diagnosis of pre-labour rupture of membranes was made on clinical examination. Pre-term rupture of membranes (PROM) was included in the pre-term group. Conservative management of PROM was not usually possible because of lack of follow-up and hence were actively managed. Every attempt was made to give steroids in the pre-term group. Delivery before 37 weeks was classified as pre-term. Deliveries more than 40 weeks were classified as prolonged pregnancy. Induction methods included prostaglandin gel and artificial rupture of membranes with or without oxytocin. Deliveries were achieved before 42 weeks. All stillbirths, intrapartum deaths and intrauterine deaths were considered in one single group. Mothers who had termination of pregnancies for anomalies were not included.

There was ready access to ultrasound scanning. There was no availability of Doppler monitoring. Doctors, postgraduate trainees, nurses and student nurses under supervision, conducted all the deliveries. All deliveries were monitored with intermittent auscultation. Analgesia in labour included paracetamol and pethidine. There was no availability of epidural analgesia. There was a theatre attached to the labour ward with quick access to anaesthetic and operative services.

Mode of delivery and associated complications were noted. Indications for any interventions and immediate maternal and fetal outcomes were recorded. Birth weights of the babies born were noted: low birth weight was defined as babies weighing <2,500 g. Babies weighing <1,500 g were classed as very low birth weight. Babies were not followed up in the neonatal period.

All the above parameters in the study and control groups were compared using the  $\chi^2$ -test, *t*-test with Yates correction or Fischer exact test, where appropriate. We calculated the Odds Ratio, 95% confidence intervals and *p* values; *p* < 0.05 was considered significant.

**Results**

There were 386 pregnancies in women aged <19 years (study group) compared with 3,326 pregnancies in older women (Control group). The incidence of teenage pregnancy during the study period of 1 year was 10%.

There were 335 (86.8%) primigravidas and 42 (10.8%) second gravidas in the study group. A small number (9–2.4%) were in their third or subsequent pregnancy. In the control group there were 1,388 (41.73%) primigravidas and 1,160 (34.87%) second gravidas. There were 532 (16%) third gravidas and 246 (7.4%) were in their third or subsequent pregnancy. The proportion of primigravidas was more in the study group (OR = 10.4, 95% CI = 7.5–14.3, *p* < 0.0001).

The proportion of women who were registered for antenatal care was 176 (45.6 %) in the study group and 1,264 (43 %) in the control group. The rest were not registered for any antenatal care. This difference was statistically significant (OR = 1.4, 95% CI = 1.1–1.7, *p* = 0.004). Almost all the women in the study and control groups were from a low socioeconomic status.

Antenatal complications and problems were as listed in Table I. Pre-term labour and anaemia were the most common problems encountered. The incidence of anaemia in the study group was 89 (23.05%) when compared with 318 (10.8%) in the control group, which was significant (OR = 2.83, 95% CI = 2.2–3.7, *p* < 0.0001). The incidence of pre-term labour was 139 (48%) in the study group, whereas the incidence in the control group was 530 (18%). (OR = 2.97, 95% CI = 2.4–3.7, *p* < 0.0001).

Table II shows the mode of delivery during the study period. The majority of the women in the study group delivered vaginally (73% vs 62.5%; OR = 1.6, 95% CI = 1.3–2.1, *p* < 0.0001). The incidence of assisted vaginal delivery was 4–5% and was not significant between the groups. The incidence of caesarean section was about 18–21% and there was no statistically significant difference between the study and the control group.

The distribution of birth weights in the babies born is represented in Table III. There were 362 live births in the study group vs 3,212 in the control group. The incidence of low birth weight babies in the study group was 186 (51.4%) vs 1,127 (35%) in the control group, which was statistically significant (OR = 1.8, 95% CI = 1.5–2.2, *p* < 0.0001). A total of 59% (*n* = 1,977) of the control group had normal weight babies compared with 41.1% (*n* = 161) in the study group, which was significant (OR = 0.5, 95% CI = 0.4–0.6, *p* < 0.0001). There was no significant difference between very low birth weight babies, stillbirths and intrauterine deaths in either group.

**Discussion**

Teenage pregnancy is a major occurrence in India, especially in the rural areas. The incidence of teenage pregnancy in our study was 10%, which was less than the national average of 14.7% at the time of the study (National

Table I. Antenatal complications.

Complications	Study (%)	Control (%)	Interpretation
Preterm Labour	139 (36)	530 (16)	OR = 2.97, 95% CI = 2.4–3.7, <i>p</i> < 0.001
Anaemia	89 (23)	318 (10)	OR = 2.83, 95% CI = 2.2–3.7, <i>p</i> < 0.001
PPROM	22 (6)	256 (8)	OR = 0.72, 95% CI = 0.5–1.1, <i>p</i> = 0.15
PIH	37 (10)	152 (5)	OR = 2.21, 95% CI = 1.5–3.2, <i>p</i> < 0.001
Prolonged pregnancy	11 (3)	147 (4)	OR = 0.63, 95% CI = 0.3–1.2, <i>p</i> = 0.15
Abnormal presentation	11 (3)	91 (3)	OR = 1.04, 95% CI = 0.5–1.9, <i>p</i> = 0.89

Table II. Mode of delivery.

Type of delivery	Study (%)	Control (%)	Interpretation
Vaginal delivery	282 (73)	2,081 (63)	OR = 1.6, 95% CI = 1.3–2.1, <i>p</i> < 0.0001
LSCS	69 (18)	579 (17)	OR = 1.03, 95% CI = 0.8–1.4, <i>p</i> = 0.82
Assisted vaginal	18 (5)	161 (5)	OR = 0.96, 95% CI = 0.6–1.6, <i>p</i> = 0.89

Table III. Birth weight distribution.

Birth weight (kg)	Study (%)	Control (%)	Interpretation
<1.5	15 (4)	108 (3)	OR = 1.2, 95%, CI = 0.7–2.1, $p = 0.51$
1.5–2.5	186 (48)	1,127 (34)	OR = 1.8, 95%, CI = 1.5–2.2, $p < 0.0001$
>2.5	161 (42)	1,977 (59)	OR = 0.5, 95%, CI = 0.4–0.6, $p < 0.0001$
SB/IUD	24 (6)	114 (3)	OR = 1.9, 95%, CI = 1.2–2.9, $p = 0.006$

Census, India). The incidence has been steady over the last few decades and is comparable with data available from various other Indian studies. (Bhaskar Rao (1976): 10.6%; Anima Bhattacharya (1986): 14.7%; S. Chabra (1991): 8.2%) The incidence worldwide varies. (National Center for Health Statistics, USA (2002): 74.5 per 1,000; UK: 30.8 per 1,000). An estimated 13% of 20-year-old women would have had a child in their teens. This rate is very high in the UK, twice as high as Germany, three times higher than in France and six times higher than in the Netherlands.

Teenage pregnancy rates vary depending on cultural and socioeconomic factors and poses an ongoing challenge to healthcare policy-makers. In spite of legal constraints in India (Sharada Act, Amended 1978, India), child marriages and teenage pregnancies continue to occur and are a major health problem in India. This study is similar with various other studies with regards to the incidence and does represent the problem in the population.

Teenage pregnancy is a common occurrence in rural India. It could be due to various cultural practices, early menarche and a fairly high fertility rate in this age group. It is also related to poor literacy amongst teenage girls and the social role of women in our society. With increasing education and socioeconomic status the incidence seems to be reducing, but remains a problem. This is evident from the number of first pregnancies in our study.

Anaemia was one of the most common antenatal complications found in our study. Teenage mothers were nearly three times more at risk of developing anaemia when compared with older women. This is comparable with other studies, which have quoted a two–three-fold increase in the risk (Aznar and Bennett 1961; Bhalerao et al. 1990; Rosenberg and McEwan 1991; Mahfouz et al. 1995; Berenson et al. 1997; Wang and Chou 1999; Goonewardane et al. 2005; Thato et al. 2007). Studies both from developing countries and the developing world are unanimous about this increased risk of developing anaemia. Teenage mothers who themselves are growing are additionally burdened by the demands of pregnancy. Worm infestation and an increased prevalence of iron deficiency could be a cause for the specially high incidence in the Indian subcontinent.

Pre-term labour is another major complication noted in this study. The risk was 2.97 times that of the control group. The incidence of pre-term labour was reported to be high in some studies (Bhalerao et al. 1990; Rosenberg and McEwan 1991; Konje et al. 1992; Mahfouz et al. 1995; Berenson et al. 1997; Thato et al. 2007), while other

studies (Aznar and Bennett 1961; Nancy and Deanna 1997; Wang and Chou 1999; Goonewardane et al. 2005) do not corroborate this. Poor antenatal care and late recognition of complications could explain this high incidence of pre-term labour.

Extremes of age are described as a risk factor for pregnancy related hypertensive problems. This was replicated by our study. Teenage mothers were twice at risk of developing pre-eclampsia and its associated problems. This is comparable with various studies (Aznar and Bennett 1961; Bhalerao et al. 1990; Rosenberg and McEwan 1991; Mahfouz et al. 1995; Wang and Chou 1999; Thato et al. 2007). Very few studies, especially the western studies dispute this (Konje et al. 1992; Goonewardane et al. 2005).

A significant number of teenage mothers delivered vaginally. Teenage mothers were 1.6 times more likely to deliver vaginally. There was no difference in the operative delivery rate in the study and control groups. Studies are very much divided on this, some have shown teenage pregnancy is a risk factor for operative delivery (Aznar and Bennett 1961; Rosenberg and McEwan 1991; Konje et al. 1992; Berenson et al. 1997), whereas others have disproved this (Bhalerao et al. 1990; Mahfouz et al. 1995; Nancy and Deanna 1997; Wang and Chou 1999; Goonewardane et al. 2005; Thato et al. 2007). Increased prevalence of low birth weight babies in our study might explain this high vaginal delivery rate in the study group.

There was a significant risk of low birth weight babies in teenage pregnancies. Teenagers were 1.8 times likely to have low birth weight babies and 50% less likely to have normal birth weight babies. This again is debated in various studies. Some studies identify low birth weight babies as a result of pregnancy at a younger age (Bhalerao et al. 1990; Rosenberg and McEwan 1991; Konje et al. 1992; Mahfouz et al. 1995; Berenson et al. 1997; Thato et al. 2007). There are studies which do not support this (Aznar and Bennett 1961; Nancy and Deanna 1997; Wang and Chou 1999; Goonewardane et al. 2005). Pre-term labour, malnutrition and young age are the possible explanations for this finding. There was no difference in incidence of very low birth weight babies or perinatal mortality.

In conclusion, teenage mothers are a high-risk group. We have shown that they are at risk of developing anaemia and pre-eclampsia. They are also at risk of delivering prematurely and having low birth weight babies, which contributes to increased perinatal morbidity and mortality. We have seen that teenagers tolerate the stress of labour well and there was no difference in the outcomes.

India with its growing population needs to address this issue of teenage pregnancy with all possible measures. There is a need to improve the socioeconomic status and literacy rate. There is a need to create more awareness of the problem amongst the population and a political will to tackle it. Good obstetric care and contraceptive services are important to prevent, identify and treat problems associated with this high-risk group.

It is difficult to generalise and endorse various risks associated as is evident from the variation in the various studies reported. Cultural, social and geographical factors should be considered before analysing these risk factors.

**Declaration of interest:** The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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